**An-Najah National University Faculty of Graduate Studies** 

## **Community Pharmacists' Medication Knowledge: A Nation-wide Study in Palestine**

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## **Dedication**

To my beloved mother, father, dear sisters and all who gave me help and support throughout my life.

## Acknowledgment

I would like to express my special thanks to Professor. Waleed Sweileh, and Dr. Adham Abu-Taha for their supervision. Without their endless support this work could not be achieved. Also, all my love to my family, there encouragement was my motivation.

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أنا الموقعة أدناه، مقدمة الرسالة التي تحمل عنوان:

## Community Pharmacists' Medication Knowledge: A Nation-wide Study in Palestine تقييم المعلومات الدوائية لدى صيادلة المجتمع در اسة مسحية على مستوى الوطن

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### Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name:	اسم الطالبة:
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Date:	التاريخ:

### Abbreviations

(ACEI)	Angiotensin-Converting-Enzyme Inhibitor
(ADRs)	Adverse Drug Reactions
(CAM)	Complementary and Alternative Medicine
(DRPs)	Drug Related Problems
(FDA)	Food and Drug Administration
(MOH)	Ministry of Health
(NGOs)	non-governmental organizations
(OTC)	Over The Counter
(POM)	Prescription Only Medicine
(SPF)	Sun Protection Factor
(UNRWA)	United Nations Relief and Works Agency
(WHO)	World Health Organization

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### Abstract

**Background:** Community Pharmacists are easily accessible to the public. They have an important role and responsibility in monitoring the safety of medicines dispensed with or without a prescription.

**Objective:** This study aims to assess medication knowledge of Palestinian community pharmacists. In specific, knowledge of community pharmacists about safety of medicines during pregnancy and evidence based therapy of herbal products will be assessed.

**Methodology:** This is a cross-sectional survey study on community pharmacists. The medication knowledge was assessed by a set of questions specifically designed for this purpose. Scores of the test were presented as percentage from a total of 100. The internal consistency of each test was acceptable with a Cronbach alpha  $\geq 0.6$ .

**Results:** Approximately one third of chief community pharmacist in West-Bank, Palestine took part in the study. The sample consisted of 173 (50.6%) females and 169 (49.6%) males. The majority of the participants (303; 89.2%) had a B.Sc. degree in pharmacy while 37 (10.8%) had an M.S degree. Community pharmacists have the following median (Q1-Q3)

scores: [70% (60-80)]; [40% (30-50)]; and [50% (40-70)] for the general knowledge, safety of medicines during pregnancy and in evidence based herbal therapy tests respectively. The total score was significantly and negatively correlated with the number of years since graduation (r= - 0.2; P<0.01). Female pharmacists had significantly better score than male pharmacists in all tests (general pharmacy, herbal pharmacotherapy, total parts) but not for drug safety during pregnancy (P values = 0.16, 0.008, 0.046) respectively..

**Conclusion:** Good proportion of the study sample lack adequate knowledge in certain important aspects of pharmacy practice such as medication safety during pregnancy, evidence based indication of herbal products, and herbal-drug interactions. This might negatively affect the role of Community pharmacists in patient counseling and education. Authorities need to improve the community pharmacists' role in healthcare system by providing continuous and up-to-date education for community pharmacists.

**Practice Implications:** Professional development should be mandatory in Palestine. Inclusion of a course about drugs during pregnancy into pharmacy curriculum is recommended.

**Key Words:** Community Pharmacist, Medication Knowledge, Pregnancy, Herbal Product, Palestine.

## Chapter One Introduction

## Chapter One Introduction

### 1.1 Background and Literature review

Community pharmacists are the most accessible health care professionals to the general public. In addition to their traditional role of dispensing medications and treating minor ailments, community pharmacists are considered as an immediate source of drug information for the public. For these reasons, community pharmacists must have sufficient medication knowledge to optimize therapy for the patients.

Clinical Pharmacy is a health specialty, which describes the activities and services to develop and promote the rational and appropriate use of medicinal products and devices. Clinical Pharmacy includes all the services performed by pharmacists practicing in hospitals, community pharmacies, nursing homes, clinics and any other setting. They play an important role in Counseling activity, drug monitoring and education.

The West-Bank of Palestine is located west of the river of Jordan and has a total population of approximately 3 million inhabitants. West-Bank is divided into three regions and eleven governorates [1-2]. Currently, there are 3217 registered pharmacists and 875 pharmacies in the West-Bank of Palestine. The majority of those pharmacists work in the private sector particularly in community pharmacies. The absence of obligatory continuing pharmacy education for pharmacists is expected to negatively affect the level of medication knowledge and consequently the pharmaceutical care services delivered in community pharmacies. The public believes and trusts information provided by community pharmacists. A cross sectional study conducted in West-Bank of Palestine found that consumers have a good perception toward community pharmacists and their services [3]. A study carried out in Jordan has found that pharmacists had a good understanding of the fundamental concept of pharmaceutical care, although their action in this field was inadequate [4].

A study in Palestine estimated that approximately 30% of pregnant women take over-the-counter medications from community pharmacies and about 45% use herbal medications during pregnancy [5]. Some frequently used OTC medications have been linked with adverse pregnancy outcomes [6] as have some herbal preparations [7-8]. Another important aspect in the daily practice of community pharmacies is the rise in the use of complementary and alternative medicine, particularly herbal medicine as a health care option [9-12]. According to the World Health Organization (WHO), 70–95% of the populations in developing countries rely on traditional medicines for primary care while 70% and 90% of population in industrialized countries have used traditional medicines [13-14]. In conjunction with this increasing use of herbal remedies worldwide, several reports about adverse drug reactions and herbal drug interactions have been reported [15-16]. Furthermore, some patients taking prescription medications might also take herbal remedies or other dietary supplements which might be associated with clinically serious interactions [17-18].

Community pharmacists have huge duties to optimize medication use and contribute to the health outcomes for individuals in their society. To reach this aim, they should have excellent medication knowledge and must be well rounded in all aspects of pharmaceutical care. Therefore, we conducted this study to measure the level of medication knowledge among community pharmacists in Palestine. Specifically, we will test community pharmacists' knowledge about the safety of medications during pregnancy and about evidence based herbal remedies.

### **1.2 Palestine**

Palestine consists of two zones separated geographically: the West-Bank and the Gaza Strip with a total population of about three million inhabitants. Approximately 62% live in West Bank with an annual growth rate of 2.7% and 39% live in Gaza Strip with annual growth rate of 3.3%. West Bank is divided into three regions and eleven governorates, with the north area including: Jenin, Tulkarem, Nablus, Qalqilia , Tobas and Salfit; the middle area include: Jerusalem, Ramalla, and Jericho while the south area include: Bethlehem and Hebron [1-2].

### 1.3 Health care system in Palestine

Over the past years, the Palestinian health care system has developed. The Palestinian health care system consists of four providers: Palestinian Ministry of Health (MOH), Palestinian non-governmental organizations (NGOs), the United Nations Relief and Works Agency (UNRWA) and the private sector [19].

### **1.3.1 The Governmental Services**

The Ministry of Health (MOH) is considered the major provider of primary health services in Palestine. There are 453 primary health care centers owned by the MOH [20]. Also the MOH is responsible for a significant portion of the secondary healthcare delivery system (12 hospitals with 1,367 beds) [20-21].

### **1.3.2 Non-Governmental Organizations (NGOs)**

NGOs operate primary, secondary, tertiary health facilities, as well as rehabilitative and maternal health facilities. The most public NGOs operating health care are Red Crescent Societies, the patient's Friends Societies, Women's Union Societies, Medical Relief Committees and the Islamic Zakat Charitable Funds [21].

#### **1.3.3** The Private sector services

Hundreds of private settings are operated by private individual medical specialists, physicians, pharmacists, dentists, lab technicians and X-ray technicians [21].

### **1.3.4 UNRWA Services**

UNRWA health program focuses on comprehensive preventive and primary health care. Services are covering medical care, family health, disease control and prevention and health education. These services are provided to Palestinian refugees [21].

### **1.4 Community pharmacy practice in Palestine**

Modern pharmacy in West-Bank began in the early nineteenth century. Currently, there are 3217registered pharmacists. The majority of them work in the private sector as in other countries [22-23]. Others work in hospitals, clinics, pharmaceutical industries and companies [20].

Many studies were published about community pharmacies in Palestine: [3, 24-25]

In 2012, a cross sectional study was conducted by Khdour et al to determine the perception of Palestinian consumers to community pharmacists and their services. They found that consumers have a good perception toward community pharmacists and their services. The authors recommended to increase awareness among the public about the role of pharmacist [3].

In 2003, two cross sectional studies were conducted by Sweileh and Jaradat. The first one was conducted to describe community pharmacy practice in Palestine. They found that, over the counter sale of many prescription medications was common and unregulated. Substitution of prescribed medications was widespread. No official records of patients' prescriptions are available [24]. The second study was conducted by the same authors to determine the sources and needs of drug information for community pharmacies in Palestine. The study revealed that few drug information sources were available for community pharmacies and this inadequacy in drug information constrains the community pharmacists in Palestine from providing patients with appropriate drug education [25].

## **1.5** Community pharmacy practice in some Middle East and gulf countries

Many articles were published related to community pharmacy practice in different countries:

### 1.5.1 Jordan

In 2012, across sectional study was conducted by Abu Ruz et al among 310 community Pharmacists. They found that pharmacists had a good understanding of the fundamental concept of pharmaceutical care, although their action in this field was inadequate. Also they had very fine attitudes toward pharmaceutical care [4].

In 2012, Abu Ruz et al performed a cross sectional study. Questionnaire was delivered to a 240 physicians. They found that physicians in Jordan did not disagree with the concept of pharmaceutical care. They also accepted traditional pharmacy services such as educating patients about their treatment. However they had bad experience with pharmacists providing pharmaceutical care or expanding their service. They did not think that pharmacists were currently ready to practice such service. It will be interesting to examine the change in physicians' expectations and experience in the future with the increasing number of Pharm. D and Master of Clinical Pharmacy graduates [26].

In 2009, a study was conducted by Wazaify et al. They found that quality of drug information resources in private community pharmacies in Amman was far away from optimal. This will decrease the quality of information provided to patients and have an unfavorable consequence on the role that pharmacists can play in the health system in Jordan [27].

In 2005, also Wazaify et al. published a review article about pharmacy in Jordan. The paper revealed that although the growth of pharmacies, industry and research were noticeable, the profession of pharmacy in Jordan was far behind that in the developed world [23].

In 2008, a cross sectional study was performed by Wazaify et al. they found that Jordanian public think highly of the pharmacy profession despite their confusion and uncontrolled consumption of OTC drugs. The findings of this study indicated that drug authorizing bodies in Jordan must be more proactive in promoting appropriate self-medication use and improving pharmaceutical services [28].

### 1.5.2 Kingdom of Saudi Arabia

In 2010, across sectional study was conducted among 100 community pharmacists by Al-Hassan. This paper revealed that almost all pharmacists did not adhere to the profession legislation act related to antibiotic dispensing. A significant proportion of community pharmacists had not had any continuing education course during the last two years. Though a significant percentage of pharmacists reported real performance of such services and is ready to do so, the participation of community pharmacists in providing patient counseling was minimal [29].

In 2007, Al-Arifi et al performed a study among 250 community pharmacists. This article showed that most of participants have good knowledge about pharmaceutical care with positive attitude. There were many barriers perceived by the pharmacist i.e. shortage of sufficient training in pharmaceutical care practice. There were significant differences in responses to a number of factors like gender and age. Also years of experience and job location can affect [30].

In 2001, a study was conducted by Najjar et al among 511 community pharmacist. The study showed that the number of customers in community pharmacies was large, this earned appropriate pharmacist intervention and active patients oriented role. The pharmacist in community required extensive research in all field specially drug utilization procedure [31].

In 2009, Al-Hassan conducted a questionnaire based survey designed to determine the current status of customers' views on community pharmacies in Riyadh. The study showed willingness to provide advice, quicker services, competence and knowledge about medicines, were revealed to be desired qualities of pharmacists. On attitudes of the customers to a list of six items, majority showed that pharmacists are qualified as health professionals. Some strongly agree that pharmacists were not qualified to discuss with patients their health complaints. Possibly the lack of privacy might influence in deterring the advice seekers. Thus the problem of environment for privacy must be addressed [32].

In 2004, a questionnaire based study was conducted by Bawazir to determine consumer attitudes towards community pharmacy and their preferences for the introduction of new services. This study showed that most pharmacy customers feel comfortable seeking advice from their pharmacist. Although many pharmacists were reported to show sensitivity to a possible lack of privacy in the pharmacy, few respondents reported that their pharmacy had a private area for discussion. patients' views on possible new services were generally positive, with the exception of patient medication records [33].

### 1.5.3 Kuwait

In 2010, a survey based study conducted by Awad et al. among 223 community pharmacists in Kuwait. The investigators showed that the role of community pharmacists in health promotion and education was primarily concentrated on pharmaceutical issues rather than health behavior adjustment. They had a positive attitude towards counseling the population on health behaviors but lack of time was perceived to be the main barrier which restrictive community pharmacists in health promotion activities [34].

In 2003, a review article was published by Matowe et al about pharmacy in Kuwait. The investigators found that Kuwait was a prosperous country with a vision for success; however, change in this country was slow and not spontaneous. Pharmacy practice lags far behind that in the developed world. To narrow this gap, pharmacy in Kuwait must embrace clinical pharmacy services and refocus its services to the provision of patient care, changes that are long overdue [22].

### 1.5.4 Lebanon

In 2007, Salameh et al performed a cross sectional study among 243 pharmacists. They concluded that recently graduated pharmacists appeared more likely to work in community pharmacies or as medical representatives. Most participants had no difficulty finding a work, but they think that the order of Pharmacists should get more concerned providing occupation opportunities. Most were economically satisfied, particularly pharmacies owners [35].

In 2004, a review article was performed by Dib et al. to show the reality of pharmacy in Lebanon. They found that the future of pharmacy in Lebanon was hopeful. With the rising importance on the role of the pharmacist in the community and in the clinical field, main achievements were predictable. These will be accomplished by implementing, generalizing, and stressing the significance of patient profiles, counseling, and drug monitoring in both the community and the clinical settings [36].

### 1.5.5 Qatar

In 2011, across sectional study was conducted by El Hajj et al. a total of 274 community pharmacists were involved. In this study pharmacists showed an overall good understanding and attitudes toward pharmaceutical care provision Although there were numerous barriers to apply high pharmaceutical care stage [37].

In the same year (2011), El Hajj et al conducted a survey based study among 250 community pharmacists. This study showed that around half of respondents rated themselves as professionally dissatisfied. Improvements to their professional role, better opportunities for professional progress, and improvements in human resource-related conditions were recognized as possible solutions to this condition [38].

In 2011, a pilot study was conducted by El Hajj et al. this study suggested that the public has a poor understanding of the community pharmacist's role in monitoring drug therapy, performing health screening, and providing drug information. Several issues of concern were raised including insufficient pharmacist–Patient contact time and unsatisfactory pharmacist knowledge. To advance pharmacy practice in Qatar, efforts may be warranted to address identified issues and to promote the community pharmacist's role in drug therapy monitoring, drug information provision, and health screening [39].

In 2011, a review article was performed by Kheir et al. the study showed that Pharmacy practice in Qatar and the challenge as that facing the pharmacists other Middle Eastern countries. Many strategies and plans have been applied to improve pharmaceutical practices [40].

### **1.5.6 United Arab Emirates**

In 2012, Hasan et al. were perform a study among 344 community pharmacists and they found that three - quarters of the pharmacies dispensed less than 100 prescriptions and responded to less than 100 requirements for OTC medicines. There appears to be an insufficiency in access to both printed and computerized resources for pharmacists in the United Arab Emirates [41].

In 2011, at study was concluded by Hasan et al. participants were 344 community pharmacists. The study revealed that pharmacies in the United Arab Emirates provided a wide range of pharmaceutical and nonpharmaceutical services. A quarter of the pharmacists reported medication errors and adverse drug reactions [42].

In 2011, a cross sectional study was performed by Hamoud et al. the study showed that community pharmacists agreed that counseling will enlarge their sales. Pharmacists reported that they need to submit themselves to training for efficient counseling. Also pharmacists felt that more personnel in the pharmacies would have a positive effect on patient compliance to medication therapies and patient safety [43].

At 2009, a review article was written by Dameh. He found that although there was several challenges face pharmacy in the United Arab Emirates, Pharmacy profession has taken presuming steps in current years. Pharmacist-led patient counseling was generally limited to the dosage and frequency of the medications they obtain [44].

### 1.6 Role of community pharmacists in various scopes

mentioned before, community pharmacists As are medical professionals who are easily accessed and knowledgeable about a lot of aspects concerning patients and their medication. There are many professional roles for community pharmacists as dispensing of prescribed drug together with informative advice regarding drug and its use, compatibility, Adverse Drug Reaction (ADR), side effect. Also, Community pharmacists are in a ideal position to provide extensive diabetes care. There is evidence of efficacy of diabetes management services provided by community pharmacies [45]. As well as, community pharmacists that have sufficient training in the pharmacotherapy of diabetes can make precious drug therapy recommendations to general practitioner. Community pharmacists are also can identify adherence problems and manage adverse drug effects [46].

In case of hypertension and cardiovascular diseases, community pharmacists can involved in management and control of high blood pressure by: lifestyle modification, monitoring and promoting medication adherence, identifying and resolving drug-related problems, providing patient education and monitoring blood pressure [47]. Community pharmacy-based interventions have resulted in reduction in risk factors for coronary heart diseases by managing hyperlipidemia [48], hypertension [47], smoking cessation [49] and secondary prevention medications.

In asthmatic patients, community pharmacists also can play a major role to improve management of their illness. Their role to control asthma are involve giving guidance on taking their medicines properly, patient counseling to avoiding factors that worsen asthma, detecting level of asthma control, responding to worsening asthma, and seeking emergency care when needed [50].

## **1.6.1** Role of community pharmacists in complementary and alternative medicine

Recently, there has been a global rise in the use of complementary and alternative medicine, particularly herbal medicine as a health care option [9-12]. Herbal medicines are defined as herbal preparations or finished herbal products that contain as active ingredients parts of plants, or other plant materials, or combinations of plants [13]. According to the World Health Organization (WHO), 70–95% of the populations in developing countries rely on traditional medicines for primary care while 70% and 90% of population in industrialized countries have used traditional medicines [13-14]. In conjunction with this increasing use of herbal remedies worldwide, several reports about adverse drug reactions and herbal drug interactions have been reported [15-16]. Despite the fact that herbal remedies are not classified as drugs by the US Food and Drug Administration (FDA), the 1994 Dietary Supplement Health and Education Act allows manufacturers to make claims regarding the benefits on the use of these products [51].

#### Additional studies in this field

In 2007, a Self-administered questionnaire was designed as the study instrument and distributed among pharmacists in Kuwait to investigate the knowledge and attitudes among pharmacists towards the use of herbs. The study showed that herbal information is needed for pharmacy students as part of the Pharmacy College curriculum. Continuing education programs for practicing pharmacists about the safety of different herbal products should be established in Kuwait [52].

In 2000, a survey was distributed to pharmacists at Virginia and North Carolina to determine the knowledge and attitudes of pharmacists regarding herbal medications. The findings from this study demonstrated that pharmacists were more likely to answer correctly about the uses of herbal medications than about drug interactions, adverse drug effects, and precautions of herbal medications. Additionally, pharmacists with previous continuing education on herbal medications were more knowledgeable about these products. With the increasing use of herbal medications, there is need for pharmacy training programs in this field [53].

In 2003, Anonymous self-administered survey was designed to determine the patterns of use, knowledge, and attitudes toward complementary and alternative medicine (CAM) among pharmacists. The study showed the use of CAM among pharmacists was widespread and prevalent. The increased use of CAM necessitates the need for more education. Pharmacists acknowledge that CAM may have a place in health care and accept their role as information providers. There is also a need for reliable sources of information on CAM [54].

In 2003, Other Descriptive study was conducted at Minnesota. The study showed that pharmacists' personal herbal use was as high as or higher than that of other groups of Americans, and they used similar products. Pharmacists desired more information on herbal products and more government oversight of these products, and pharmacists were increasingly being sought out as sources of information regarding herbal products [55].

In 2009, a survey was designed to investigate the attitudes and knowledge of consumers and pharmacists toward the safety of natural products. Findings from this study demonstrated that in general consumers needed information on herbal safety and pharmacists were more likely to answer correctly about the use of herbs rather than about cautions, adverse effects and interactions [56].

In 2005, an anonymous, self-administered questionnaire was designed and mailed pharmacists in Australia to determine the knowledge and attitudes of pharmacists toward CAM. They found that CAM use was highly prevalent among Australian pharmacists. While pharmacists were aware of their role as educators about both CAM and conventional medicines, there was a need for greater access to CAM resources and education on these therapies [57].

In 2010 a cross-sectional study was conducted among 115 community pharmacists in Saudi Arabia to detect knowledge, attitudes and practices towards herbal remedies. In general, pharmacists had poor awareness about potential herb-drug interactions, While 56% of participating pharmacists expressed concerns about the safety of herbal remedies. Community pharmacists need to be better informed about herbal products [58].

In 2006, other study was carried out to assess the knowledge of community pharmacists who sell herbal /phytopharmaceutical formulations in pharmacy retail outlets. The study found that there was gross inadequacy in the pharmacists' knowledge of the phytopharmaceuticals sold in pharmacies indicating an urgent need for intensive training in order to render better services to their clients [59].

In 2010, a cross sectional study was conducted to assess pharmacists' current practice, perception and knowledge towards the use of herbal products in United Arab Emirates. The study showed that pharmacists need to be on indication, drug interactions, adverse events and precautions of herbal products. Concerned bodies must also provide them with regular continuing education programs apart from putting their efforts to incorporate relevant topics on herbal medicine in the pharmacy students' curriculum [60].

# 1.6.2 Role of community pharmacy in monitoring drugs during pregnancy

Prescribing for pregnant patients can be a challenge caused by inadequate information about medication safety in that period. In Palestine, It is estimated that less than one thirds of pregnant women take OTC medications from community pharmacies and about 45% may use herbal medications [5]. Some frequently used OTC medications have been linked with adverse pregnancy outcomes [6] as have some herbal preparations [7-8]. However some patients taking prescription medications and might also take herbals or other dietary supplements – this combination could have clinically serious interactions [17-18]. Community pharmacists have huge duties to optimize medication use and contribute to the health outcomes for individuals in their society. To reach this aim , they should be offering the following services to pregnant women and to those planning to become pregnant: medication counseling, drug information, support to quit risky behaviors (e.g. tobacco smoking), medication reviews and adherence support [61].

### Additional studies in this area

In 2010, a descriptive study was performed in United States. The study showed that education efforts that focus on the effectiveness and safety of influenza vaccination during pregnancy and the benefits of treating pregnant women with confirmed or suspected influenza with antiviral medications might be useful in improving pharmacists' support of pharmaceutical interventions to reduce the impact of influenza in pregnant women. Pharmacists' personal decisions regarding vaccination might be a marker for their overall assessment of risks and benefits and might influence their recommendations for pregnant patients [62].

In 2011, a cross sectional study was conducted in Tanzania to assess the knowledge of drug dispensers and pregnant women regarding drug use in pregnancy, focusing on four commonly used drugs that are teratogenic or cause unwanted effects to the fetus and babies. The study demonstrated that drug dispensers had low knowledge regarding the harmful effects of drugs during pregnancy. Drug dispensing personnel should be considered part of the therapeutic chain and, if appropriately trained, they will play a very important role in promoting rational use of medicines [63].

In 2006, other cross sectional study aimed to assess knowledge and attitudes of the pharmacists on dispensing drugs to pregnant women in (Brazil). The study suggested that Pharmacists dispensing drugs were not able to interpret information on the use of drugs in pregnant women, and they didn't have reliable information sources on the use of dug in pregnancy. However, they adviced and counseled drugs to pregnant women and discuss with physicians therapeutic strategies [64].

### **1.6.3 Role of Community Pharmacists in Pharmacovigilance**

According to the WHO, pharmacovigilance is "the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other possible drug-related problem ". Drug-related problems (DRPs) are associated with significant morbidity and mortality, with the majority DRPs thought to be preventable. Community pharmacists can detect and either prevent or resolve many of these DRPs. In a number of countries the pharmacist plays a significant role in the reporting of ADRs, on the other hand in other countries reports from pharmacists are not accepted by registration authorities. In addition to that the pharmacists' understanding of the range of pharmaceutical specialties could also enhance the understanding of the nature of ADRs. However, pharmacists attention within the fields of ADRs and so Pharmacovigilance is limited [65].

### Additional studies in this field

Recently, a tool with 63 statements was constructed based on circumstances that occur more regularly in the Australian community pharmacies. That study was aimed to assess a pharmacist's ability to recognize, collect relevant information about and make appropriate recommendations to determine, a DRP. The study found that the clinical knowledge measurement tool appeared to estimate a pharmacist's ability to notice and determine DRPs within the community pharmacy setting [66].

In 2002, a questionnaire based study was conducted among a stratified random sample of 200 community pharmacists to gain insight into the attitude and behavior of community pharmacists in the Netherlands with respect to the reporting of adverse drug reactions (ADRs). The study

revealed that community pharmacists in the Netherlands are knowledgeable about reporting ADRs and highly motivated to do so. This positive attitude towards reporting adverse events was based on the established tradition of pharmacist reporting in the Netherlands [67].

In 2011, a cross-sectional observational survey was conducted to investigate the knowledge, perceptions and practice of Pharmacovigilance amongst community pharmacists in Nigeria. They found that community pharmacists had poor knowledge about pharmacovigilance with poor Reporting. They recommend that was need for educational programs in this field [68].

In 2009, a survey was developed to gather information from both patients with epilepsy and community pharmacists on the issue of antiepileptic drug formulation switching. They concluded that both patients with epilepsy and pharmacists were under-informed and underinvolved with reporting adverse drug events [69].

In 2008, a survey about the knowledge and attitude of community pharmacists towards pharmacovigilance and adverse drug reactions (ADRs) was conducted in Turkey. The results showed that Turkish community pharmacists had poor knowledge about pharmacovigilance [70].

In 2012, a survey-based clinical knowledge measurement tool was designed to estimate a community pharmacist's clinical knowledge and

ability to detect and appropriately resolve drug related problems (DRPs). The study showed that the pharmacists' survey scores were correlated against their actual rate of documenting clinical interventions. The clinical knowledge measurement tool appeared to estimate a pharmacist's ability to detect and resolve DRPs within the community pharmacy environment [71].

In 1999, an interview study was conducted to investigate community pharmacists' attitudes to and knowledge of ADR reporting and the "yellow card" scheme. They found that their concerns about reporting need to be addressed. Their findings suggested that more research was needed to identify the factors which encourage and inhibit reporting, and that further efforts might be needed to promote ADR reporting [72].

In 2008, a survey was performed to examine pharmacists' perceptions and opinions on the potential causes of dispensing errors and the ways to prevent them in community pharmacies. The study showed that community pharmacists still had the person-centred approach to medication safety although signs of the system approach were also evident. Attitudinal modifications still had to take place, as well as changes to the practice environment, in order to get the system approach fully implemented in the Finnish community pharmacies [73].

In 2009, a questionnaire based study was conducted to investigate the role of pharmacists in ADR reporting was performed in Iran. They found that pharmacists had poor knowledge regarding the operation, purposes, and usefulness of ADR reporting. However, continuing education will be important in field of ADR reports [74].

### **1.7 Objectives**

- 1. The general objective was to assess the community pharmacists' knowledge about medications and drug-related problems that are encountered in his every day practice.
- 2. The specific objective was to evaluate the actual knowledge of community pharmacists in three important aspects: evidence based herbal therapy, drug safety in pregnancy and general pharmacy knowledge based in previously published studies [75-93].
- 3. Furthermore, this study aimed at identifies potential factors associated with knowledge, if any, and the possible recommendations.

### **1.8 Significance**

- 1. This study was the first and only study about community pharmacists' medication knowledge in Palestine.
- 2. Assessing medication knowledge will help Pharmaceutical Association and MOH to argue for mandatory continuing pharmacy education.
- 3. This study will help people in universities to design courses for pharmacy continuing education that meets Palestinian pharmacy practice situation.

### **1.9 Relevance of the study to Clinical Pharmacy**

- 1. Clinical pharmacists are information providers and they must play a role in assessing, educating and training community pharmacists in this regard.
- 2. Research in community pharmacy is an important, but neglected aspect of clinical pharmacy. This study will increase the share of clinical pharmacists into community pharmacy practice.
- Clinical pharmacists must play a role in promoting pharmaceutical care in Palestine through encouraging and meeting the needs of community pharmacists.
# Chapter Two Methodology

# Chapter Two Methodology

# **2.1 Introduction**

This is a cross sectional analytical study conducted in West-Bank of Palestine on September, 2012. The authors got a list of the names of all community pharmacies and their addresses from the Palestinian Pharmaceutical Association. Based on the list, the authors visited all governorates in the West-Bank: Nablus, Jenin, Tulkarm, Qalqilya, Tubas, Salfit, Ramallah, Al Bireh, Hebron, Bethlehem, Jerusalem and Jericho. Community pharmacies were visited in every governorates of the West Bank and were asked to participate in the study. Community pharmacies which were closed or in which the pharmacist in charge was not present at the time of the visit were excluded from the study. The authors gave a brief explanation of the study and obtained a verbal consent from community pharmacists who participated in the study. Approval to conduct the study was also obtained from the IRB at An-Najah University.

## 2.2 Study Tool

The tool used in this study had been constructed by the authors and was reviewed and corrected by three Ph.D holders in clinical pharmacy who had at least 5 years of pharmacy practice (Appendix 1). The questions used in the tool had been developed based on similar previously published studies in other countries [75-93]. The tool was piloted and tested before the study was officially carried out.

The questionnaire used in the tool consists of two sections: section one contained general demographic questions like age, gender, educational level, country of graduation, and number of years of experience in pharmacy practice. The second section in the tool consists of questions that were divided into 3 short tests:

The first test pertains to the general pharmacy practice and contained 10 multiple choice questions.

The second test contained a list of 20 medicines and pharmacists were asked about the safety of each medicine during pregnancy. The list included both prescription only medications (POM) and over the counter medications (OTC). Questions in this section had one of the following answers: safe in the first trimester, safe in all trimesters, must weight risks and benefits for individual patients, not safe in the first trimester, not safe in all trimesters, and I don't know. The correct answers to the questions were based on FDA pregnancy categories which are defined as categories A, B, C, D and X. Two questions had more than one answer.

The third test contained 10 multiple choice questions about evidence based herbal pharmacotherapy. The herbs mentioned in the questions were those which are available as herbal product in the Palestinian market and being used commonly for common ailments.

## 2.3 Analysis and Scoring

For each question in the test, the participant got a score of 1 in case his answer was correct and 0 if his answer was incorrect. For each participant, a total score was given for each test and an average score of the three tests was also given. The score for each test was calculated out of 100 and presented as percentage. Score results were entered and computed using Scores were entered and computed using Statistical Package for Social Sciences (SPSS, version 16.0, SPSS Inc., Chicago, IL, USA). A significance level of  $P \le 0.05$  was used for significant level. Normality of the data was tested using Kolmogorov–Smirnov test. Continuous variables were presented as mean  $\pm$  standard deviation (S.D) or median (Q1- Q3) based on normality of the data. Categorical variables were presented as frequencies and percentages. Group differences on ordinal measure were evaluated using the Mann- Whitney U or Kruskal- Wallis test. Pearson correlation was used to test for correlation between test scores and other variables. The internal consistency of the questionnaire was tested by measuring the Cronbach's alpha values for the three sets of questions in the questionnaire and gave the following values: 0.574, 0.697 and 0.766 for the general drug knowledge, safety of medicines during pregnancy and herbal therapy tests respectively.

# Chapter Three Results

# Chapter Two Methodology

## 3.1 Results

During study period, a total of 342 community pharmacies out of 875 spread in the 11 governorates participated in the study. The remaining community pharmacies were not included in the study because the pharmacist in charge was either not available at the time of the visit or was busy or did not agree to participate. The number of participants represents approximately one third of the pharmacists in charge of community pharmacies. Tests of normality showed that the scores for all tests were not normally distributed.

Forty nine percent (49%) of the participants were males and the majority (89.2%) had a bachelor degree in pharmacy. The average age of participants was  $31.5 \pm 9.1$  years and the average number of years of experience was  $7.7 \pm 8.3$ . The majority (88.6%) of the participants graduated from school of pharmacies in Palestine and the Arab countries (Table 1). The distribution and location of community pharmacies which participated in the study is shown in Table 2.

In general pharmacy practice test, the results showed that the scores of participants were good (mean =  $69\% \pm 18$ ; median = 70% (60-80). Scores for each question in the general pharmacy test is shown in table 3. In the test pertaining to the safety of medicines during pregnancy, the average score was low (mean =  $39.9\% \pm 16$ ; median 40 (30-50). Scores for each question in the second test is shown in table 4. In the third tests pertaining to evidence based herbal therapy, the average score was poor (mean =  $51.6\% \pm 2.3$ ; median = 50 (40-60). Scores for each question is shown in Table 5.

Gender differences were observed in scores of general pharmacy test (P = 0.016) and evidence based herbal therapy test (P = 0.008) but not in drug safety during pregnancy test (P = 0.604). Country of graduation significantly influenced the scores of herbal test but not other tests. The total score in the three tests was significantly influenced by gender (P = 0. 046), but not country of education (P = 0.076) (table 6). The scores in three tests were significantly and negatively correlated with the number of years since graduation (r = -0.2; P < 0.01). There was a significant moderate correlation between the scores of the three tests (Table 7).

Гаble (1): demographic charact	eristics of the partic	ipants (N = 342)
--------------------------------	------------------------	------------------

Variable	Frequency (%)
Gender	
- Male	169 (49.4)
- Female	173 (50.6)
Latest qualification	
- Bachelor	305 (89.1)
- Master	37 (10.9)
Address	
- City	286 (83.6)
- village	56 (16.4)
Years of experience	
- < five years	159 (46.5)
- 5 -9 years	71 (20.8)
- 10 -14 years	59 (17.3)
$- \ge 15$ years	53 (15.5)
Country of education	
- Local (Palestine)	213 (62.2)
- Regional (Middle East/ Gulf countries)	92 (26.9)
- International (Europe/ USA/ Asia)	38 (10.9)

	No. of	No. of	(%) from	(%) from total
District	participants	pharmacies in	the	Study sample
	<b>(n)</b>	the district	district	N = 342
- Hebron	83	204	24.9	40.7
- Nablus	63	152	18.4	41.4
- Ramallah	58	135	17	42.9
- Tulkarm	33	84	9.6	39.3
- Jenin	30	97	8.8	30.9
- Bethlehem	28	66	8.2	42.4
- Qalqilya	21	42	6.1	50
- Jerusalem	10	67	2.9	15
- Tubas	8	10	3.3	30
- Salfit	3	12	0.9	25
- Jericho	3	6	0.9	50
Total	342	875	100	39.1

 Table (2): Geographical distribution of the study sample

# Table (3): Results of general pharmacy practice test

#	Question	Frequency (%) for each answer
1	Why is it important for asthmatic patient to rinse their mouth after inhalation of corticosteroids[76]	
	a-to prevent atrophy of mucosa in the mouth b-to prevent ulceration in the mouth	28 (8.2) 66 (19.3)
	<i>c-to prevent fungal infection in the mouth</i> d-none of the above	204 (60.5)* 18 (5.3)
2	What is the most common side effect for ACEI[77] a-allergy b-diarrhea c-headache d-dry cough	21 (6.1) 6 (1.8) 15 (4.4) 248 (83)*
3	What is the most important side effect of nitro- glycerin[78] a-headache b-stomachache c-constipation d-none of the above	245 (74.3)* 10 (2.9) 14 (4.1) 41 (12)
4	What is the drug group that cause pseudomembranouse colitis [79] a- drug that treat hypertension	7 (5)

	b- drug that treat diarrhea	25 (7)
	<i>c- antibiotics</i>	270 (78.9)*
	d- drug that treat diabetes	11 (3.2)
5	The temperature in the drug refrigerator should	
	be[80]	
	a-1 to 4 °c	26 (7.6)
	<i>b-2 to 8 °c</i>	269 (78.7)*
	c-4 to 8 $^{\circ}$ c	30 (8.8)
	d- 0 to 2 °c	4 (1.2)
6	Influenza vaccine is usually given on [81]	
	a-March	2 (0.6)
	b-November	303 (88.6)*
	c-April	14 (4.1)
	d-February	8 (2.3)
7	The abbreviation (PRN) stands for [94]	
	a-give a drug twice daily	9 (2.6)
	b-give a drug subcutaneously	2 (0.6)
	c- a-give a drug when required	310 (90.6)*
	d-none of the above	10 (2.9)
8	The abbreviation (QID) stands for [94]	
	a-give a drug four times daily	306 (89.5)*
	b-give a drug twice daily	12 (3.5)
	c- a-give a drug once daily	4 (1.2)
	d-none of the above	2 (0.6)
9	What percent of UVB radiation is blocked by a	
	sunscreen with sun protection (SPF)value of	
	15[82]	
	a-15 %	195 (57)
	b-73 %	36 (10.5)
	c-30 %	34 (9.9)
	<i>d-93 %</i>	44 (12.9)*
10	The efficacy of OTC cough product in symptoms	
	of common cold [83]	
	a-unknown	36 (10.5)
	b-modest	106 (31)
	c-well-established	88 (25.7)
	d-clearly lacking	98 (28.7)*
	Mean $\pm$ S.D for general pharmacy score	$68.6 \pm 18$
	Median for general pharmacy score (Q1-Q2)	70 (60 - 80 )

(\*) was used for correct answer

#	medication	Frequency (%) for each answer
PO	Μ	
1	Alprazolam	
	a-safe in 1 <sup>st</sup> trimester	
	b-safe all trimesters	15 (4.4)
	c-must weight risks and benefits for individual	4 (1.2)
	patient	71 (20.8)
	d-not safe in 1 <sup>st</sup> trimester	18 ( 5.3)
	e-not safe all trimesters	207 (60.5)*
	f- I don't know	26 (7.6)
2	Amoxicillin	
	a-safe in 1 <sup>st</sup> trimester	48 (14)
	b-safe all trimesters	258 (75.4)*
	c-must weight risks and benefits for individual	14 (4.1)
	patients	11 (2.2)
	d-not safe in 1 <sup>st</sup> trimester	11(3.2)
	e-not safe all trimesters	5(1.5)
2	f- I don't know	6 (1.8)
3	Budesonide, inhaled	<b>22</b> (( <b>7</b> ))
	a-safe in 1 <sup>st</sup> trimester	23(6.7)
	b-safe all trimesters	6/(19.6)*
	c-must weight risks and benefits for individual patients	126 (36.8)
	d-not safe in 1 <sup>st</sup> trimester	46 (13.5)
	e-not safe all trimesters	43 (12.6)
	f- I don't know	24 (6.7)
4	Ciprofloxacin	
	a-safe in 1 <sup>st</sup> trimester	8 (2.3)
	b-safe all trimesters	12 (3.5)
	<i>c</i> -must weight risks and benefits for individual	38 (11.1)*
	patients	
	d-not safe in 1 <sup>st</sup> trimester	41 (12)
	e-not safe all trimesters	222 (64.9)
	f- I don't know	10 (2.9)
5	Isotretinoin	× /
	a-safe in 1 <sup>st</sup> trimester	5 (1.5)
	b-safe all trimesters	2 (0.6)

Table (4) Results of medication safety during pregnancy test for community pharmacists

	c-must weight risks and benefits for individual	14 (4.1)
	patients	
	d-not safe in 1 <sup>st</sup> trimester	11 (3.2)
	e-not safe all trimesters	281 (82.2)*
	f- I don't know	23 (6.7)
6	Lamotrigine	
	a-safe in 1 <sup>st</sup> trimester	14 (4.1)
	b-safe all trimesters	10 (2.9)
	c-must weight risks and benefits for individual	80 (23.4)*
	patients	
	d-not safe in 1 <sup>st</sup> trimester	24 (7)
	e-not safe all trimesters	128 (37)
	f- I don't know	54 (15.8)
7	Oral contraceptives	
	a-safe in 1 <sup>st</sup> trimester	16 (4.7)
	b-safe all trimesters	13 (3.8)
	c-must weight risks and benefits for individual	9 (2.6)
	patients	
	d-not safe in 1 <sup>st</sup> trimester	17 (5)
	e-not safe all trimesters	257 (75.1)*
	f- I don't know	15 (4.4)
8	Paroxetine	
8	<i>Paroxetine</i> a-safe in 1 <sup>st</sup> trimester	9 (2.6)
8	<i>Paroxetine</i> a-safe in 1 <sup>st</sup> trimester b-safe all trimesters	9 (2.6) 9 (2.6)
8	<b>Paroxetine</b> a-safe in 1 <sup>st</sup> trimester b-safe all trimesters c-must weight risks and benefits for individual	9 (2.6) 9 (2.6) 113 (33)
8	<b>Paroxetine</b> a-safe in 1 <sup>st</sup> trimester b-safe all trimesters c-must weight risks and benefits for individual patients	9 (2.6) 9 (2.6) 113 (33)
8	<b>Paroxetine</b> a-safe in 1 <sup>st</sup> trimester b-safe all trimesters c-must weight risks and benefits for individual patients d-not safe in 1 <sup>st</sup> trimester	9 (2.6) 9 (2.6) 113 (33) 22 (6.4)
8	Paroxetine a-safe in 1 <sup>st</sup> trimester b-safe all trimesters c-must weight risks and benefits for individual patients d-not safe in 1 <sup>st</sup> trimester <i>e-not safe all trimesters</i>	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)*
8	Paroxetine a-safe in 1 <sup>st</sup> trimester b-safe all trimesters c-must weight risks and benefits for individual patients d-not safe in 1 <sup>st</sup> trimester <i>e-not safe all trimesters</i> f- I don't know	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3)
8	Paroxetine         a-safe in 1 <sup>st</sup> trimester         b-safe all trimesters         c-must weight risks and benefits for individual         patients         d-not safe in 1 <sup>st</sup> trimester         e-not safe all trimesters         f- I don't know         Phenobarbital	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3)
8	Paroxetinea-safe in 1st trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in 1st trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in 1st trimester	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9)
8 9	Paroxetinea-safe in 1st trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in 1st trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in 1st trimesterb-safe all trimesters	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3)
8	Paroxetinea-safe in 1st trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in 1st trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in 1st trimesterb-safe all trimestersc-must weight risks and benefits for individual	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8)
8	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatients	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8)
8	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimester	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7)
8	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimesters	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7) 196 (57.3)*
8	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't know	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7) 196 (57.3)* 15 (4.4)
8 9 10	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowValproic acidC-i $1^{st}$ trimester	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7) 196 (57.3)* 15 (4.4)
8 9 10	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowValproic acida-safe in $1^{st}$ trimester	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7) 196 (57.3)* 15 (4.4) 23 (6.7) 15 (4.4)
8 9 10	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowValproic acida-safe in $1^{st}$ trimesterb-safe all trimestersf- I don't know	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7) 196 (57.3)* 15 (4.4) 23 (6.7) 15 (4.4)
8 9 10	Paroxetinea-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowPhenobarbitala-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individualpatientsd-not safe in $1^{st}$ trimestere-not safe all trimestersf- I don't knowValproic acida-safe in $1^{st}$ trimesterb-safe all trimestersc-must weight risks and benefits for individual	9 (2.6) 9 (2.6) 113 (33) 22 (6.4) 120 (35)* 42 (12.3) 10 (2.9) 1 (0.3) 71 (20.8) 23 (6.7) 196 (57.3)* 15 (4.4) 23 (6.7) 15 (4.4) 102 (29.8)

	d-not safe in 1 <sup>st</sup> trimester	20 (5.8)
	e-not safe all trimesters	133 (38.9)*
	f- I don't know	28 (8.2)
11	Killed influenza vaccine	
	a-safe in 1st trimester	26 (7.6)
	b-safe all trimesters	75 (21.9)*
	c-must weight risks and benefits for individual	54 (15.8)
	patients	
	d-not safe in 1st trimester	23 (6.7)
	e-not safe all trimesters	104 (30.4)
	f- I don't know	49 (14.3)
	Mean ±S.D for drug safety during pregnancy	45.5±19
	(POM) score	
	Median for for drug safety during pregnancy	46(36.3-56.8)
	(POM) score $(Q1 - Q3)$	
OT	C	
1	Acetaminophen	
	a-safe in 1 <sup>st</sup> trimester	48 (14)
	b-safe all trimesters	259 (75.7)*
	c-must weight risks and benefits for individual	6 (1.8)
	patients	
	d-not safe in 1 <sup>st</sup> trimester	5 (1.5)
	e-not safe all trimesters	3 (0.9)
	f- I don't know	7 (2)
2	Aspirin 325 mg	
	a-safe in 1 <sup>st</sup> trimester	74 (21.6)
	b-safe all trimesters	51 (14.9)
	c-must weight risks and benefits for individual	90 (26.3)*
	patients	
	d-not safe in 1st trimester	40 (11.7)*
	e-not safe all trimesters	58 (17)
	f- I don't know	14 (4.1)
3	Ranitidine	
	a-safe in 1 <sup>st</sup> trimester	31 (9.1)
	b-safe all trimesters	144 (42.1)*
	c-must weight risks and benefits for individual	60 (17.5)
	patients	
	d-not safe in 1 <sup>st</sup> trimester	52 (15.2)
	e-not safe all trimesters	22 (6.4)
	f- I don't know	14 (4.1)
4	Caffeine	
	a-safe in 1 <sup>st</sup> trimester	15 (4.4)

	b-safe all trimesters	72 (21.1)
	c-must weight risks and benefits for individual	90 (26.3)*
	patients	
	d-not safe in 1 <sup>st</sup> trimester	46 (13.5)
	e-not safe all trimesters	79 (23.1)
	f- I don't know	21 (6.1)
5	Dextromethorphan	
	a-safe in 1st trimester	20 (5.8)
	b-safe all trimesters	29 (8.5)
	c-must weight risks and benefits for individual	78 (22.8)*
	patients	· · · ·
	d-not safe in 1st trimester	38 (11.1)
	e-not safe all trimesters	121 (35.4)
	f- I don't know	37 (10.8)
6	Guaifenesin	
	a-safe in 1st trimester	43 (12.6)
	b-safe all trimesters	143 (41.8)
	c-must weight risks and benefits for individual	57 (16.7)*
	patients	
	d-not safe in 1st trimester	30 (8.8)
	e-not safe all trimesters	35 (10.2)
	f- I don't know	23 (6.7)
7	Ibuprofen	
	a-safe in 1st trimester	44 (12.9)
	b-safe all trimesters	28 (8.2)
	c-must weight risks and benefits for individual	60 (17.5)*
	patients	
	d-not safe in 1st trimester	74 (21.6)*
	e-not safe all trimesters	114 (33.3)
	f- I don't know	6 (1.8)
8	Pseudoephedrine	
	a-safe in 1st trimester	17 (5)
	b-safe all trimesters	14 (4.1)
	c-must weight risks and benefits for individual	84 (24.8)*
	patients	
	d-not safe in 1st trimester	49 (14.3)
	e-not safe all trimesters	133 (38.9)
	f- I don't know	23 (6.7)
9	Senna	
	a-sate in 1st trimester	12 (3.5)
	b-sate all trimesters	24 (7)
	c-must weight risks and benefits for individual	41 (12)*

patients	
d-not safe in 1st trimester	24 (7)
e-not safe all trimesters	184 (33.8)
f- I don't know	37 (10.8)
Mean± S.D for drug safety during pregnancy	$33 \pm 19.6$
(OTC) score	
Median for drug safety during pregnancy (OTC)	33.3(22.2-44.4)
score(Q1-Q3)	
Mean ± S.D for drug safety during pregnancy score	
Median for drug safety during pregnancy score	$39.9 \pm 16$
(Q1-Q3)	40 (30-50)

(\*) was used for correct answers

#	Question	Frequency (%) for each answer
1-	Herbal product that may decrease blood	
	cholesterol level[84-85]	
	a) Garlic	250 (73.1)*
	b) Ginkgo Biloba	25 (7.3)
	c) Hawthorn	10 (2.9)
	d) Horse Chest Nut Seed	20 (5.8)
2-	Herbal product that increase bleeding effect	
	when used with Anticoagulants [86]	
	a) Red Yeast Rice and CoQ10	29 (8.5)
	b) Black tea and Chest Nut	15 (4.4)
	c) Hawthorn and Green Tea	19 (5.6)
	d) Garlic and Ginkgo Biloba	190 (55.6)*
3-	Herbal product that may cause anxiety and	
	insomnia[87]	
	a) Citrus Aurantium	57 (16.7)
	b) Garlic	7 (2)
	c) Green Tea	99 (28.9)*
	d) Ginkgo Biloba	118 (34.5)
4-	Black Cohosh is used for [88]	
	a) post menopausal symptoms	118 (34.5)*
	b) enhance immunity	67 (19.6)
	c) respiratory infections	20 (5.8)
	d) insomnia	29 (8.5)
5-	Echinacea is used for [89]	
	a) cold symptoms	203 (59.4)*
	b) urinary tract infections	39 (11.4)
	c) increase alertness	19 (5.6)
	d) ulcers	10 (2.9)
6-	Valerian Root should not be used with drugs that	
	treat[87]	
	a) insomnia	207 (60.5)*
	b) diarrhea	25 (7.3)
	c) influenza	18 (5.3)
	d) ulcer	44 (12.9)
/-	Which the following is appropriate information	
	for the patient who is considering the use of	
	Ginkgo biloba [90]	
	a) Ginkgo may block antiplatelet effect and	23 (6.7)
	cardiovascular effect of Asripin	

Table (5): Results of the evidence based herbal pharmacotherapy test

	b) Ginkgo prevents memory decline in adult who	78 (22.8)
	taake the supplement for at least 6 month	
	c) Ginkgo may increase the risk of bleeding and	160 (46.8)*
	may interact with medications that increase	<b>`</b>
	bleeding risk	34 (9.9)
	d) activities of daily living improved more than	
	momory by using Ginkgo	
8-	Which the following adverse effects have been	
	linked to Ephedra\Caffeine [91]	
	a) hypotension, bradycardia	11 (3.2)
	b) anexiety, palpitation	268 (78.4)*
	c) constipation, bronchocostriction	17 (5)
	d) nasal congestion, drowsiness	11 (3.2)
9-	From the following drug, the drug that treat	
	hypertension[92]	
	a) Garlic	201 (58.8)
	b) Policosanol	27 (7.9)
	c) Coenzyme Q10	34 (9.9)*
	d) Omega 3 fatty acid	44 (12.9)
10	in the patients with history of cardiac disease,	
-	the product that recommended for protection	
	from heart attack[93]	
	a) Ginkgo biloba	8 (2.3)
	b) Red yeast rice	5 (1.5)
	c) Coenzyme Q10	50 (14.6)
	d) Omega 3 fatty acid	232 (67.8)*
	<i>Mean</i> ± <i>S</i> . <i>D</i> for herbal products score	51.6±23.4
1	Madian for harbal products score $(01, 03)$	50(40-70)

(\*) was used for correct answer

Variable	Test	Variable	Mean ± S.D	Median	Р
				(Q1- Q3)	value <sup>1</sup>
Gender <sup>2</sup>	General	Male	$65.8 \pm 2$	66.8(50-60)	0.016
	pharmacy		51.4.5.0.1		
		Female	$71.4 \pm 2.1$	/0(60-80)	
	Drug safety	Male	39 ±1.6	40(30-50)	0.604
	during	Female	$40.8 \pm 1.6$	40(30-50)	
	pregnancy				
	Herbal	Male	$48 \pm 2.4$	50(30-70)	0.008
	pharmacothe rapy	Female	$52 \pm 2.2$	60(40-70)	
	Total parts	Male	$48 \pm 1.6$	50(40-57.5)	0.046
	100000 p 00 05	Female	$52 \pm 1.3$	52.5(45-60)	00010
County of	General	Local	$70.7\pm1.5$	70(60-80)	0.076
graduation <sup>3</sup>	pharmacy	Regional	$65.6\pm2.1$	70(50-80)	
		International	$63.2\pm2.2$	70(50-80)	
	Drug safety during pregnancy	Local	$40.2\pm1.5$	40(30-50)	0.94
		Regional	$39\pm 1.7$	40(25-50)	
		International	$40.7\pm1.8$	40(30-55)	
	Herbal products	Local	$54.7\pm2.13$	50(40-70)	0.039
		Regional	$46.6\pm2.6$	50(30-70)	
		International	$45.8\pm2.7$	60(20-70)	
	Total parts	Local	$51.5\pm1.24$	52.5(45-60)	0.26
		Regional	$47.5\pm1.7$	50(35-60)	
		International	$47.7\pm1.8$	52(35-62)	

 Table (6): factors affecting knowledge for pharmacists

1 The level of significance was < 0.05

2 The Mann- Whitney U test was used

3 Kruskal- Wallis test was used

Variables	General	Drug safety	Herbal	
v al labits	pharmacy test	during pregnancy	therapy	
General		r = 0.34	r = 0.37	
pharmacy test	-	P < 0.01**	P < 0.01**	
Drug safety	r = 0.24		r = 0.41	
during	I = 0.34	-	I = 0.41	
pregnancy	$P < 0.01^{++}$		P <0.01**	
II and all the survey	r = 0.37	r = 0.41		
Herbai therapy	P < 0.01**	P <0.01**	-	

 Table (7): Correlation among the three tests

\*\*. Correlation is significant at the 0.01 level (2-tailed).

#### 3.2 Discussion

There are many professional roles for community pharmacists aside from dispensing prescribed drugs. For example, there is evidence of efficacy of management services provided by community pharmacies for patients with diabetes mellitus or asthma [45, 50]. Community pharmacists also can identify adherence problems and manage adverse drug effects [46]. Community pharmacy-based interventions have resulted in reduction in risk factors for coronary heart diseases by managing hyperlipidemia [48], hypertension [47], smoking cessation [49] and secondary prevention medications. Other potential professional role of community pharmacists is giving an evidence based recommendation regarding use of herbal remedies. Recently, there has been a global rise in the use of complementary and alternative medicine, particularly herbal medicine as a health care option [9, 11, 95-96]. In conjunction with this increasing use of herbal remedies worldwide, several reports about adverse drug reactions and herbal drug interactions have been reported [17, 97]. Community pharmacists are in a position to identify potential interactions and adverse

effects of herbal remedies. Another important professional role of community pharmacists is the assurance of safety of medications prescribed or taken during pregnancy. To achieve this, community pharmacists must be able to offer medication counseling and drug information to pregnant women [61].

In recent times, the teratogenic consequences of isotretinoin (Accutane®) have received widely attention [98]. Nevertheless, there are numerous medications that have been linked with increased risks of birth defects. To protect women and their fetus from teratogenic consequences associated with use of certain drugs, the US Food and Drug Administration (FDA) established a drug classification system in 1979 in which drugs have been classified as category D or X indicate potentially teratogenic medications [99]. Over 100 prescription medications used to treat diseases as hypertension and seizures, were labeled as class D or X. As well, there are several drugs with other ratings that, depending on the timing of drug use and dose of the exposure, can also cause fetal damage [100].

In our study, community pharmacists showed insufficient competency in providing information about safety of medications during pregnancy. This is considered a professional drawback given that pregnant women in Palestine do consume lots of OTC and herbal medications [5]. Some commonly used OTC medications have been associated with adverse pregnancy outcomes [6] as do some herbal preparations [7-8]. Actually, patients taking prescription medications concomitantly with herbals or other dietary supplements might be exposed to clinically serious drug- drug interactions [17-18]. This indicates that pregnant women would benefit from counseling about various type of medications use, including OTC drugs, dietary supplements and herbal products and they could be in danger in the absence of pharmacist's competency and knowledge about safety of these drugs.

In Palestine, there is an open market for OTC and herbal medications with no restrictions and rules to regulate the use or selling and a wide variety of herbal products are being marketed, promoted, sold, and dispensed in community pharmacies. Therefore, pharmacists can play a pivotal role in selecting and providing information regarding herbal medicines. In our study, the actual test scores revealed that 1) about half of participants did not know the correct indications for herbal remedies in the questions; 2) more than half of the participants were ignorant of the adverse effects and contraindications of herbal products in questions; 3) about 40% had problems in identifying the patterns of herbal-drug interactions; and 4) knowledge about herbal pharmacotherapy declined with time and it was highest among new graduates who had relevant herbal courses during their study. One might argue that older pharmacists have more knowledge about herbs due to more courses in the past curricula and longer experience. However, older pharmacists had lower scores than younger ones in this field. This might be an indicator of poor self up-grading among pharmacists.

Our study has few limitations summarized in the inclusion of only one third of community pharmacists in Palestine. Furthermore, the fact that the type and nature of questions used to test knowledge were built by the authors might affect the validity of the scores.

As a conclusion, Good proportion of the study sample lack adequate knowledge in certain important aspects of pharmacy practice such as medication safety during pregnancy, evidence based indication of herbal products, and herbal-drug interactions. This might negatively affect the role of Community pharmacists in patient counseling and education. Steps should be taken by the government, universities and Pharmaceutical association to improve the community pharmacists' role in healthcare system by providing them with continuous and up-to-date medication knowledge.

We strongly recommend to (1) improve pharmacy education in Palestine and offering new pharmacy specialization according to Palestinians need; (2) establish and install a pharmacy network system in community pharmacies in Palestine which will enhance patient monitoring and provide immediate information to pharmacists regarding medications; (3) introduce an obligatory course regarding safety of drugs into the pharmacy curriculum; and finally (4) establish a pharmacy continuing education center and make such education to be mandatory for re-licensure in Palestine.

# **3.2 Practice Implications**

Professional development should be mandatory in Palestine. Inclusion of a course about drugs during pregnancy into pharmacy curriculum is recommended. We strongly recommend to (1) improve pharmacy education in Palestine and offering new pharmacy specialization according to Palestinians need; (2) establish and install a pharmacy network system in community pharmacies in Palestine which will enhance patient monitoring and provide immediate information to pharmacists regarding medications; (3) introduce an obligatory course regarding safety of drugs into the pharmacy curriculum; and finally (4) establish a pharmacy continuing education center and make such education to be mandatory for re-licensure in Palestine.

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## Appendix

## **Questionnaire in Arabic**

إستبيان خاص للطالبة / الصيدلانية إيناس ماجد لأغراض البحث العلمي كمتطلب لرسالة الماجستير في الصيدلة السريرية – جامعة النجاح الوطنية – نابلس – فلسطين

- \* المعلومات الشخصية:
  - 1- الجنس :
    - 2- العمر :
  - 3– مستوى التعليم :
  - 4-عنوان الصيدلية :
- 5- عدد سنوات الخبرة :
  - 6- بلد التخرج :

\* مصدر معلوماتك عن الأدوية : (الرجاء وضع اشارة × أمام المصدر – يمكن اختيار أكثر من اجابة)

غيرها	النشرة المرفقة	مندوبي	المجلات	مواقع	الكتب	المحاضرات
	بالدواء	الدعاية	العلمية	الانترنت	العلمية	الدراسية

\* يرجى من حضرتكم الإجابة على الأسئلة الدوائية العامة التالية مع العلم أنه يوجد إجابة واحدة
صحيحة فقط :

corticosteroid يجب اخبار مرضى الربو بضرورة غسل الفم بعد استعمال inhalation لمنع : a) ضمور الطبقة المبطنة لتجويف الفم (b) التقرحات في الفم والحلق C) نمو الفطريات في تجويف الفم d) لاشيء مما ذكر 2- من اهم الأعراض الجانبية ل ACEI : d) سعال جاف C) صداع b) اسهال a) حساسية 3- من أهم الأعراض الجانية ل Nitroglycerine: b) ألم في البطن C) امساك d) لا شيء مما ذكر a) صداع 4- الأدوية التي قد تودي لحدوث pseudomembranous colitis: b) أدوية الاسهال a) أدوبة الضغط d) أدوية السكري C) المضادات الحبوبة و اسعة الطبف 5- يجب أن تكون درجة حرارة الثلاجة التي يتم حفظ الأدوية فيها: b) من 2 الى 8 درجة مئوية a) من 1 الى 4 درجة مئوية d) من -2 الى صغر درجة مئوية C) من 4 الى 8 درجة مئوية 6- يجب اعطاء طعم الأنفلونزا في شهر: d) فبر ایر b) نو فمبر C) ابريل a) مارس 7- الرمز PRN يعنى : b) اعطاء الدواء تحت الجلد a) اعطاء الدواء مرتين يوميا d) لا شيء مما ذکر C) اعطاء الدواء عند الضرورة 8- الرمز QID يعنى: a) اعطاء الدواء أربع مرات يوميا b) اعطاء الدواء مرتان يوميا

C) اعطاء الدواء مرة واحدة يوميا (d) لا شيء مما ذكر

9 واقى الشمس الذي يحمل معامل الحماية 15 يقوم بمنع الأشعة فوق البنفسجية بنسبة:

- 93% (d 30% (C 73% (b 15% (a
  - 10- تعتبر فعالية أدوية السعال (OTC) في أعراض البرد ٪
- a) غير معروفة b) متوسطة C) مثبتة d) غير مثبتة

\* الجدول التالي يبين مدى امكانية اعطاء الدواء خلال فترة الحمل، يرجى من حضرتكم وضع اشارة (×) في العمود المناسب :

	آمن في	آمن طول	يجب موازنة	غير آمن في	غير آمن	
الأدوية	فترة الحمل	فترة	الفائدة	فترة الحمل	طول فترة	لا أعلم
	الأولى	الحمل	والضرر	الأولى	الحمل	
Alprazolam						
Amoxicillin						
Budesonide, inhaled						
Ciprofloxacin						
Isotretinoin						
Lamotrigine						
Oral contraceptives						
Paroxetine						
Phenobarbital						
Valproic acid						
Acetaminophen						
Aspirin 325 mg						
Ranitidine						
Caffeine						

		65				
			Dextromethorpha	an		
			Guaifenesin			
			Ibuprofen			
			Pseudoephedrin	ie		
			Killed influenz: vaccine	a		
			Senna			
بابة واحدة صحيحة :	مع العام أنه يوجد إ. الدم :	ى الأسئلة التالية « ى الكولسترول في	يرجى من حضرتكم الإجابة عا النبات الذي قد يخفض مستوع	* -1		
a) Garlic b) Ginkgo biloba						
c) Hawthorn	d) Horse	chestnut seed				
: Warfarin and A	مالها مع Aspirin	ة النزيف عند است	النباتات التي قد تتسبب بزيادة	-2		
a) Red yeast rice a	and CoQ10	b) Black tea	and Chest nut			
c) Hawthorn and G	freen tea	d) Garlic and Ginkgo biloba				
		لقلق هو:	أكثر نبات قد يسبب الأرق و ا	-3		
a) Citrus Aurantiur	n b) Garlic	c) Green tea	d) Ginkgo biloba			
		:	تستخدم Black cohosh في	-4		
تهابات الجهاز التنفسي	c) الأرق d) ال	) زيادة المناعة	عراض الدورة الشهرية b	Í (a		
			تستخدم Echinacea في:	-5		
البولي	b) التهابات الجهاز	ض البرد	التهابات الجهاز التنفسي وأعراه	(a		
	d) القرحة		زياده التركيز	(c		
6- يمنع استعمال Valerian root مع الأدوية التي تعالج :						
d) القرحة	c) الأنفلونز ا	لإسبهال	الأرق (b) ال	(a		

7- من أهم المعلومات اللتي يجب اخبار المريض بها عند صرف Ginkgo biloba أنه : a) يؤثر على فعالية الأسبرين كمميع للدم b) يحسن الذاكرة اذا أخذ لستة أشهر على الأقل C) يزيد من خطر النزيف وخاصة اذا أخذ مع مميع الدم d) يؤثر على النشاط أكثر من تأثيره على الذاكرة 8- من أهم الأعراض الجانبية لEphedra/Caffeine a) إنخفاض في ضغط الدم، بطء نبض القلب b) قلق ، خفقان في القلب d) إحتقان في الأنف ، نعاس C)امساك ، تضيق القصبات الموائية 9- أي من المستحضرات التالية تعالج ارتفاع ضغط الدم : a) Garlic b) Policosanol c) Coenzyme Q10 d) Omega 3 fatty acid 10- في المرضى الذين لديهم تاريخ مسبق لأمراض القلب ، المستحضر الذي قد يحمى من النوبات القلبية هو: a) Ginkgo biloba b) Red yeast rice

c) Coenzyme Q10 d) Omega 3 fatty acid

\* من وجه نظرك كيف يمكن زيادة معرفة الصيادلة بالمستحضرات الدوائية:

\_\_\_\_\_

شكرا لتعاونكم

جامعة النجاح الوطنية كلية الدراسات العليا

## تقييم المعلومات الدوائية لدى صيادلة المجتمع در اسة مسحية على مستوى الوطن

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الصيدلة السريرية في بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين. 2012م تقييم المعلومات الدوائية لدى صيادلة المجتمع دراسة مسحية على مستوى الوطن اعداد ايناس ماجد عبد الرحمن أبو عرة أ. د. وليد صوليح د. أدهم أبو طه الملخص

من أهمما يميز صيادلة المجتمع انتشارهم الواسع على مستوى الوطن. ولذلك،يقع على عاتق الصيادلة مراقبة الأعراض الجانبية للأدوية وصرف جزء منها دون وصفة طبية.

الهدف: تهدف هذه الدراسة إلى اختبار مدى المعرفة الصيادلة في فلسطين في ثلاثة محاور هامة هي : الممارسات الصيدلانية العامة / أمان الادوية خلال فترة الحمل / المنتجات النباتية بالاعتماد على الدراسات الحديثة المتوفرة .

المنهجية: أجريت دراسة مسحية على مستوى الوطن على مجتمع من الصيادلة. تم اختبار المعرفة عن طريق أسئلة الاختيار من متعدد التي تم تصميمها خصيصا لهذا الغرض. تم تجريب الامتحان سابقا والتحقق منها. وقدمت كل النتائج كنسبة مئوية من إجمالي 100 علامة.

النتائج: تم الوصول الى ما يقرب من تلث صيادلة المجتمع (342 من أصل 875) في الضفة الغربية. العينة مؤلفة من 173 (50.6%) من الإناث. وكانت معظم العينة (89.2% 303) من الحاصين على درجة البكالوريوس في الصيدلة في حين أن 37 (10.8%) كانوا حاصلين على درجة الماجستير. حصل الصيادلة على متوسط 68.6 ± 18 في اختبار الممارسات الصيدلانية العامة؛ بينما حصلوا على 99.5 ± 10 في سلامة الأدوية خلال فترة الحمل و 51.6 ± 23 في الامتحان المتحان المتحان المعادة الماجتمع من الإناث. وكانت معظم من 10.5% من الإناث على درجة الماجستير. حصل الصيادلة على متوسط 68.6 ± 18 في اختبار الممارسات الصيدلانية العامة؛ بينما حصلوا على 99.5 ± 10 في سلامة الأدوية خلال فترة الحمل و 51.6 ± 23 في الامتحان المتعلق بالأدوية النباتية .تتأثر علامة الصيادلة بشكل سلبي وملحوظ مع عدد سنوات العمل منذ التخرج. وكانت علامات الصيادلة الإناث أفضل بكثير من الصيادلة الذكور في جميع الأقسام ما عدا سلامة الأدوية خلال فترة الحمل.

الخلاصة: يفتقر الصيادلة في فلسطين لمستوى المعرفة الجيدة بالدواء وهذا بدوره يؤدي الى تأثير سلبي على تقديم المشورة للمريض في المجتمع المحلي . ينبغي اتخاذ خطوات من قبل الحكومة والجامعات والجمعيات الدوائية لتحسين دور الصيادلة في المجتمع وزيادة الثقافة الدوائية لديهم.