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Assessing Drug Dspensing Safety Practices at Community Pharmacies in the Gaza Strip

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Assessing Drug Dispensing Safety Practices at Community Pharmacies in the Gaza Strip

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Dedication

This study is wholeheartedly dedicated to my beloved parents and my grandmother, who have been my source of inspiration and give me strength when I thought of giving up, thanks for everything.

To my wonderful lovely husband Youssef, thanks for being a source of support, hope, and motivation.

To my brothers and sisters, Khamis, Rania, Dalia, Heba, and Abdullah thanks for always being there for me.

To my beloved husband's family.

To my uncle Moneer and my aunts.

To my lovely child Khayri and Rita who are the bright of my today and future.

To everyone who helped me to finish this study.

Reem Bashir Ghannam

Declaration

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

Signed: ……..

Reem Bashir Ghannam

Date: 16/6 /2020

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Abstract

Medication safety has long been recognized as a key issue within the broader patient safety agenda. Medication errors can cause unwanted adverse drug events and, in some cases, can lead to life-threatening injuries. In Palestine, community pharmacies are engaged mainly in dispensing medications, including antibiotics, without prescription. However, the quality of the service provided by community pharmacies in developing countries has often been questioned and is often suboptimal. This study aimed to evaluate the current medication safety practices in the community pharmacies at Gaza Strip.

The study employed a descriptive, analytical cross-sectional approach with an explanatory sequential mixed method (quantitative and qualitative). Interview based questionnaires (five point Likert scale) and key informant interviews were used for data collection. Two-stages systematically randomized sample was used to select the eligible community pharmacies and the eligible participants. The calculated sample size was 270, out of them, 258 completed the questionnaires, with a response rate of 95.5%. An adapted Medication Safety Self-Assessment instrument (10 dimensions) was used to collect the quantitative data. The reliability coefficient for the study instrument was excellent 0.95. Semi structured, face to face, in-depth interviews were conducted with seven key informants from community pharmacies and five patients as a second data collection technique.

The data was analyzed by SPSS version 23, findings revealed that the overall mean score of the medication safety practices was satisfactory 3.20, SD = 0.56, T-value =5.81, and P-value =0.000. The analysis showed that the Drug Standardization, Storage, and Distribution scored the highest level of implementing the medication safety practices 3.57, T-value=11.91 and P-value=0.000 , followed by the Staff Competency and Education 3.55, T-value=12.47 and P-value=0.000, Use of Devices and medical supplies 3.51, T-value=7.89 and P-value=0.000, Environmental Factors, Workflow, Staffing Patterns 3.42, T-value=11.45 and P-value=0.000, and Drug Information 3.33, T-value=7.09 and P-value=0.000. The least score was for the Drug Labeling, Packaging, and Nomenclature 2.69, T-value=4.92 and P-value=0.000, and Patient Information 2.81, T-value=4.26 and P-value=0.000. The findings showed insignificant variation in medication safety practices in reference to gender, age, salary, qualification, and work experiences, except for governorate, and specialization where P-value was <0.05.

The researcher strongly recommends using a multifaceted implementation strategies targeting the use an electronic prescription with patient personal information, clinical history, and complete medication history, properly manage the look-alike drug names and packaging, and using validated tools to identify potential risk factors to avoid medication errors in addition to using continuous quality improvement programs in the community pharmacies.

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List of Abbreviation

COE	Council of Europe
COPE	Client Oriented Provider Efficient
CQI	Continuous Quality Improvement
GG	Gaza Governorate
IMR	Infant Mortality Rate
IoM	Institute of Medicine
ISMP	Institute for Safe Medication Practices.
NMERP	National Medication Errors Reporting Program
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
NCC MERP	National Coordinating Council of Medication Errors Reporting
NGO	Non-Governmental Organizations
PCBS	Palestinian Central Bureau of Statistics
PNA	Palestinian National Authority
PNGO	Palestinian Non-Governmental Organizations
UFMR	Under-five Mortality Rate
UNRWA	United Nations Relief and Works Agency for Refugees in the Near East
WHO	World Health Organization
MSSA	Medication Safety Self Assesment
MEs	Medication Errors
ADE	Adverse Drug Event
GDP	Gross Domestic Product
OTC	Over The Counter
GS	Gaza Strip
CP	Community Pharmacises

Chapter One
Introduction

1.1 Background

Medication safety has long been recognized as a key issue within the broader patient safety agenda (Institute of Medicine, 1999). The Institute of Medicine (IOM) revealed that 51.5 million errors occur per 3 billion prescriptions per year. This amounts to four errors per 250 prescriptions per pharmacy per day (Aspden et al., 2006). A number of studies have shown that medication errors are relatively common and identified a range of contributory factors occurring at the individual and organizational levels of analysis.

The individual causes of error include fatigability of staff and lack of training. The organizational causes of error include shortage of staff, organizational climate and system design (James et al., 2009; Fogarty & McKeon, 2006; Lane et al., 2006). These errors often occur as a result of problems associated with prescribing, communicating, labeling, and therapy monitoring. Medication errors can cause unwanted adverse drug events and, in some cases, can lead to life-threatening injuries (Gandhi et al., 2005). In most cases, fatal errors are the result of dispensing either an incorrect medication or dose (Phillips et al., 2001).

Community pharmacies fill more than 4 billion prescriptions every year (Kaiser Family Foundation, 2016), and a classic community pharmacy will make two clinically significant medication errors every week (Aspden et al., 2006). Medication errors in community pharmacies have serious consequences for patients, and certain populations may be at an increased risk for harm, such as the chronically ill and elderly patients with complex conditions taking multiple medications. Root-cause analysis has identified common causes for medication errors in community pharmacies, including medications that sound or look alike, lack of concentration due to interruptions, and lack of effective control of prescription, and label (Knudsen et al., 2007). Community pharmacists are well positioned to identify, resolve, and prevent certain types of medication errors to reduce adverse drug event.

1.2 Research problem

In Palestine, community pharmacies are often individually owned in a privately funded health care system where patients have to buy medications. Community pharmacies are run by registered pharmacists. In routine community pharmacy practice, patients or their caregivers bring prescriptions to community pharmacies where pharmacists fill prescriptions and dispense medications accordingly. Generic substitution is a common practice that is often performed by the community pharmacists without consulting the prescriber. Like in many community pharmacy practice settings around the world, once a prescription was filled and medication was dispensed to the patient further verifications to ensure the dispensing of correct medication are not performed (Franklin & O'Grady, 2007; Ocampo et al., 2015). In community pharmacy practices, the processes of medication dispensing and patient counseling are the responsibility of community pharmacists and; therefore, medication errors are usually committed by pharmacists (Al-Arifi, 2014). And this interfere with the Palestinian pharmacy practice law which explained the prescription medications be sold on a prescription-only basis. These laws are not strictly enforced in community pharmacies. In Palestine, like many other developing countries having a valid prescription is not enforced for receiving prescription-only drugs. With the exception of narcotics and major tranquilizers, almost any drug available in the market can be purchased as over the counter medication without a prescription. The traditional activities of the profession primarily focused on the dispensing and supply of medications, while interaction with other healthcare professionals was somewhat limited.

Irrational use of drugs is a serious problem throughout the world. Unnecessary drug use causes a heavy burden to the economy of developing countries. there are also serious negative health effects of irrational drug use and self-medication. Previous research has demonstrated that usage of analgesics and antibiotics are the main subject of self-medication (Lukovic et al., 2014; Ibrahim et al., 2015; Zhu et al., 2016; Nayir et al., 2016). Improper use of analgesics is dangerous to health due to their toxic and harmful side effects (Ibrahim et al., 2015). The other most commonly observed mode of irrational drug use around the world is self-medication with antibiotics, which may lead to masking symptoms, treatment failure and development of drug resistance by bacteria (Zhu et al., 2016). Nowadays, pharmacists also ensure the rational and cost-effective use of medicines, promote healthy living, and improve clinical outcomes by actively engaging in direct patient care and collaborating with many healthcare disciplines. With this expanding scope

of practice, pharmacists are being recognized as key components in providing individualized patient care as part of inter-professional healthcare teams (Dalton & Byrne, 2017). Community pharmacies in Palestine are engaged mainly in dispensing medications, and most drugs, including antibiotics, are dispensed without prescription (Sweileh & Zyoud & Al-Haddad, 2016). However, the quality of the service provided by community pharmacies in developing countries has often been questioned and is often suboptimal (Nga Do et al., 2014; Kotwani et al., 2012 ; Gastelurrutiaetal., 2013). Because of the importance of all of the above and the shortage of studies that dealt with these issues in Palestine, I wanted to delve deeper into studies of community pharmacies, what are their importance and what are the services they provide to the local community.

1.3 Justification

After the literature review, it seems that this study is the first one aiming at evaluating the medication safety practice in the Palestinian community pharmacists using the MSSA instrument. This study tries to overcome the limitation of using only the quantitative approach and will triangulate using the qualitative method. Researchers are interested in the method of mixed research methodology in the health field specifically in the public health field and health services because the mixed quantitative and qualitative research gives us more visibility and tells us more facts (Creswell & Plano Clark, 2011). Understanding the opinions and experiences and of community pharmacists is critical in detecting the key determinants of medication safety practices. The first line of defense in the health system is the pharmacies of the community, they advise patients and dispense treatment and answer all their inquiries (Al-Ramahi, 2013). The results of this study could be used to set recommendations that help decision-makers and stakeholders to develop more evidence-based strategies aiming at improving patient safety and minimizing medication errors.

1.4 Study objectives:

1.4.1 General objective

To assess the safety of current medication practices at community pharmacies in the Gaza Strip and identify opportunities for improvement.

1.4.2 Specific objectives

1. To explore the level of medication safety practices at community pharmacies.
2. To examine the association between the socio-demographic and work-related characteristics of community pharmacists and the safety of current mediation practices.
3. To qualitatively explore the perspectives and experiences of key informants towards the factors influencing the safety of medication practices.
4. To develop recommendations that might enable decision-makers to plan and set national strategies for promoting safe medication practices and preventing medication incidents.

1.5 Research questions

1. What is the level of medication safety practice at community pharmacies?
2. Which domains in the MSSA instrument are the lowest in terms of medication safety practices?
3. Is there any significant association between the socio-demographic characteristics of community pharmacists and safety of current mediation practices?
4. Is there any significant association between the work-related characteristics of community pharmacists and safety of current mediation practices?
5. What is the perception of clients about health counseling at the community pharmacies?
6. What are the main recommendations for promoting safe medication practices and preventing medication incidents?

1.6 Context of the study

The demographic, socio-economic, and political challenges in Palestine enhance us to support health services. The pharmaceutical area is one of the most crucial health services that are affected by this situation.

The area of Palestine is 27000 km ^{2}, the city of Rafah is located in the south of Palestine, to the north there is the city of Ras al-Naqoura on the Lebanese border and from the east bordered by the Hashemite Kingdom of Jordan and the Syrian Arab Republic. Palestine lived through the British Mandate until the Israeli occupation came in 1948 after Balfour gave the Israelis a promise to establish a national homeland for them on the land of

Palestine in 1917, the result was the refugees, Palestinian people, moved to various parts of the land, some of whom emigrated to Egypt, Syria, Lebanon or Jordan. Some of them came from the West Bank and Gaza Strip (Abu Lughod, 1971). Today, Palestine is completely geographically separated in the Gaza Strip (GS) and the West Bank (WB), totaling 6,020 km^2, representing only 22% of the total area of Palestine before its occupation in 1948 (Ministry of Health, 2006). The general population is 4.78 million. Of these, 2.43 million males and 2.35 million females. The West Bank has a population of 2.88 million, of which 1.47 million are males and 1.41 million females, while the population of the Gaza Strip is 1.90 million, of which 963 thousand males and 936 thousand females (PCBS, 2018). In the world, the population density in Palestine is 823 inhabitants / km2, the Gaza Strip has reached 5324 inhabitants / km2, while in the West Bank the population density will reach 532 persons / km2 by mid-2017 (PCBS, 2018). The Gaza Strip is a very small area of land divided into five governorates: North Gaza, Gaza City, Central District, Khan Younis and Rafah (PCBS, 2008). The population under the age of 15 in the Gaza Strip is 42.6%, while the elderly are 2.4% for those aged 65 and over (Ministry of Health, 2018). The total fertility rate in Palestine decreased to 4.1 births / woman during the period (2011-2013) compared to 1997 when it reached 6.0 births / woman. During the period (2011-2013) the total fertility rate in the Gaza Strip (4.5 births) / woman) was higher than the West Bank (3.7 births / woman) (PCBS, 2018). The crude birth rate in Palestine is expected to decrease from 30.9 / 1000 births in 2016 to 29.0 births / 1000 in 2020 (PCBS, 2018). The rate of community-based rehabilitation in the General Service category was 31.1 / 1000 in 2017 (Ministry of Health, 2018); on the other hand, the crude mortality rate (CDR) is projected to decrease from 3.5 deaths / 1000 population in 2016 to 3.4 deaths / 1000 population in 2020 in Palestine (PCBS, 2018). This indicates an improvement in the standard of living, and access to health services that have become available, where health awareness has increased among the public with the qualitative improvement of health services.

1.6.1 Socio-Economic and Political Situation

After the Israeli aggression on the besieged Gaza Strip in 2014, situation in the Gaza Strip are very difficult and worsening day by day as the siege on the occupied sector has been imposed for more than ten years and there is difficulty in accessing resources to the population and there has been a great suffering at the level The war imposed on the population in 2014 caused severe damage to schools, hospitals, houses, mosques,

agricultural lands, factories, desalination plants and electricity generation. The Palestinian political divide has continued to cast a shadow over the difficult situation and the suffering has increased with the closure of the Rafah crossing for long periods, thus stifling the already obstructed development process (UNDP, 2016). Poverty, economic and social suffering and food insecurity have increased for a large segment of the population. Humanitarian assistance has become a reliable source that represented a lung through which people breath in the besieged enclave of Gaza Strip. Unemployment rates have increased among young people and among adults and there are salary crises for public sector employees, with 58% without any source of income to live on (UNDP, 2016). The Ministry report said that 70 percent of the population of the Gaza Strip is food insecure, while 33.8 percent are under the extreme poverty line and 65.6 percent of poor families are refugees.

1.6.2 Health Status

When comparing the Palestinian health situation with neighboring countries according to health indicators, the Palestinian health situation is fair. The preventive medicine in Palestine is considered to be very advanced and the Palestinian health measures led to provide an effective service that contributed to improving these indicators (WHO, 2018). The average Palestinian age for males is 72.3 years, females have reached either 75.4 (WHO, 2018). After the successful health policy, the Palestinian health situation was able to control many infectious diseases, so that these diseases are no longer the first in Palestine, but became second only to chronic diseases such as diabetes, heart disease, cancer, hypertension and blood vessels. Non-communicable diseases, rather than infectious diseases, are the leading causes of death in Palestine. In 2017, the crude death rate was 2.6 deaths per 1,000 people. In the Gaza Strip, this percentage reached 2.6% / 1000 of the total population. Infectious diseases cause a total of 4.7% of total deaths. Chronic diseases are the leading causes of death such as cardiovascular disease (31.5%), cancer (15.4%), cerebrovascular (13%), prenatal (9.5%), and diabetes (7.5%). In addition, accidents had an approximate proportion of infectious diseases (4.5%) of mortality and these include war martyrs as well (MOH, 2018). The infant mortality rate (IMR) has dropped significantly from 200 children in 1948 per thousand to 24 children. This indicator is considered one of the most important health indicators (Abderrahim et al., 2009; Giacaman et al., 2009). In 2017, the infant mortality rate was 10.7 / 1,000 live births and the under-five mortality rate was 12.1 / 1,000 live births (MOH, 2018). The second most important indicator for

assessing the health situation is the maternal mortality rate, and there is a shortage in the registration process, but the available figures indicate that this rate at Gaza was 19.1 / 100,000 live birth in 2018 (Ministry of Health, 2018). Maternal complications during pregnancy and child birth were often associated with prenatal and neonatal mortality, especially if the mother was neglected during pregnancy (Antenatal Care), unsafe delivery, birth defects, premature birth, unsafe childbirth conditions, and sepsis. Also lack of attention to quality standards and finally do not link data to pregnant women. Health care centers, hospitals and maternity centers are sometimes equipped with the necessary technology and the level of postnatal service needs further support. The standardization of health work protocols will have a major impact on improving health indicators of reproductive and neonatal health. The development of clinical services and the repair of infrastructures are factors that must be paid attention (Hamad, 2011).

1.6.3 Health Care System

Since the Oslo Accords in 1994, the health situation has been a major concern in the region, especially when the Palestinian National Authority (PNA) took over health matters. Several countries, such as the World Health Organization (WHO) and the United States of America, as well as several donor countries and institutions, have supported the authority. Despite the difficult circumstances in the Palestinian Territories, the occupation, closures, wars, siege, electricity, water and salaries crises, health indicators compared to neighboring countries are relatively good in terms of child and maternal mortality and the proportion of immunizations that are among the highest in the world (WHO, 2018). The health system in Palestine consists of four health care providers: the Ministry of Health (MOH), the UN Relief and Works Agency (UNRWA), Non-Governmental Organizations (NGO) and the private sector. The Palestinian Ministry of Health provides 70% of all healthcare services, including licensing and supervision of other health institutions and the provision and delivery of vaccinations for children. In 2017, there were 743 primary health care centers in Palestine (583 in the West Bank and 160 in Gaza), and 81 hospitals, 51 in the West Bank and occupied Jerusalem and 30 in the Gaza Strip. The Palestinian Ministry of Health is responsible for the management of 466 health clinics in the welfare centers while the NGO sector is responsible for 192 centers, 65 UNRWA centers and 20 military medical services centers. The Ministry of Health buys some health services it lacks from inside and outside Palestine. Most of the price for this service comes foreign aid and taxes (MOH, 2018). UNRWA has an important role in providing health services and ranks second to the

Ministry of Health. It provides refugees with primary health care services in 22 centers. It also buys secondary and tertiary services for Palestinian refugees registered in the Gaza Strip. Health NGOs assist the Palestinian MOH in fulfilling its role by providing many distinctive services in the field of maternity, childhood rehabilitation of the disabled and also participating in health education through its institutions. The health sector budget is fundamentally unstable and dependent on taxes, health insurance, grants, humanitarian aid, and aid from non-governmental sources (PNGO, 2013). According to PCBS (2016), total current health spending was US $ 1419 million (10.7% of GDP). The government covered almost (37%), private insurance companies (about 3%), directly at the expense of the population (about 41%), non-profit organizations (about 18%), and others (about 1%). MOH expenditures amounted to approximately US $ 477 million (MOH, 2018). Employees' salaries are equivalent to (51%) of the budget and the remainder to cover the expenses of treatment abroad, medicines and medical supplies 49%. The bill for treatment abroad has reached US $ 119 million (MOH, 2018). Since most of the budget went to salaries and treatment abroad, the rest is not enough to buy medicines and threatens the quality of health service and diminish development (Chemonics International, 2008). The number of medical caders registered in various medical associations at Gaza Strip 7,441 (MOH, 2018). MOH have the largest employer of human resources working at the health sector in Palestine were 6,253 which is 43.3% at Gaza Strip. The total number of doctors 2681 of whom 865 working within the MOH, while the total number of nursing and midwives 3917, of whom 1330 working in the MOH, while the total number of pharmacists reached 621, 201of them working in the MOH. The total number of dentis 222, 102 of them working in the MOH (MOH, 2018).

1.6.4 Pharmacy Practices in Palestine.

A. Pharmacy in Palestine

As mentioned in the annual report of the Ministry of Health 2017, the number of licensed community pharmacies in the Gaza Strip was 670 pharmacies. The governorate of Gaza is the highest among others governorates which have 38% of the total pharmacies in GS; while the Rafah has the lowest numbers of pharmacies with a percentage of 9.8%. The actual numbers of Pharmacies by Governorate are distributed as follows; Gaza (255),North Gaza(131),Middle Zone (110),KhanYounis(108), and Rafah (66) (MOH, 2017).Also the number of warehouses and pharmaceutical companies in GS reached 96 while the number of factories was 3 factories (MOH, 2017).The number of pharmacists working at the MoH

in 2017 was107 pharmacists, whereas the total number of pharmacists was 2761, with a rate of 14.5 pharmacists per 10,000 population (MOH, 2018).According to the World Health Organization, the number of pharmacists is almost not more than 5 pharmacists per 10,000 population, but in GS the rate of pharmacists is three times more than the countries average.Also,the total number of pharmacy assistants was 866 until the end of 2017, with 6.4 pharmacy assistants / 10,000 population (MOH, 2017).

Many pharmaceutical departments are available within the MOH to ensure the enforcement of MOH laws and legislation and to enhance the quality of pharmaceutical services provided to patients.These departments are the Dangerous Drugs Department, Drug Control Department, Drug Import and Export Department, Pharmaceutical Policy Department, Quality Control Department, and Drug Registration Department (MOH, 2012).All these departments work hand in hand to control the drugs available on the Palestinian market and to monitor all practices by pharmaceutical institutions.Therefore, this would protect patients and enhance the quality of all the services provided to them.The annual requirement for medicines is $ 6.33 million, and for medical consumables is $ 5.7 million, the average rate of the deficit in medicines is 38% and medical consumables are 31% (MOH, 2017).

Almost all of the registered pharmacists in Palestine work in the private sector with 93.1%. About 6.9% work in the government sector which mainly consists of hospital pharmacies and primary health care clinics.The main duties of community pharmacists in Palestine involve dispensing, while the duties of hospital pharmacists mainly consist of administrative duties.In hospital settings, very limited interaction occurs between the pharmacist and the patient. Most hospital pharmacies have dispensing windows where medicines are placed for patient pick up as the Physician in the hospital writes the prescription(Abu Alia, 2014).Because of the limited interaction between pharmacists and patients, the public considers the pharmacy profession to be a commercially and business-oriented profession. A patient can buy any medication without a prescription, with the exception of controlled narcotics and major tranquilizers (as, benzodiazepines), which can only be dispensed after receipt of a prescription signed by a registered physician.Moreover, the use of natural products, especially herbs, as a source of medicines is widespread, as is the case in other areas of the Mediterranean. Rarely do private pharmacies in Palestine maintain patient medication records and they are not legally required to do so.

Also, the pharmacies at the private sectors like private hospitalssuch as Al-quads, Al-Awda ….et, at UNRWA and Military medical services work with the same duties as hospital pharmacies.In Palestine, there are five manufacturers of drugs for human use, which cover approximately 50% of the local pharmaceutical market(MOH, 2014). All five are in the West Bank; one was in the GS, but it is no longer functioning owing to Israeli restrictions on goods allowed to enter Gaza (Abu Alia, 2014). Most pharmacists in the pharmaceutical industry are engaged in marketing and promotion with tight competition between local and imported medicines. Clinical pharmacy services are absent in Palestine. It is still a wish that the new patient care-oriented doctor of pharmacy (PharmD) program in the country would produce graduates who are capable of providing better pharmaceutical and clinical care to patients and improving the image of the pharmacy profession.

B. Community Pharmacies.

Public health has become linked to the work of pharmacists as the pharmacist is permanently available for the patient and accessibility to him is easier to reach than doctors in most cases. Today, we can relatively depend on the individual role played by the pharmacist in advising the patient and providing medical guidance, so it is necessary to strengthen the pharmacist's ability to play this role properly (Sweileh, 2004). One of the reasons that the Palestinian patient is turn to the pharmacist is the lack of money to go to the doctor and also easy access to the pharmacist and this is evident in areas lacking health services and the pharmacy is the fastest, easiest and cheapest option for the patient. Thus, the role of the pharmacy becomes key in dealing with patients in the short term as the interest in this subject inevitably affects the control of many diseases (Jaradat & Sweileh, 2003). Palestinian pharmacies still play traditional roles in dispensing medications and advising patients. They also dispense antibiotics without any prescriptions, except for sedative and narcotic drugs (Sweileh, 2004).

1.7 Operational Definition

Adverse event: An incident that results in harm to a patient (WHO, 2009). Is an injury resulting from medical intervention related to a drug.1 This includes medication errors, adverse drug reactions, allergic reactions, and overdoses.

High-alert medication: Drugs that bear a heightened risk of causing significant patient harm when used in error (wrong drug, wrong dose, wrong route, etc.). Although mistakes

may or may not be more common with these drugs, the consequences of an error are clearly more devastating to patients (ISMP, 2014).

Medication error (ME): A medication error is a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient. Medication errors can occur in deciding which medicine and dosage regimen to use (prescribing faults--irrational, inappropriate, and ineffective prescribing, underprescribing, overprescribing); writing the prescription (prescription errors); manufacturing the formulation (wrong strength, contaminants or adulterants, wrong or misleading packaging); dispensing the formulation (wrong drug, wrong formulation, wrong label); administering or taking the medicine (wrong dose, wrong route, wrong frequency, wrong duration); monitoring therapy (failing to alter therapy when required, erroneous alteration)(Aronson, 2009).

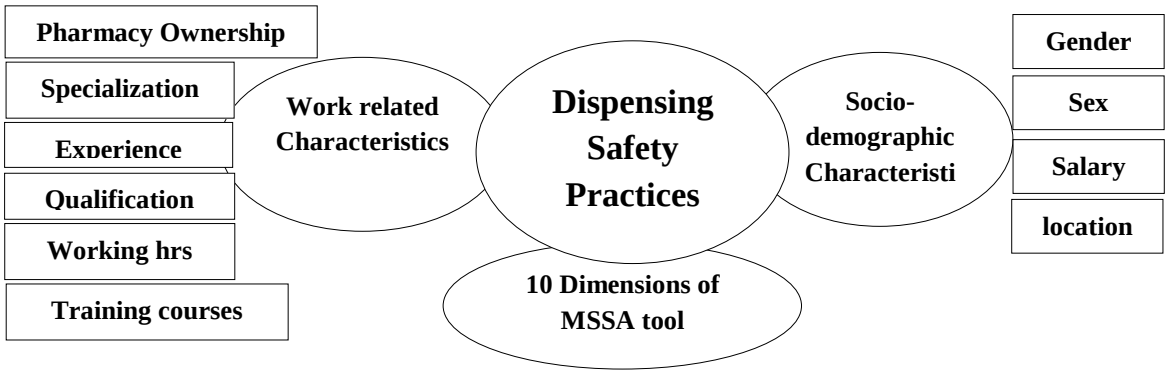
Medication safety: A freedom from accidental injury during the course of medication use; activities to avoid, prevent, or correct adverse drug events which may result from the use of medications (CoE, 2005; WHO, 2009).

Risk management: Activities or measures taken by an individual or a healthcare organization to prevent, remedy or mitigate the occurrence or reoccurrence of a real or potential (patient) safety event (Dückers et. al., 2009).

Chapter Two

Literature Review

This chapter reviews the literature focusing on medication and patient safety aiming at conducting an analysis of the existing researches literature related to the medication safety practices in different countries around the world and in Gaza Strip, replying the question, to which extent the pharmacists care about patient'ssafety?what are the procedures of medication safety? where is the weakness, what can we do to overcome this weakness and finally the chapter gives recommendations for policymakers to improve the process of handling medications at community pharmacies.



2.1 Conceptual 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. The framework can be used as the basis for measurement of the performance of the public health system as a whole or of a specific public health organization.The following self-developed framework describes the main aspects and components of the study, which describes the relationship between medication safety and study variables as this interactive process between the mentioned variables could lead to desirable outcomes of medication safety and as well patient safety.

The dependent variables are the dispensing safety practices, while the independent variables are Socio-demographic Characteristics as gender, age, location and salary, and

Work-related Characteristics as qualification, specialization, experience, working hours, pharmacy ownership, and specific training.

The researcher constructs two main boxes, then drew third boxe related to ten dimensions of MSSA instrument, which are:

1) Socio-demographic characteristics include age, sex, and salary of pharmacists and the location of the pharmacy.
2) Work-related Characteristics include pharmacy Ownership, specialization, experience, qualification, working hours and training courses.
3) Dimensions of MSSA instrument:
   1- Patient information.
   2- Drug information.
   3- Patient education.
   4- Staff competency & education.
   5- Environment al factors, work flow & staffing patterns.
   6- Communication of drug orders & and other drug information .
   7- Drug labeling, packaging, & nomenclature.
   8- Drug standardization, storage, & distribution.
   9- Medication device acquisition, use, & monitoring.
   10- Quality processes & risk management

2.2 Role of Community Pharmacies

The community pharmacy is also known as trade pharmacy; it is the most common type of pharmacy that permits the public contact to their medications and advice about their health. Conventionally known as a chemist, it is the healthcare facility accountable for the offering of pharmaceutical service to a specific public group or region (WHO, 1994). Community pharmacists are the easiest in terms of public access, as they are always available to provide advice on health and medicine to anyone who arrives at the pharmacy, without having to make an appointment. 89% of the population in Britain can reach the community pharmacy within 20 minutes on foot (PSNC, 2019). Conventionally, the role of the community pharmacist is to provide medications to patients according to a prescription from their doctor. Nevertheless, the role of the pharmacist has progressed greatly and is now extremely involved in other health initiatives as checking for drug interactions, processing prescriptions, provision of medications, offering advice and promoting health

and lifestyle. As the community pharmacist is a professional of health seen most often by patients, they play an essential role in the ongoing healthcare and checkups for patients. Furthermore, they are in a good position to endorse routine screenings (e.g. for bowel cancer) at specific life stages (Smith, 2019).

2.3 Patient and Medication Safety

Safety of patients comprises recognition, managing related risks and incidents, thus patients care becomes least harmful and safer (Aspdenet al., 2004; CoE, 2005). Patient safety is correlated with medication safety and is defined as "a freedom from accidental injury along the course of medication use; activities to avoid, avert, or correcting drugs side effects that may result while using medications" (CoE, 2005; WHO, 2009). Patient safety incidents are assessed to be 3rd cause of mortality in USA (Makary& Daniel, 2016) and the fourteenth leading cause of the universal disease burden (WHO, 2018). Unsafe medication practices and medication errors (MEs) are the single most significant avoidable factor risking patient safety (WHO, 2017).

Currently, the World Health Organization (WHO) published the third Global Patient Safety Challenge, which highlights medication safety (WHO, 2017). The goal of the program "Medication without Harm" is to minimize the level of serious preventable harm related to medication by 50% over 5 years, worldwide. Safe pharmacotherapy can be classified into drug safety and medication safety (Stakes & ROHTO, 2006). Drug safety is linked to pharmaceutical products, and is usually focused on adverse drug reactions (ADRs) (ROHTO, 2006; Turner, 2009). An ADR means a reaction to a medicinal product that is harmful and unplanned, occurring at doses used normally in humans for the prophylaxis, diagnosis or treating a disease or the correction, restoration, or modification of physiological function (CoE, 2005).

Medication safety refers to dealing with medication errors (MEs), which are unintended mistakes of neglecting or committing a medication-use process (Stakes & ROHTO, 2006; Turner, 2009). The MEs are "any avoidable occasion that may lead to unsuitable medication use or patient hurt while drugs are under the supervision of healthcare professional, patient, or purchaser" (CoE, 2005). Those occasions may be linked to expert behavior, healthcare products, procedures and/or systems, including prescribing, order statement, product categorization, packaging and naming, compounding, release, administration, guidance, follow up, and utilization. A near miss (also called a close call or

a potential adverse drug event), is a severe medication error that has the risk of causing an ADE, but did not, either by luck or because it was interrupted and corrected (CoE, 2005).

2.3.1 Types of Medication Errors

Since the release of the report ‘‘To Err is Human: Building a Safer Health System’’ by the Institute of Medicine in 2000, medication errors have become a core of consideration for research in medicine and pharmacy (South et al., 2015). Therefore, improving the safety of healthcare services and mitigating MEs have become a universal priority (Ashcroft et al., 2005). A medication mistakes may happen due to commission or omission and may happen at any stance of the medication process at the community pharmacy, including prescribtion, transcribtion and release .

Many MEs are detected prior to reaching the patient; nevertheless, if the MEs are not detected on time they may result in an ADE. Pharmacists are in an exceptional position to intervene whenever medication errors appear. One study found that among the errors that were prevented from reaching patients, 40% of the interventions were attributed to pharmacists (Kuo et al., 2008). A lesser percentage (17%) were prevented by patients themselves, which under scores the importance of patient counseling. Pharmacists are ready to address dispensing errors, but may also have a role in addressing, prescribing and administration errors.

Prescribing Errors

Most MEs occurs in the prescribing phase. In a study of more than 50 physician offices, 70% of medication errors occurred due to errors in prescribing (Kuo et al., 2008). Prescribing errors include wrong diagnosis and dose mis-calculations (Cohen, 2007). Improvements in technology, including electronic prescribing (“E-prescribing”) is promising in mitigating prescribing errors. E-prescribing provides a safe bidirectional share of information between prescribers, pharmacists, payers, and patients.

It automates vital functions such as obtaining prior authorization, checking for any known patient drug allergies or sensitivities, identifying drug-drug interactions (DDIs), accessing patients’ medication histories, and communicating with patients about prescription (Minnesota Department of Health, 2015). There is evidence that e-prescribing is effective in preventing medication errors, and many providers believe e-prescribing can improve patient safety (Kannry, 2011). One study found that as many as 57% of reported

medication errors could be prevented by e-prescribing and monitoring tools, which can address both prescribing and transcription errors (Kuo et al., 2008). Another study showed a nearly sevenfold decrease in errors in community pharmacies that utilize e-prescribing, from 42.5 errors per 100 prescriptions at baseline to 6.6 errors per 100 prescriptions one year after adoption (Kaushal et. al., 2010). However, some studies have shown non-significant differences in errors between hand-written prescriptions and e-prescribing (Gilligan et.al., 2012) while other studies have cited new challenges created by e-prescribing (Lu & Roughead, 2011). The need for more evidence is cited in most studies.

Transcription Errors

Errors of transcriptions occur when a prescription is correct, but not correctly released by the pharmacist. Examples are mis-interpreting handwriting on a prescription or poor hearing of drug instruction via phone. Transcription errors can result in releasing awrong drug and dose. Especially after eliminated transcription errors mainly after using the e- prescriptions (Jani et al., 2008).

Dispensing Errors

Perhaps the stage in which community pharmacies intervene to prevent or correct a ME is the dispensing phase. Like other kinds of medication errors, pharmacists can commit errors by commission or omission. In the dispensing phase, errors of the commission include dispensing the wrong drug or imperfectly entering patient data into the computer. Omission errors are passive and include failure to advise the patient. Overall, dispensing accuracy in pharmacies is high. A descriptive study of 50 pharmacies in USA found a 98.3% dispensing accuracy rate(Flynn et al., 2003). Nevertheless, due to a large number of prescriptions written annually the U.S.A, even a minimal error rate (1.7%) amounts to around 51.5 million errors annually nationwide (Aspden et. al., 2006).

A systematic review of 60 studies revealed that the most common types of dispensing errors were providing the wrong drug, dose, form, or quantity, and mislabeling medication with wrong directions of use (James et. al., 2009). In 13 of the 60 papers, the workload was the main cause of dispensing error. A similar drug name was seen in 12 of the 60 reviewed papers, and both similar packaging and staffing levels were cited in nine studies.

Administration Errors

These errors occur after useing drugs in a various way apart from what the doctor asked basically. They occur when a patient is offered the wrong drug or dose in the in or out-patient setting and include wrong administration of combined drugs known of causing drug- drug interactions. These errors are difficult for pharmacists to avoid , despite the fact that communication with patient and caregiver may assist to overcome administration errors caused by patients (Hodges, 2018). Administration errors also happen when a patient continue using medicine against the advice of the doctors. Sometimes, the patient request a refill of a prescription against doctors welling, but if e- prescribing system exists that will never happen.

2.4 Medication Monitoring

Medication monitoring is the procedure of recognizing and handling medication-related problems after the initial prescription. Medication monitoring can happen during routine meetings with health care providers or as a part of medication management services such as medication therapy management, chronic illness management, disease state management, and sporadic case management. The present study used the term medication monitoring as it mainly refers to the context of routine care rather than specialized services. Routine examination of the practice of the community pharmacy offers a marginalized large opportunity as most practice and research has concentrated on providing information on new prescriptions, not monitoring of chronic medications (Puspitasari & Aslani & Krass, 2009).

Steinman presented a proposal for a model of better drug monitoring (Steinman et al., 2011). This proposal is based on three levels; First, engaging and educating patients to report any problems that may arise from their treatment. Pharmacists use multiple sources to identify the efficacy of the drug and safety ratings. Health service providers make a change to the treatment scheme that is always consistent with the patient's condition. In general, drug monitoring requires the involvement of all relevant health professionals so that they always communicate with patients in order to improve drug practices (Steinman & Hanlon, 2010).

- **Pharmaceutical Care and Medication Monitoring**

Community pharmacists are to be praised for the contribution to medication monitoring for bedridden patients suffering from chronic diseases (Steinman et al., 2011). The has adopted the trend of "pharmaceutical care" (Hepler & Strand, 1990). Hepler and Strand (1990) defined a new arrangement for pharmacists depending on bearing responsibility for drug therapy outcomes. To meet this goal, pharmacists are asked to identify and determining medication-related problems for their patients. Medication monitoring is a substantial part of that role (Rosenthal et al., 2011). Some community pharmacists spend a lot of their work time to provide services like medication therapy management and disease state management (Kreling et al., 2010) .

Many defenders for pharmaceutical care propose it is not sufficient for pharmacists to merely fill the prescription properly; they must make sure that medications are being used properly. A substantial part of this duty is to keep monitoring medications for safety, adherence, and to make sure that the aim of therapy is being achieved (Hepler& Strand, 1990). Currently pharmaceutical care is concentrating on rising new pharmacy services dissimilar to prescription dispensing such as: complete medication reviews; blood pressure, diabetes, and cholesterol management; and smoking cessation programs. All these factors indicate that community pharmacy goes beyond reaching a good outcome of a service. Evidence proposes that pharmacists make positive influences including the recognition and resolution of medication-related problems of chronic drug therapy (Carter et al., 2009; Chris chilles et al., 2004; Doucette et al., 2009; Witry & Doucette & Gainer, 2011) .

Medication monitoring has not received enough attention as new prescription guidance in the dispensing process. A counseling model developed by the U.S.A Indian Health Service offers "Three prime questions" pharmacists can use when counseling patients with new prescriptions. The questions are: What do you take the medication for? How do you take it? And, what kinds of problems are you having? (Gardner & Boyce & Herrier, 1991). These questions, however, have not been tested empirically "Less is known about pharmacist monitoring of medication use in settings where formalized programs have not been adopted. We know of no studies that have thoroughly examined how community pharmacists view their monitoring role or how they actually monitor medication use by patients with specific chronic conditions" (Bultman & Svarstad, 2002).

2.5 Factors Affecting Medication Safety Practices

These are the factors that most considerably affect the medication-use process and safe medication use.The interrelationships between these key fundamentals will lead to the best medication safety practices thus leading to patient safety.

1- Patient information

Information about the patient leads to the proper selection of medications, doses, and routes of administration. The basic demographic and clinical information are of significant importance (e.g., age, weight, allergies, diagnoses and pregnancy status) besides patient monitoring information (e.g., laboratory values, vital signs and other parameters) that scale the influences of medications as well as the patients' disease processes. Studies revealed that as much as 18% of serious, preventable adverse drug events (ADEs) stem from practitioners having inadequate patients' information before prescribing, dispensing and administering medications (Leape et al. 1995). Twenty-nine percent of prescribing errors alone are associated directly with insufficient patient information (Lesar & Briceland & Stein, 1997). Narcotics and antimicrobials are the two drug categories mostly involved in errors related to insufficient information about patients. Most severe injuries are related to prescribing these drugs for patients allergic to them.

2- Drug Information

Wrong drug information are responsible for more than 35% of adverse reactions (Leape et. al., 1995). One in six ADEs was due to combination of inadequate knowledge about usual drug doses with errors or wrong expression of measurement or drug concentration (Lesar & Briceland & Stein,1997). The wrong drug dose or choice were mainly representing the cause of serious injury to patients

3- Communication of Drug Orders and Other Drug information

Poor communication among physicians, pharmacists, and nurses is the main cause of medication errors. Failure to regulate and standardize prescribing vocabulary will certainly lead to incorrect use of dangerous abbreviations, acronyms, invented names and other unclear means of communicating drug information that can simply be misunderstood. Studies have revealed that more than one in ten medication errors are related directly to the use of improper drug names, wrong expressions of dosage, forms, and misunderstanding of

abbreviations (Lesar &Briceland & Stein, 1997). The same study also revealed that mis-interpreting decimal point placement, often resulting in ten-fold overdoses, was one of the leading factors causing errors that could certainly harm patients seriously. Errors are more likely when the handwriting is clear but hides something serious.

In many cases, complications of the name of the drug occur when the handwriting is readable but the name of the drug is similar to another one. Although this may seem unlikely, there is a risk of a prescription of the anti-diabetic agent AVANDIA (rosiglitazone) instead of COUMADIN anticoagulants (warfarin) due to almost similar patterns when they are handwritten (ISMP, 2000).

In all healthcare facilities, communication difficulties, for example intimidation (feeling of fear), usually leads to ineffective communication among health care staff. In a recent ISMP survey on workplace intimidation, 40% of the participants informed they need to know about the safety of order in the past year but chose to assume the order was right instead of interacting with a prescriber they alleged as intimidating (ISMP, 2003). If the pharmacist has any doubtful prescription, he should freely call the doctor (the prescriber) and discuss the issue with him to prevent harmful errors from reaching patients.

4-Drug Labeling, Packaging, and Nomenclature

Similar drug names that look and sound alike, unclear or absent drug labeling, and non-distinct or vague drug packaging significantly lead to medication errors. These conditions have led to severe drug mix-ups and mortalities. Studies show that one of the most common causes of pharmacy drug dispensing errors (29%) is the failure to exactly recognize drugs, most obviously due to look-alike and sound-alike (LASA) drug names (Leape et al., 1995). The problem is intensified by what is known as confirmation bias: when choosing an item or validating a name, you see what you want, and once you find what you are looking for, you stop looking, not identifying any disconfirming proof. Pharmacy staff usually chooses a medication container according to a mental picture of the item, whether it is a characteristic of the drug label, the shape and size or color of the container, or the site of the item on a shelf (Grasha et al., 2000).

Several errors usually occur when practitioners, due to familiarity of certain products, see what they believe is correct rather than what is really there. It is human nature for people to join items with certain features (Cohen, 2006). Physically splitting drugs with look-alike

labels and packaging helps to minimize this contributing factor (National Patient Safety Agency, 2009). Altering a product's name or shape may help avoid LASA medication errors. For instance, tall man letters is an error-prevention method of writing the drug name to reduce the risk of look-alike and sound-alike medicine name confusion and errors. Numerous studies have shown that highlighting sections of drug names using tall man letters can help to distinguish similar drug names (Filik et al., 2004), making them less prone to mix-ups (Filik et al., 2006; Grasha, 2000).

5-Drug Standardization, Storage, and Distribution

In order not to confuse between medicines and errors in dispensing it is important that drugs are to be stored in appropriate places in terms of size and location. There are other important recommendations regarding the presence of separate front refrigerators to distinguish important drugs and also allocate places for narcotic drugs so that the drugs are clear to eye sight.

It is forbidden for staff to save food in the refrigerator of the drugs, where research confirms that one of the pharmacies made a mistake and caused to drink a chemical instead of water because because of the dual use of refrigirators (foods and drugs) and it is necessary to review the stock of medicines for disposal by sending them to the competent authorities, which is also must allocate a place in order to deal with in a proper way and reduces the chances of mistakes. It is obligatory that pharmacists know the places of the new drugs and distinguish similar drugs so as not to be confused with medicines during the dispension . If location of drugs are changed without notifying pharmacists, it is likely that they will commit a mistake to dispence what they used to see in the same place. No way to keep medicines in open boxes on the ground as it must be kept in a specific place to sort medicines and check inventory and follow it. Note that the use of technology in dealing with drug stocks added a qualitative leap in improving the quality of services and this is consistent with a study conducted in Pakistan showed that medical products need proper storage conditions to ensure their quality, which reflects on the rationalization of spending and reduce losses (Sumera & Savera & Nadir, 2016).

6-Medication Device Acquisition, Use, and Monitoring

Knowledge of the tools used to give medication to the patient is of paramount importance in a safe drug policy. Efficiency in the use of drug administrators is a top priority. For

example, error reports from ISMP MERP institutions indicate that lack of knowledge of the devices used to administer drugs is a common cause of medical errors in clinics and health centers and mistakes may occur by health care professionals and/or patients as well. If there is a small change in the device used to give the medicine, it will be easy for staff to deal with and give the medicine to the patient with a high degree of safety. In the event of a radical change in the device used to give a specific medicine to patients, this requires training for any person (patient, doctor, nurse, pharmacist) who will deal with the new device before using it to give medicine to patients. However, as new devices come to market, it is essential that training tools for appropriate use and avoiding potential risks are available to health professionals and patients as well.

7-Environmental Factors, Workflow, and Staffing Patterns.

The overcrowding, the intensity of the work in the pharmacy and the dim lighting are all factors leading to the occurrence of medication errors as the chaotic environment leads to the inability of the pharmacists to concentrate. Conversely, good lighting reduces these errors (Buchanan, 1991). Another research showed that simple mistakes due to carelessness are accountable for 11% of prescribing errors, 12% of administration errors, and 73% of transcription errors (Leape et al., 1995). Pharmacological environment disorders lead to mistakes, where pharmacists answer the phones at the same time they talk with patients and dispense medicine for them then medication errors occur in this environment, which prevents the safe and correct work. Patient data can't be recorded and therefore errors that could have been avoided will certainly occur. The lining of the pharmacy floor will comfort the pharmacist during his work and the temperature of the pharmacy in the winter should not fall below 16 ° C. The medicine should not be stored at a temperature higher than 25° C. It is not recommended to use white seats in pharmacies where it is preferable gray or yellow color and studies have shown that these colors are better in pharmacies in terms of contrast with the colors of medicine packaging (National Agency for Patient Safety, 2009).

8-Staff Competency and Education

Combining staff teaching with proper drug handling strategies are so eventual in reducing medications mistakes but education alone is not enough at all to reduce the risk of errors .Nevertheless , at the long run the most experienced pharmacists can still do medication errors during the dispensing process.

9- Patient Education

The patient must understand the details of the treatment in order to avoid mistakes , the patients must also know exactly what is required from him to prevent any medical error as he is considered the last station that can avoid making a medication error. The pharmacist must cooperate with the patient and explain to him all the details related to the drug dispensed, such as the dose and expected side effects and the relationship of treatment with food and how to take it (Sumera & Savera & Nadir, 2016).

10- Quality Operations and Risk Management

The ordinary efforts to reduce medication errors have concentrated on individual practitioners, training, advice, rules and education to improve performance.Error, and human factor experts refuse this method because it is much better to change the system as a whole than to target individuals for improvement.What people do is usually governed by the system, the causes of error are related to system failures beyond the direct control of the individual workforce. Consequently, the way to prevent errors is to reform the systems and procedures that lead to errors instead of exerting efforts on correcting the individuals who make errors (Benrimoj et al., 2008).

Effective strategies for minimizing errors let it become impossible or difficult to make by the staff, and enhancing the recognition and correction of errors before they reach and harm the patient. Despite the fact that reducing complexity in processes is important to error mitigation, simple checks repetitions of some steps in the system may promote the recognition and correction of errors before reaching the patients.These checks are much effective when applied on drugs with high potential to cause severe patient injury (Benrimoj et al., 2008).

2.6 Community Pharmacy in Middle East

- At Jordan, across sectional study among 310 community Pharmacists found that pharmacists had a good understanding of the basic concept of pharmaceutical care, although their action in this field was insufficient despite having fine attitudes toward pharmaceutical care (Abu Ruz et al., 2012). Another study in Jordan revealed that the quality of drug information resources in private community pharmacies in Amman was far

away from optimal. This will reduce the quality of information given to patients and have negative consequences on the pharmacists role in the health system (Wazaify et al., 2009).

- At Kuwait, a survey conducted on 223 community pharmacists showed that their role in health promotion and education was mainly concentrated on pharmaceutical matters rather than health behavior modification. They had a positive attitude towards the guidance of the population on health behaviors but shortage of time was apparent to be the main barrier that limits health promotion activities by community pharmacists (Awad et al., 2010).

-At Qatar, across sectional study was conducted on 274 community pharmacists who showed an overall good understanding and attitudes toward pharmaceutical care and responsibility towards patient safety delivery despite the abundant barriers to apply high pharmaceutical care stage (El Hajj et. al., 2011). At United Arab Emirate, (UAE) a study among 344 community pharmacists found that 75% of the pharmacies dispensed less than 100 prescriptions, and responded to less than 100 requirements for over the counter (OTC) medicines. An insufficiency in access to both printed and computerized resources for pharmacists in the UAE was obvious.In the same study, it was also revealed that pharmacies in the UAE provided a wide range of non-pharmaceutical services while quarter of the pharmacists admitted medication errors and adverse drug reactions (Hasan et al., 2011).

2.7 Community Pharmacy in Palestine

Plenty ofstudies were published in Palestine about community pharmacies:

A cross-sectional study about health counseling at community pharmacies in Gaza Strip (GS) showed that patient counseling occurs at a higher rate when compared with other developing countries. However, significant number of pharmacy workers don't perform this activity yet, Further studies should be undertaken to highlight the patient counseling in GS (Muqat, 2014).

A cross-sectional study was performed to determine the perception of Palestinian consumers to community pharmacists and their services. The study showed that patients have a good perception of community pharmacists and their services. The study recommended increasing public awareness about the role of pharmacists (Khdour et al., 2012). In 2003, two cross-sectional studies were conducted in the same year by Sweileh

and Jaradat. The first study aimed at describing community pharmacy practice in Palestine. The study revealed that over the counter sale of many prescription medications was common and unregulated. Replacement of prescribed medications was widespread. No official records available about patients' prescriptions (Sweileh & Jaradat, 2003).

The second study aimed at determining the requirements and sources of drug information community pharmacies in Palestine. The study revealed that drug information sources were insufficient and represent limit the community pharmacists in Palestine from providing patients with appropriate guidance about medications (Sweileh & Jaradat, 2003).

Chapter Three

Methodology

The methodology of the study: is the way to get a relevant data to the current problem, in order to answer the research questions and resolve the research problem, including study design, study setting, study population, study sample, eligibility criteria, study instrument, data collection procedure and plan for data analysis. The analysis includes investigation of reliability and validity of the modified instrument, limitation of the study and ethical and administrative approval.

3.1 Study Design

The research design refers to the overall strategy that you choose to integrate the different components of the study in a consistent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data. So that the research problem determines the type of design you should use, not the other way around (De vaus, 2001).

Triangulation is usually used to indicate that two (or more) methods are used in a study in order to check the results of the same subject (Mertens & Hesse-Biber, 2012). The purpose of triangulation in research is to increase the validity of the results, as it is a trial to illustrate more fully rich and complex human behavior by studying it from more than a single point (Cohen et al., 2000). It also gives a more balanced and detailed picture of the situation (Altrichteret al., 2005). O'Donoghue and Punch (2003), also found that triangulation of research is a method for crosschecking of data from multiple sources, to search for regularities in the research data.

Denzin (1978) identified four types of triangulation: (a) method triangulation using more than one method for gathering data such as interviews, observations, and questionnaires. (b) Investigator triangulation including multiple researchers in a study (c) theory triangulation more than theory for the interpretation of research data and (d) data source triangulation involves time, person, and place. In this study, we are going to use the first type of triangulation by using more than one method to gather the required data.

The design is a cross-sectional study with an explanatory sequential mixed method. In this design, quantitative and qualitative data are collected sequentially in two-stages. The

quantitative data is collected and analyzed in the first stage. Then qualitative data is collected and analyzed to explain the findings of the quantitative component.

3.2 Study Period

The study started immediately after having the university approval and obtaining ethical approval from the Helsinki committee. This study lasted 7 months to be finalized from May to November 2019.

3.3 Study population and Setting

The study population consisted of all pharmacists who work in the community pharmacies distributed in the five governorates (North Gaza, Gaza, Middle zone, Khanyounis, and Rafah) in the GS. The total number of the licensed community pharmacies in the GS is (670). The number of pharmacies in North Gaza, Gaza, Middle Zone, Khanyounis, and Rafah is 131, 255, 110,108, and 66 respectively. The total number of community pharmacists ranges between 1005 and 1340, assuming that one or two pharmacists work in each pharmacy.

3.4 Sample Size and Sampling Process

- **Quantitative sampling process:**

According to MOH annual report, the total number of registered pharmacies at GS in 2018 is (670) Pharmacies. The researcher used the Epi-Info program to calculate the sample size. The expected frequency was estimated at 50%. The calculated sample size was 244 at 95% confidence level.The sample size was increased up to 270 in order to ensure an appropriate response rate. The sampling was based on two-stages, cluster randomized selection. At the first stage, GS is classified into 5 governorates. Each governorate is classified into small cities/camps. A proportionately randomized systematic selection from each camp is conducted to select the community pharmacies. The simple randomization is followed to select the eligible community pharmacists from each selected pharmacy.

- **Qualitative sampling process:**

The key informants for the in-depth interviews were purposefully selected after the consultation of the academic supervisor. The key informant included popular community pharmacists, senior pharmacists, and academics in pharmacy schools. Snow-ball method

was used to nominate the most appropriate key informants. The total number of key informants is decided based on the saturation of the themes and expected to be 7. Additionally, in-depth interviews were conducted with 5 patients who were purposefully selected from the patients visiting the community pharmacies.

3.5 Eligibility Criteria

All licensed community pharmacists who officially work for one year prior to data collection time in the licensed community pharmacies were included. Meanwhile, all community pharmacists who don't work in the licensed community pharmacies at the time period of data collection for any reasons (retirement, turnover, sickness, or travelling abroad), all-volunteer community pharmacists, and all-new community pharmacists with less than one year of employment at the time of data collection were excluded from this study.

3.6 Ethical and Administrative Consideration

After receiving the study approval from Al Quds University, an official letter of approval from the Helsinki committee in Gaza was obtained. All questionnaires attached with a full explanatory form including the title of the study, purpose, assurance about the confidentiality of the information, and the instructions on how to respond to the questionnaire. Additionally, the form includes a statement indicating that the participants have the right to refuse or participate in the study.Confidentiality and anonymity of collected data were completely maintained. Verbal consent was obtained from each participant.

3.7 Study Instrument

- **Quantitative instrument:**

The researcher used a modified Medication Safety Self-Assessment (MSSA) instrument. This instrument includes 216 item and covers 10 dimensions (Patient information, Drug information, Communication of drug orders and other drug information, Drug labeling, packaging, and nomenclature, Drug standardization, storage, and distribution, Use of devices, Environmental factors, workflow, and staffing pattern, Staff competency and education, Patient education, and Quality processes and risk management).

A 5-points likert scale includes five responses.

- Response 1-No activity done.
- Response 2-Discussed, but not done.
- Response 3-Partially done for some or all patients, prescriptions, drugs, or staff.
- Response 4-Fully done for some patients, prescriptions, drugs, or staff.
- Response 5-Fully done for all patients, prescriptions, drugs, or staff.

The MSSA instrument was translated into the Arabic language following a standardized approach of translation (forward-backward translation). Cross-cultural adaptation was done by an expert reviewing panel of highly experienced pharmacists. Irrelevant items are deleted or modified as necessary. The validity and reliability of the Arabic version were assessed.The instrument included socio-demographic and work-related data. The socio-demographic related data include gender, age, location, and salary. The work-related data included qualification, specialization, work experience, working hours, pharmacy ownership, and specific training.

- **Qualitative instrument:**

Two interview guides were developed after analyzing the quantitative data. The first guide targeted the key informants of community pharmacists while the second guide targeted the patients themselves. Both interview guides were based on semi-structured, opened-ended questions.

3.8 Pilot Study

Piloting of the MSSA instrument was conducted in order to test, standardize the research instrument and to increase the response rate. The piloting also tests the feasibility and suitability of the instrument and to improve its validity and reliability. The pilot results were used to finalize the instrument for the general study phase. A sample of 30 community pharmacists was randomly selected to pilot the instrument. According to the results of the pilot tests, the final format of the MSSA instrument was finalized.

3.9 Data Collection

- **Quantitative method:**

Data were collected by the researcher herself and four qualified data collectors who get an explanation and training about the study; its purpose, objectives, procedures and how to distribute and collect the questionnaires with respect to confidentiality. Data were collected based on an interviewed questionnaire (as checklist assessment). The researcher herself with the trained data collectors visited the selected community pharmacies during the daily working hours. The average time for filling the questionnaire ranged between 30-40 minutes.

- **Qualitative method:**

Face to face in-depth interviews was used as a second data collection method. Key informant interviews were conducted by the researcher herself. The average period time for the interview's ranged between 30-40 minutes. All of the key informants were informed about the purpose and the main features of this study. The interviews focused on the explanation of the main quantitative findings, the main barriers that might affect the proper implementation of medication safety practices, and any suggestions toward improving these practices. Moreover, face to face in-depth interviews was conducted with key patients to explore their perceptions and experiences toward the medication safety practices within the community pharmacies.

3.10 Scientific Rigor

A. Validity

Validity means a test has the actual ability to measure what we designed it to assess (Burns & Grove, 2005). The tool items are designed for all themes to be addressed (Burns & Grove, 2005). In this study, the questionnaire was presented to ten experts in different pharmaceutical sciences. Questions that were not approved by 80% of the experts were canceled. piloting process to assure the Internal validity was conducted.

Table (3.1) clarifies the correlation coefficient for each field and the whole questionnaire. The P-values (Sig.) were less than 0.05, so the correlation coefficients of all the fields were significant at $\alpha = 0.05$, so it can be said that the fields were valid to measure what it was set for to achieve the main aim of the study.

Table (3.1): Correlation coefficient of each field and the whole of the questionnaire

No.	Field	Pearson Correlation Coefficient	P-Value(Sig.)
1.	Patient Information	.743*	0.000
2.	Drug Information	.726*	0.000
3.	Communication of Drug Orders and Other Drug Information	.366*	0.000
4.	Drug Labeling, Packaging, And Nomenclature	.683*	0.000
5.	Drug Standardization, Storage, and Distribution	.772*	0.000
6.	Use of Devices	.643*	0.000
7.	Environmental Factors, Workflow, and Staffing Patterns	.802*	0.000
8.	Staff Competency and Education	.796*	0.000
9.	Patient Education	.837*	0.000
10.	Quality Processes and Risk Management	.824*	0.000

* Correlation is significant at the 0.05 level

In order to ascertain the reliability of the qualitative data, the sample participating in this part of the study was consulted. Procedures to ensure that the data analysis was correctly interpreted ow-inference description by using description phrased very closed to respondent's accounts.

B. Reliability

An instrument is considered as reliable when it yields consistent results by repeated measuring of the concept of interest (Burns & Grove, 2005).

The reliability of the questionnaire scale questions was tested using the reliability coefficient "Cronbach" Alpha test. Cronbach Alpha with value over than 0.7 is considered as accepted (REA, 1998).

Cronbach's Coefficient Alpha

Cronbach's alpha (George & Mallery, 2006) is designed as a measure of internal consistency, to make sure that all items within the instrument measure the same thing. Theoretically, Cronbach's alpha results should give you a number from 0 to 1, but you can get negative numbers as well. A negative number indicates that something is wrong with your data—perhaps you forgot to reverse score some items. The general rule of thumb is that a Cronbach's alpha of .70 and above is good, .80 and above is better, and .90 and above is best (McNeish, 2018).

Table (3.2): Cronbach's Alpha for each field of the questionnaire:

No.	Field	Cronbach's Alpha
1.	Patient Information	0.758
2.	Drug Information	0.651
3.	Communication of Drug Orders and Other Drug Information	0.802
4.	Drug Labeling, Packaging, And Nomenclature	0.696
5.	Drug Standardization, Storage, and Distribution	0.785
6.	Use of Devices	0.655
7.	Environmental Factors, Workflow, and Staffing Patterns	0.707
8.	Staff Competency and Education	0.801
9.	Patient Education	0.874
10.	Quality Processes and Risk Management	0.869
	All items of the questionnaire	**0.953**

Table (3.2) shows the values of Cronbach's Alpha for each field of the questionnaire and the overall questionnaire. For the fields, values of Cronbach's Alpha were in the range between 0.651 and 0.874. This range is considered high; the result ensures the reliability of each field of the questionnaire. Overall Cronbach's Alpha of all fields equals 0.953 for the overall questionnaire, which indicates excellent reliability of the entire questionnaire. Thereby, it can be said that the questionnaire was valid, reliable, and ready for distribution for the study sample.

The reliability of the qualitative key informant interview data is assured through the description of the interviewee's characteristics (location, job position, and experience).

3.11 Data Management and Analysis

After completion of data collection, the researcher used the Statistical Package for Social Sciences (SPSS) program version 23 to code the questions and the responses. Data entry following the developed coding system is made by the researcher herself. After that, the researcher conducted cleaning of the entered data byre-entering of a random sample of questionnaires and by making descriptive statistical frequencies and reviewing the results. Means and Standard Deviations (SD) of continuous numeric variables were computed and

then recoded inappropriate categories. Descriptive statistical analysis was conducted by comparing frequencies and percentages of different variables. Total scores of questionnaires' domains were computed. Reliability of the instrument tested by computing the reliability coefficient to ensure the consistency of findings.

To examine the relationships between independent (categories) and dependent variables (numeric scores), inferential statistical tests were made including independent t-test and one-way ANOVA test. The independent t-test was used to compare two means and the one-way ANOVA to compare more than two means. Pearson correlation test was used to investigate the correlation between the dependent and independent variables. P-Value of equal or less than 0.05 was considered as statistically significant. After completing the analysis of quantitative data, the collected qualitative data were analyzed using the coding and thematic analysis approach. The interviews were audio-recorded, and data were transcribed verbatim to facilitate analysis. All interview transcripts are read many times to get a sense of the data and to review for emerging themes. A coding list was developed and revised translated from Arabic to English. Data for each code was reviewed and compared to data for other codes. Finally, the researcher used the dimensions of medication safety practices as the key themes and mainly focused on explaining the findings of the quantitative part and explore reality from another perspectives.

3.12 limitations.

- The large sample size covering all areas of the Gaza Strip, this was exhausting and expensive for the researcher, in addition to the difficulty to access to the pharmacies located at the southern regions was also a barrier.
- The length of the questionnaire that took about 40 minutes to fill inside the pharmacy, made some pharmacists get bored because they were busy working in pharmacies.
- I had difficulty to convince patients to accept the interviews, and I think it would have been better to meet them in focus groups.
- Shortage of information and previous studies of pharmacy in Palestine.

Chapter Four

Results & Discussion

In this chapter, the researcher illustrates the main findings of the study and compares that with the results of previous relevant studies

4.1 Socio-Demographic characteristics and work-related variables

Table (4.1): Socio-demographic Characteristics and Work-relatedCharacteristics (N=258)

Socio-demographic Characteristics and Work-related Characteristics			Frequency	Percent
Socio-demographic Characteristics	Governorate	North	66	25.6
		Gaza	81	31.4
		Midle –Zone	40	15.5
		Khanyones	44	17.1
		Rafah	27	10.4
		Total	258	100%
	Gender	Male	161	62.4
		Female	97	37.6
		Total	258	100%
	Age	Less than 30 years	125	48.4
		30 – less than 40 years	78	30.2
		40 years and more	55	21.3
		Total	258	100%
	Salary	Less than 1000 NIS	69	41.3
		1000- Less than 1500 NIS	71	42.5
		1500 and more	27	16.2
		Total	258	100%
Work related Characteristics	Qualification	High Education	39	15.1
		Bachelor	167	64.7
		Diploma	52	20.2
		Total	258	100%
	Specialization	General Pharmacy	225	87.2
		Clinical Pharmacy	27	10.5
		Other	6	2.3
		Total	258	100%
	Years of Experiences	Less than 5 years	111	43.0
		5-less than 10 years	59	22.9
		10-less than 15 years	33	12.8
		15- less than 20 years	25	9.7
		20 years and more	30	11.6
		Total	258	100%
	Working Hours	≤ 8 hours	201	78%
		> 8 hours	57	22%
		Total	258	100%
	Pharmacy ownership	Yes	85	32.9
		No	173	67.1
		Total	258	100%
	Specific Training on Pharmaceutical Care	Yes	173	67.1
		No	85	32.9
		Total	258	100%

The total number of the pharmacies in GS was 617, whereas the study sample size was 270 and the total number of study participants was 258 with a response rate of (95.5%). This high response rate gives more validity to the study results. Participants are distributed in five governorates; North, Gaza, Middle-Zone, Khan-Younis, and Rafah. Where Gaza takes the highest percentage of participants (30.4%) and Rafah was theleast by (10.1%). The percentage of the male was 62.4% and female 37.6% (Fig. 4.1). These percentages were not consistent with the study conducted by Muqat, (2014) about the importance of counseling for patients at community pharmacies, the percentage of females was 54.7% and the percentage of males 45.33 %; as the study sample of Muqat was from Gaza governorate, but in this study, the sample was selected from all Gaza Strip governorates; Also maybe thhe reason for this difference is due to the fact that the period in which the data was collected in the evening shift, as we know the majority of females are working in the morning shift.. Gender equity might be ensured by hiring more females given that our study showed that males and females were performing equally in implementing the medication safety practices and in many cases the females performed better.

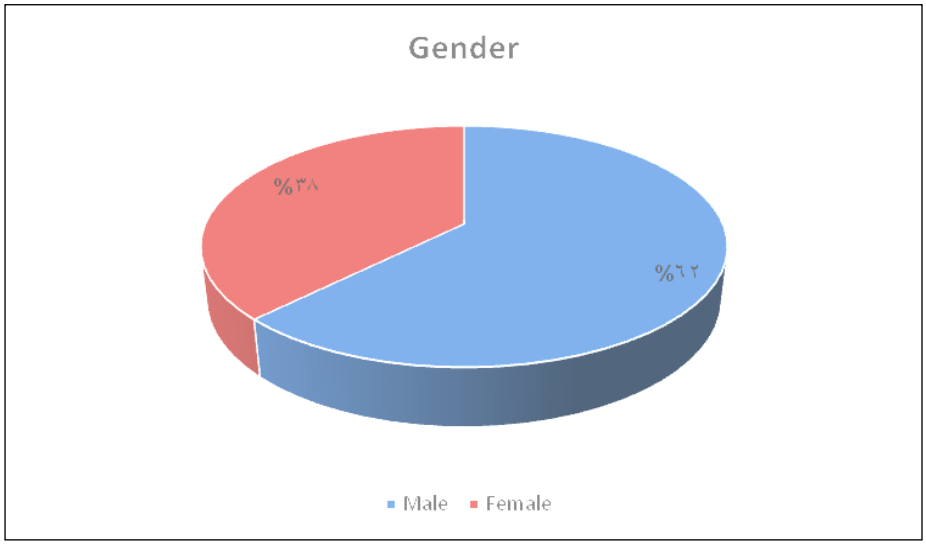


Figure 4.1: Distribution of participants by gender

Regarding age, the average age of participants was 33 years, the highest age group was the younger of less than 30 years (48.4%) whereas (30.2%) of participants comprise the middle group and 21.3 % are 40 years and more (Fig. 4.2). The high percentage of young employees (78.6% are up less 40years). However, this age structure can be considered a good source for the future of pharmacy through which the pharmacy profession will be built and enhanced.

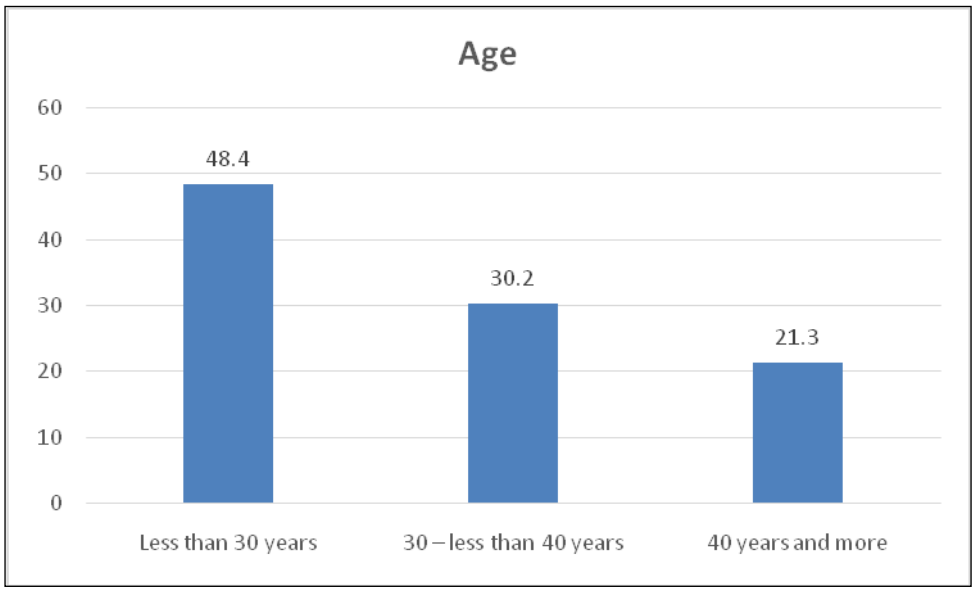


Figure 4.2: Distribution of participants by age

The educational level of the study participants ranged from diploma (20.2%) to postgraduate degrees (15.1%) with the majority of bachelor degree holders (64.7%). This indicates that a large proportion of pharmacists hold a bachelor's degree at the moment, especially after the presence of pharmacy collage at the University of Palestine, which will increase the proportion of their presence in the labor market and reduce the chance of holding a diploma.

According to specialization, the vast majority of participants were general pharmacists with a percentage of (87.2%) while clinical pharmacists were only (10.5%).

According to salary, the average monthly salary of participants was 1250 NIS per month, with a considerable proportion (42.5%) ranged between 1000 to 1500 NIS, whereas (41%) earn less than 1000 NIS/ month, and those who earn more than 1500 NIS were (16.2%). The limited monthly average reflects the deteriorating economic situation in GS. Where these results are compatible with the decline in the average daily wage for workers in the Gaza Strip has been observed since 2006, compared to the West Bank, which records almost twice the wage, as there is 17.3% of workers in the private sector receiving less than the minimum wage in Palestine (1450 NIS) at a rate Monthly wages estimated at (1070 NIS) in the West Bank, and 78.6% in the sector, at a rate of monthly wages estimated at (726 NIS) in the absence of work opportunities, and also the majority of sectors that have the average wage below the minimum wage in Palestine were affected (PCBS, 2018).

According to the total years of experience, the average total work experience was 12.8 years, and the most of the participants (43.0%) had work experience of less than 5 years, while (22.9%) of participants had work expirence from 5 to 10 years, and those who had a total work experience of more than 20 years were (11.6%) (fig.4.3).

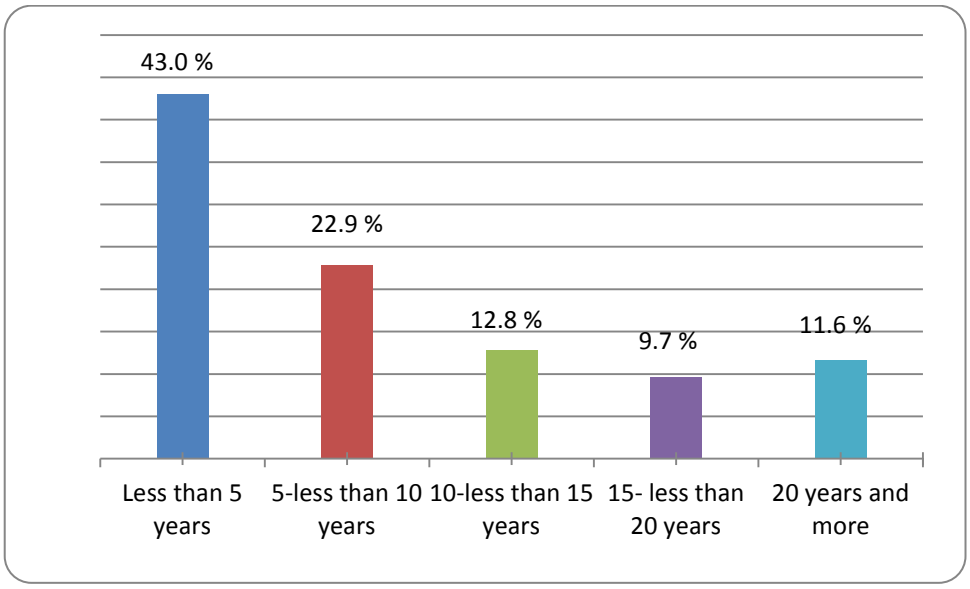


Figure 4.3: Distribution of participants by years of experiences

According to working hours, the vast majority of participants (78%) work for 8 hours or less and this is compatible with many jobs in terms of daily working hours. The pharmacy ownership for participants was (32.9%); While those who do not own pharmacies were (67.1%). Also, (67.1%) of participants never took any specific training courses on pharmaceutical care and that is one of the most important problems that affect the experience of pharmacists and medication safety.

4.2 Medication safety practices factors

The factors that determine the medication safety practices were grouped into ten main dimensions; Patient information, drug information communication of drug orders and other drug information drug labeling, packaging, and nomenclature drug standardization, storage, and distribution use of devices environmental factors, workflow, and staffing patterns staff competency and education patient education quality processes and risk management.

Each one has many questions (110 questions are the total number) to assess the current implementation practices of medication safety. All of these questions were evaluated in

accordance with a Likert scale ranging from score 5 for 'strongly agree' to the score 1 for 'strongly disagree', while the score 3 for 'neutral'. Furthermore, the score less than a neutral score of 3 was assumed to be with less or no implementation and the score of more than 3 is with higher implementation. This implies that the least mean score is considered as the least implementation level (Sekaran & Bougie, 2010).

Table (4.2): The score of the dimensions of ISMP medication safety practicesamong community pharmacies

Item		Mean	S. D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	Patient Information.	2.81	0.71	56.26	4.26*	0.000	9
2.	Drug Information.	3.33	0.76	(66.69%)	7.09*	0.000	5
3.	Communication of Drug Orders and Other Drug Information.	3.11	1.62	62.15	1.06	0.145	6
4.	Drug Labeling, Packaging, And Nomenclature.	2.69	1.01	53.79	4.92*	0.000	10
5.	Drug Standardization, Storage, and Distribution.	3.57	0.77	(71.44%)	11.91*	0.000	1
6.	Use of Devices and Medical Supplies.	3.51	1.04	(70.20%)	7.89*	0.000	3
7.	Environmental Factors, Workflow, and Staffing	3.42	0.59	(68.44%)	11.45*	0.000	4
8.	Staff Competency and Education.	3.55	0.71	(71.10%)	12.47*	0.000	2
9.	Patient Education.	3.07	0.65	61.30	1.61	0.055	7
10.	Quality Processes and Risk Management.	2.95	0.68	59.03	1.13	0.129	8
	All Items	3.20	0.56	64.05	5.81*	0.000	

*The mean is significantly different from 3

Table (4.2) showed that the Drug Standardization, Storage, and Distribution scored the highest level of implementing the medication safety practices 3.57 (71.44%), followed by the Staff Competency and Education 3.55 (71.10%), Use of Devices and Medical Supplies 3.51 (70.20%), Environmental Factors, Workflow, Staffing Patterns 3.42 (68.44%) and

Drug Information 3.33 (66.69%). The least score of implantation or non-implementation was for the Drug Labeling, Packaging, And Nomenclature 2.69 (53.7%), followed by Patient Information 2.81 (56.2%), and Quality Processes and Risk Management2.95 (59.0%).

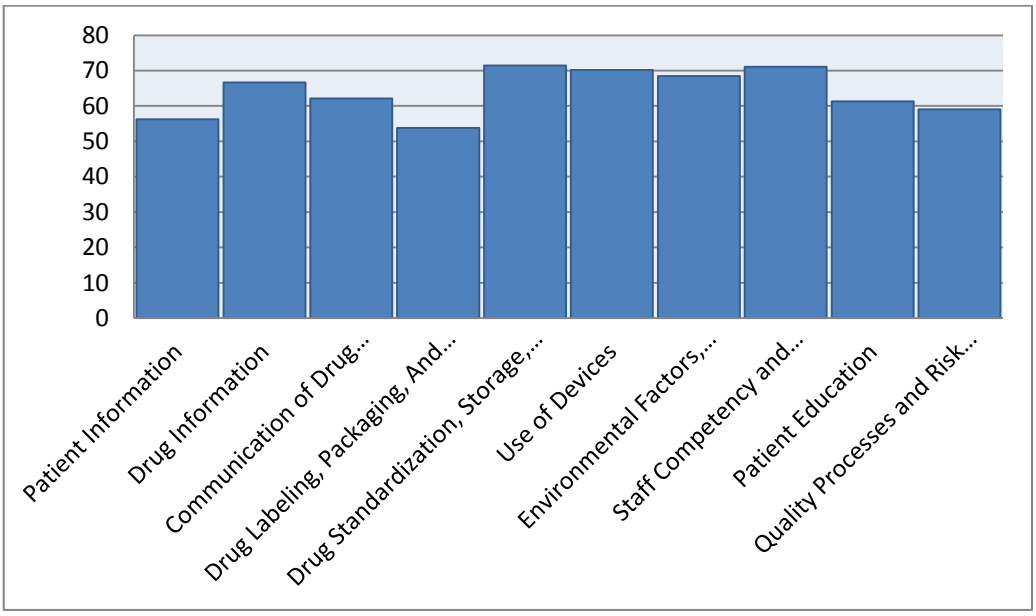


Figure 4.4: the differences of mean through medication safety practices dimensions

*Analysis for Ten Dimentions

4.2.1 Patient Information

Table (4.3): Means and T-values for "Patient Information"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	Complete information about the patient is obtained and then entered into the pharmacy computer system before providing the patient's prescription, and also updated at each new visit	1.86	1.01	37.13	18.27*	0.000	8
2.	The pharmacy uses the appropriate language for patients to communicate, raise awareness in a healthy culture; Taking into account any factors that may have an impact on the success of the treatment, and also any auditory and/or visual diseases that may affect the process of drug therapy	3.77	0.91	75.47	13.61*	0.000	1
3.	After obtaining the current list of drugs, they are entered into the computer system of the pharmacy, including over-the-counter medicines (specifying the dosage, the amount of dispensing and the pharmaceutical dosage form) and then updated when purchasing any new drug class	2.49	1.55	49.84	5.26*	0.000	7
4.	The list of vitamins, herbal and supplements, or any type of drugs currently used by the patient, is entered into the computer system of the pharmacy and updated at each visit.	1.71	1.30	34.11	15.97*	0.000	10
5.	The pharmacy takes steps to obtain patient weight when dispensing weight- based drugs, such as those used in chemotherapy treatment or pediatrics.	2.75	1.48	54.96	2.74*	0.003	6
6.	When receiving a prescription from the patient through the phone, they are asked about their date of birth, weight, whether they have allergies, or have a chronic illness, what is the medical problem they face and what is their diagnosis.	3.51	1.07	70.23	7.68*	0.000	3
7.	The pharmacist informs about all recent laboratory data of the patient to regulate and monitor the patient's treatment plan by setting a dosage regimen and schedules.	1.82	1.33	36.36	14.25*	0.000	9
8.	Pharmacists check any important clinical data about the patient to ensure that the treatment are appropriate to the patient's health condition (such as the sensitivity of the patient to certain ingredients, , tolerance to narcotic substances, and the results of laboratory tests).	3.62	0.97	72.45	10.26*	0.000	2
9.	The pharmacy computer system contains a warning alert when dispensing a drug classified as (narcotic or addiction drugs) to obtain or verify important information about the patient	3.15	1.72	62.95	1.38*	0.085	5
10.	Pharmacists look to the necessity for change the dose based on the patient's health condition like the patients suffer from renal difficulties	3.46	0.96	69.22	7.73*	0.000	4
	All items of the field	2.81	0.71	56.26	4.26*	0.000	

* The mean is significantly different from 3

Table (4.3) shows that the mean score of the “Patient Information” was 2.81 (56.26%), T-value = 4.26, and P-value = 0.000, which indicates that the community pharmacists have been discussing possible implementation of registering patient information in the pharmacy, but they have not implemented this information registration policy yet for any patient, prescription or drug . However, the finding reflects that the essential patient information isn’t obtained, readily unavailable in a useful form, and not considered when dispensing, administering, and monitoring the effects of medications. Such finding is totally consistent with a study (Alomi et al. 2016) aimed at exploring the hospital medication safety practices in Saudi Arabia where the patient information obtained (2.75) score. The low performance in this domain can be explained by the fact that the community pharmacies in GS are not computerized to facilitate the registration of patient information in a systematic way. Also the participants didn’t use of computer system to register patients' intake of vitamins, herbal products, dietary supplements, homeopathic medications, and alternative medicines with a mean of 1.71 (34.11%), T-value = 15.97, and P-value = 0.000. Our finding in this domain is contrary to the study of Agrawal, (2009). The study revealed that systems nowadays use information technology as the introduction of computerized medical orders, automatic distribution, the management of barcode medicines, the settlement of electronic medicines and personal health records are vital elements in strategies to prevent medication errors, and a growing body of evidence requires widespread implementation. Furthermore, the participants didn’t collect laboratory investigation data from the patients as blood glucose levels, liver enzymes, renal function, blood pressure, and cholesterol levels.

This information is so important for pharmacists to support clinical drug monitoring of patient-specific drug regimens. The mean of this point is 1.82 (36.36%), T-value = 14.25, P-value= 0.000 which is less than 0.05.

A big gap in registering patient's information was identified in this qualitative section of the research. The pharmacists mostly just ask the patient about what sort of medicine they want, regardless of the history of illness, clinical information, and if he/she suffers from any kind of allergies, etc. The pharmacists mentioned that activating the computerization system in pharmacies and registering patient data is very difficult. Pharmacists said that the pharmacy computer is limited to accounting and to the entry of drugs' list, stock, price, and expiration date.

"The computerized system in the pharmacy is limited to the accounting system, inventory of medicines, quantity and expiry date only, and the pharmacy is not interested in taking information and secrets of the patient, this is not necessary". *Senior community pharmacist.*

" Highly toxic and narcotic drugs are registered in the computers, and located in designated areas separated from other medicines". *Community pharmacist*

"There is a need for establishing a computerized system that connects all community pharmacies within the city". *Senior community pharmacist.*

The qualitative analysis highlighted the importance of having a quality system at community pharmacies to reach patient safety practices. The researcher met a number of patients to get their opinions and impressions of the service provided to them in pharmacies. It was found that most of the interviewees agreed that the service provided to them was barely good and that some pharmacists may have exceeded the limit of their role by changing the prescribed medication.

"There is a shortage in taking adequate information from patients and listen to their complaint and often the pharmacist just asks what medicine the patients want". "Some pharmacists exaggerate their action by prescribing a medication for a non-prescription patient or changing a medication written by a doctor and substituting it with another drug".All of the interviewees confirmed that pharmacists never sought patient information, history of the disease, the latest clinical laboratory analysis.

"No, they never ask" a diabetic patient commented.

4.2.2 Drug Information

Table (4.4): Means and T-values for "Drug Information"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	Online drug information references are easily accessible in all dispensing areas and include user-friendly, up-to-date information on prescription, OTC,herbal, and alternative medicine	4.35	1.11	87.05	19.57*	0.000	1
2.	The pharmacist checks the medical condition of the patient if is appropriate with the prescribed medication before he dispenses it.	3.82	0.96	76.42	13.77*	0.000	2
3.	The pharmacy computer system alerts staff when safety screening does not occur due to data not being available.	3.26	1.45	65.22	2.81*	0.003	3
4.	When adding new products to the pharmacy store, the probability of an error in this drug is assessed (for example, drugs that are similar in sound, packaging or way of using).	2.42	1.39	48.36	6.69*	0.000	5
5.	After the drug appears in the markets for a period of time, staff in the pharmacy are instructed to monitor whether errors have been reported in the drug industry or any side effects and if safety measures are strengthened in case of complications with patients, as a result of using this product.	2.75	1.35	54.98	2.98*	0.002	4
	All items of the field	3.33	0.76	66.69	7.09*	0.000	

* The mean is significantly different from 3

Table (4.4) shows that the mean score of the "Drug Information" was 3.33 (66.69%), T-value = 7.09, and P-value=0.000 which indicates that the community pharmacists have been partially implementing the drug information policy in the pharmacy for some or all drugs.

The researcher said It is worth mentioning that this finding points out that essential drug information is partially available and partially considered when dispensing, administering, and monitoring the effects of medications. In addition, this also indicates that some medications are added to the inventory are reviewed for their error potential, and strategies are partially undertaken to minimize the possibility of errors. Such findings could be attributed to fact that the computer system is not commonly used to detect any alarm for the high alert medications, serious drug interaction, or allergy alerts. On the other hand, the study showed that the participants are fully implementing (for some drugs) the use of online drug information references as they are easily accessible in all dispensing areas and include user-friendly, up-to-date information on prescription, over the counter medications OTC, herbal, and alternative medicines with a mean of 4.35 (87.05%), T-value = 19.57, and P-value = 0.000. Moreover, the pharmacist partially ascertains the clinical purpose of each prescription before the medication is dispensed to ensure that the prescribed therapy is appropriate for the patient's condition with a mean of 3.82 (76.42%), T-value = 13.77*, and P-value = 0.000. Our study goes in line with the study of Jylhä, Saranto and Bates, (2011) which reported that adverse drug events (ADEs) happen during prescription, transcription, and administration phases were the most common, and human factors were the first category cause followed by the use of data. Error kinds connected to information management happened in every stage of the medication use. Most of the information management errors were due to registration, copying data or contraindicated prescriptions. The analysis also indicated that when a new item is added to the pharmacy inventory, the potential for error with that medication is not evaluated with a mean of 2.42 (48.36%), T-value = 6.69, and P-value = 0.000 which is statistically significant. This is not congruent with the study of Agrawal et al., (2009) who indicated that look-alike' errors are regularly reported with new medicines.

Pharmacists were asked about types of accidents or errors at community pharmacies, and howthey detected and reported errors and what is the mechanism of response to these errors. All the interviewees stated that the moderate errors had happened with a minimal incidence, however they were never documented.

These mild errors were manageable and quickly fixable. One pharmacist mentioned that" Whatever the degree of error we do not leave the patient until he gets better"*Senior community pharmacist.*

"Errors are very minimal; if they occur, they are always under control. If the error occurs within the pharmacy, it may be skipped without notification." *Senior community pharmacist.*

" All the pharmacists informed that they don't document medication errors, whenever any error occurs, they deal with it immediately and get it corrected at once". *Senior community pharmacist*

4.2.3 Communication of Drug Orders and Other Drug Information

Table (4.5): Means and T-values for "Communication of Drug Orders and Other Drug Information"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	There is a law that enables a pharmacist to change any unusual doses or uses of medicines and cancel them if they are incorrect	3.72	2.79	74.43	4.13*	0.000	1
2.	Pharmacists have a written protocol followed, to resolve differences between the doctor and pharmacist on patient safety when taking the prescription	2.49	1.30	49.84	6.26*	0.000	2
	All items of the field	3.11	1.62	62.15	1.06	0.145	

* The mean is significantly different from 3

Table (4.5) showed that the mean score of the field was 3.11 (62.15%), T-value = 1.06, and P-value=0.145 which indicates that the community pharmacists have been partially implemented the items of this dimension for some patients, staff, and doctors. This result reflects that the methods used to communicate with prescriptions and other information are partially standardized to minimize the incidence of error. However, the mean score of this dimension is relatively less than the mean score of a study (Alomi et al., 2016) found that the "Communication of Drug Orders and Other Drug Information" within the hospital was 3.53 (70.6%). Such difference can be explained by a finding showed that within hospitals, the pharmacy dispensing error can be detected and communicated by nursing personnel at the administration stage, but in community pharmacies, the patient is the last one who can

check after the pharmacist dispense the medication (Institute NEH, 2010). The study revealed that the community pharmacies have partially a law that enables a pharmacist to change any unusual doses or uses of medicines and cancel them if they are incorrect with a mean equal to 3.72 (74.43%), T-value = 4.13, and P-value = 0.000. This goes in line with the study of Natalie, (2018) which reported that pharmacists regularly face dilemmas when they are asked for dosing advice of patients with features apart from those characterized in the drug label (eg, pregnancy, morbid obesity, geriatric patients). For this reason, today there is essential data and technology exist to create and implement precision drug dosing (PDD) software for high priority drug-disease targets in order to assist pharmacists and doctors in selecting the harmless and most effective dose for each patient (Natalie et al., 2018). This, in turn, can address the dispute this study found between physician and pharmacist as the pharmacists haven't a written policy to follow, to resolve conflicts easly when doctors do not agree with their expressed worries about the safety of an order, given that the mean was 2.49 (49.84%) T-value = -6.26, and P-value = 0.000.

The findings of the key informants revealed that most of the interviewees confirm the result obtained after the analysis of the questionnaire.Most pharmacists agreed that the service provided to the patient is fairly good and varies depending on the patient whether he is a transient or a permanent customer. Nevertheless, this was a pharmacists who work in one of the largest pharmacies in the Gaza Strip, where he said that the service provided is very good and they give the patients everything they need.

"The service is good, and it varies depending on the type of patient, some of them are transient I give them what they requestonly."*Senior community pharmacist*

"Some patients are friends of the pharmacy, we join them along the treatment journey". *Senior pharmacist*

"Care in the pharmacy ranges between good to very good, especially for central pharmacies, there is a very large communication between us and patients about things such as dosage, side effects and how it is managed". *Senior community pharmacist*

The qualitative result suggested that doctors bear full responsibilities of medications they have prescribed and any misunderstanding in the prescriptions should be discussed in details with the doctors, as Flynn et al., (2003) stated that pharmacists can make mistakes by commission or omission. Commission errors are made when the wrong medicine is dispensed or incorrect data about the patient is entered into the computer. Omission errors happen when not giving the patient the advice necessary for his safety.

4.2.4 Drug Labeling, Packaging, And Nomenclature

Table (4.6): Means and T- values for "Drug Labeling, Packaging, And Nomenclature"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	Labels are on shelves, packaging, and drug storage boxes for that have complex names	2.92	1.68	58.36	0.78	0.218	3
2.	Medications with a similar label and packaging are separated by the staff because they create problems and therefore are not stored next to each other so that there is no error while preparing the prescription.	2.41	1.67	48.28	5.61*	0.000	4
3.	Prescription labels are easy to read by patients, written in clear handwriting, sufficient space, and appropriate instructions for patient self-management.	2.98	1.42	59.61	0.22	0.413	2
4.	The pharmacy uses a suitable language for patients who need it (those who do not speak Arabic) when applying the label to the drug.	3.09	1.29	61.71	1.06	0.144	1
5.	A description of the product (e.g., shape, imprints, color, scent) appears on the pharmacy label.	2.03	1.45	40.54	10.79*	0.000	5
	All items of the field	2.69	1.01	53.79	4.92*	0.000	

* The mean is significantly different from 3

Table (4.6) showed that the mean score of "Drug Labeling, Packaging, and Nomenclature" was 2.69 (53.79%), T-value = 4.92, and P-value = 0.000 **,** which indicates that the community pharmacists have been discussing the possibility of implementing this domain in the pharmacy, but implementation at this time is not started yet for any drug. This result reflects that strategies were only discussed to be used for minimizing the possibility of errors with drug products that have similar or confusing manufacturer labeling/packaging and/or drug names that look and/or sound alike, but were not implemented yet. The low score of this dimension might be explained by the fact that the Palestinian pharmaceutical market deals with various national and international drug agencies with different manufacturers, thus the possibility to have similar or confusing look and/or sound-alike products is high. Such explanation makes the situation worse as the community

pharmacists didn't segregate products with look-alike drug names and packaging that are known by the staff to be problematic and didn't store them next to one another without existence of system can clearly redirects staff to where the products have been relocated mean was 2.41(48.28%), T-value = 5.61, P-value = 0.000. In developing countries, of the main causes of medication dispensing errors were similar drug names, similar drug packaging (James, 2009). The analysis revealed also that the community pharmacies didn't consider the importance of using the pharmacy label that shows a description of the product (e.g., shape, imprints, color and scent)" with a mean equals to 2.03 (40.54%), T-value = 10.79, and P-value = 0.000. This finding is inconsistent with the study of Filik, (2006) which revealed that numerous studies have shown that highlighting sections of drug names using tall man letters can help to distinguish similar drug names (Filik et al., 2004), making them less prone to mix-ups (Filik et al., 2006; Grasha, 2000).

4.2.5 Drug Standardization, Storage, and Distribution

Table (4.7): Means and T-values for "Drug standardization, storage, distribution"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	There is a mechanism to obtain the necessary medicines in the pharmacy very easily and quickly by communicating with representatives of pharmaceutical companies	3.83	1.11	76.59	12.04*	0.000	5
2.	There is a mechanism to determine the reasons why the patient does not take the medicine after the pharmacist prepare of the prescription	2.37	1.38	47.32	7.37*	0.000	12
3.	Electronic systems are used to record temperatures all the time and give warning of abnormalities in cooling system that the drug are storing in it and improved procedures for how to deal with any system problem	2.92	1.22	58.45	1.02	0.154	10
4.	Refrigerators of sufficient size, are used to store drugs that need to be cooled so as not to damage	4.59	0.98	91.71	26.10*	0.000	2
5.	The pharmacy has enough space to organize and separate medicines safely, everywhere in the store, refrigerator or shelves	4.62	0.85	92.48	30.62*	0.000	1
6.	When storing shelves, the staff ensures that labels do not remove any essential information about medicines on its label	2.98	2.14	59.69	0.12	0.454	9

Continued Table (4.7): Means and T-values for "Drug standardization, storage, distribution

7.	There is a separate and fully enclosed area in the pharmacy to place the returned, expired drugs until they are disposed of .	4.58	0.88	91.63	29.03*	0.000	3
8.	Active pharmaceutical ingredients and chemicals used in pharmaceutical formulations are evaluated at least every three months, and unused components are regularly disposed of properly	3.04	1.65	60.70	0.34	0.367	8
9.	Active pharmaceutical ingredients and chemicals used in pharmaceutical formulation are obviously marked with their contents, the date of opening the product, and the expiration date of the manufacturer. (If there is no expiration date, the date is set for one year from the date the product was first opened.	3.14	1.79	62.80	1.25	0.106	7
10.	The pharmacy stores chemicals used in compounding in a separate area according to current USP <795> and <797> standards .	2.81	1.63	56.25	1.84*	0.034	11
11.	All caustic or hazardous chemicals and other toxic substances are visibly marked and stored on separate shelves from all other products in the pharmacy warehouse.	3.55	1.44	70.98	6.07*	0.000	6
12.	Pharmacy prescription bottles and labels are not used to re-package non-drug substances (e.g., liquid chemicals, cleaning compounds, insecticides, soaps).	4.41	1.27	88.27	17.79*	0.000	4
	All items of the field	3.57	0.77	71.44	11.91*	0.000	

* The mean is significantly different from 3

Table (4.7) showed that the mean score of the "Drug Standardization, Storage, and Distribution" was 3.57 (71.44%), T-value = 11.91, and P-value=0.000. This indicates that the community pharmacists have been partially implemented the items of this dimension for some or all drugs. This result reflects that prescribed medications are partially accessible to some or all patients and dispensed in a safe and secure manner, in addition, the results indicate that medications and other necessary medication supplies are partially stored, dispensed, and returned to stock in a manner that reduces the likelihood of an error .It seems that drug storage is relatively performing well and this could emphasize the importance of drug storage where medication products require appropriate storage conditions in order to ensure the quality and efficacy of medicines (Butt et al., 2005). Such

finding is supported by the study which indicated that the community pharmacies they have adequate space to safely organize and separate the storage of medications and drug supplies, and utilizes dividers on stock shelves, in narcotic cabinets, and in refrigerators, as needed with a mean equals to 4.62 (92.48%), T-value = 30.62, and P-value = 0.000. The study also revealed that the refrigerators of sufficient size are available in all the pharmacies and are used for stock and preparing prescriptions waiting to be picked up, to ensure refrigerated medications are stored in an organized manner with mean of 4.59 (91.71%), T-value = 26.10 and P-value = 0.000. This is supported by the study which shows that medicines that are not stored on required temperature can further increase the unnecessary burden on economy of general population due to their ineffectiveness in curing of disease (Hafeez et al., 2004).

Qualitative analysis shows that all interviewees agree that community pharmacies contain spaces, shops, refrigerators, lighting, and all other environmental matters which is consistent with the same result of the quantitative section of this domain.

""Pharmacies are fully equipped because they do not take the license unless they meet the all specifications" *Senior community pharmacist.*

Considering the analysis of qualitative data, when the researcher asked the patients about the accessibility of the prescribed medications and if they purchase a drug without a prescription; most of the patients informed that all of them don't buy any drug without doctor's prescriptions, but there is a problem because some pharmacists try to change the prescribed medication as what available in their pharmacy. Also, patients said they just buy sedative or painkiller drug because they know that taking unneeded medication will be harmful to their health

"Very few, rarely, except for over-the-counter medicines such as Paracetamol, Trufin and Stomach drugs". *45 Male Hypertention Patient*.

"Adhere to the medication written by the doctor and not to change to alternative medicines, and good behavior with the patient". *55 Female Heart Disease Patient.*

4.2.6 Use of Devices and Medical Supplies

Table (4.8): Means and T-values for "Use of Devices and Medical Supplies"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	All pharmacists follow standards for hand washing, wearing gloves, and equipment disposal to minimize the risks of disease transmission during the administration of vaccines.	3.52	1.14	70.47	7.34*	0.000	2
2.	Employees at the pharmacy wash their hand in a suitable manner before preparing any product.	4.66	0.83	93.15	31.88*	0.000	1
3.	Barcode scanning or a checklist/sign-off sheet is used to verify the drug name, strength, NDC, lot number, and expiration date of each stock bottle before the contents are added to an automated dispensing system (e.g., robotics.)	2.88	1.80	57.51	1.11	0.134	4
4.	a machine-readable code is used to check the dispense of the drug.	2.97	1.87	59.45	0.23	0.408	3
	All items of the field	3.51	1.04	70.20	7.89*	0.000	

* The mean is significantly different from 3

Table (4.8) showed that the mean score of the "Use of Devices and Medical Supplies" was 3.51 (70.20%), T-value = 7.89, and P-value = 0.000 which indicates that the community pharmacists have been partially implemented the items of this dimension for some or all patients ,staff, prescriptions and drugs. This result reflects that sanitary practices are followed by good numbers of pharmacies using devices and equipment to store and prepare medications. Such a finding can be attributed to the adherence of community pharmacists toward the recommendations of infection prevention control, as the largest percentage of them are adequately educated and aware of such recommendations. This explanation is supported by the study result which revealed that community pharmacies follow standards for handwashing, wearing gloves, and equipment disposal to minimize the risks of disease transmission during the administration of injections with a mean of 3.52 (70.47%), T-value = 7.34* and P-value = 0.000.

The study revealed also that, the vast majority of the community pharmacists follow appropriate handwashing procedures prior to compounding any prescription product with a mean of 4.66 (93.15%) , T-value = 31.88, P-value = 0.000. This is consistent with the study of Decker et al., (2016) who reported that hand cleanness is the single most active technique for avoiding transmission of healthcare-related contaminations, a top-10 cause of death in the United States. Yet, less than half of health workers comply with hand-hygiene indications and approaches (Decker et al., 2016). On the other hand, the community pharmacist didn't use barcode scanning or a checklist to verify the drug name, strength, national drug code (NDC), lot number, and expiry date of each stock bottle before the contents are added to an automated dispensing system with a mean of 2.88 (57.51%),

T-value = 1.11, P-value= 0.134. This is contrary to the study of Truitt et al., (2016), which reported that the implementation of barcode medication administration (BCMA) and electronic medication administration record MAR technology enhanced patient safety by reducing the overall rate of ADEs and the rate of transcription errors. These technologies also decreased the harmful influence to patients caused by administration errors (Truitt et al., 2016).

Qualitatively, the researcher asked about the medication practices in the community pharmacy and to which extent it is reflected on the patient safety. The majority of pharmacists said, there is no need to follow the safety practices in pharmacies because they don't form any risk, and another mentioned that there are safety procedures followed by everyone when giving an injection, however, another participant said no one followed safety practices.

"Very safe, no pharmacy requires safety practices such as wearing gloves and sterilization as there is no preparation of medicines or medical preparations." *Community pharmacist*

"Very safe, after injecting patients, I put needles in (Safety Box) and this is necessary as when I dispose them they do not hurt anyone, whether the hygiene factor point of view if they fell into the hands of children or whenever they contain hazardous chemicals" *Senior community pharmacist*

"Not all pharmacies follow safety practices". *Community pharmacist*"

4.2.7 Environmental Factors, Workflow, and Staffing Patterns

Table (4.9): Means and T-values for "Environmental Factors, Workflow, and Staffing Patterns"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	The lighting is appropriate and convenient for reading labels and other important information about the medicine and patient clearly.	4.60	0.94	92.00	27.26*	0.000	1
2.	A lighted enlarge lens is located at the settled place and is used to make labels and prescriptions easier to read	1.68	1.30	33.64	16.33*	0.000	16
3.	The heat and moisture at the pharmacy comply with the requirements for storing medication.	4.47	1.05	89.38	22.44*	0.000	4
4.	The region, where orders are checked, are isolated and free from deviations and interruptions	2.81	1.56	56.26	1.88*	0.031	11
5.	Pharmacy tries not using high storage areas that make the staff climb for taking products.	3.64	1.42	72.84	7.23*	0.000	9
6.	Areas, which are used for the preparation of prescriptions, are clean, tidy and free from chaos..	4.47	0.94	89.49	25.16*	0.000	3
7.	When considering adding a new drug or services to the pharmacy, all pharmacy workers are well connected and discussed, and appropriate consideration of resources is .addressed before implementation	3.42	1.38	68.40	4.90*	0.000	10
8.	When prescriptions are set up, pharmacy employees work with one medicinal product at a time and place the mark on the patient's medication before working on the next prescription.	4.27	1.18	85.47	17.22*	0.000	6
9.	All drug orders (whether a paper copy or an image) are set at the eye level while the drug is being entered.	2.51	1.68	50.20	4.66*	0.000	14
10.	An annual medical examination is carried out for pharmacy employees, the most important of which is hearing and vision examination	1.50	1.61	30.08	14.92*	0.000	17
11.	The pharmacist does not work for more than 12 sequential hours	3.97	1.49	79.46	10.49*	0.000	8
12.	The pharmacist has the right to take at least 8 hours of rest between shifts	4.22	1.36	84.34	14.40*	0.000	7
13.	Pharmacy staff are allowed to take a break of 15 - 30 minutes during daily working hours even when there is pressure at work.	2.63	1.57	52.64	3.77*	0.000	13
14.	There is a supportive plan when the number of staff is reduced because of someone taking a vacation for example or pressure at work inside the pharmacy.	2.78	1.46	55.69	2.36*	0.009	12

Continued Table (4.9): Means and T-values for "Environmental Factors, Workflow, and Staffing Patterns"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
15.	Pharmacy recruitment standards are sufficient to provide safe care services to patients at all times, including during increased work frequency (eg, beginning of the month, immediately before or immediately after the holidays)	4.44	1.51	88.83	15.25*	0.000	5
16.	When there are temporary employeesthey are properly directed and trained in the private pharmacy environment in which they will work.	4.59	1.02	91.72	24.93*	0.000	2
17.	The prescription rate is periodically checked to see the appropriate number of employees, even during peak times when the demand is higher.	2.09	1.59	41.81	9.09*	0.000	15
	All items of the field	3.42	0.59	68.44	11.45*	0.000	

* The mean is significantly different from 3

Table (4.9) showed that the mean score of "Environmental Factors, Workflow, and Staffing Patterns" was 3.42 (68.44%), T-value = 11.45, and P-value=0.000, which indicates that the community pharmacists have been partially implementing the items of this dimension for some of the staff. This result reflects that methods of transcribed, prepared, dispensed, and administered of medications are relatively within an efficient and safe workflow, and relatively in a physical environment that offers adequate space and lighting and allows pharmacy staff to remain focused on medication use without distractions. The analysis showed that lighting is quite adequate in all pharmacies to clearly read labels and other important drug and patient information" with a mean of 4.60 (92.00%), T-value = 27.26, and P-value = 0.000. This is consistent with the Guideline of the Malaysian MOH which states that lighting and ventilation of community pharmacies reduce the risk of medication errors as bright white fluorescent lights are favored to filament (Malaysia Community Pharmacy Benchmarking Guideline, 2015). Furthermore, it reflects that the pharmacy staff partially matches the workload without affecting patient safety. The relatively good performance of this dimension could be attributed to specific criteria imposed by the MoH prior the licensing of any community pharmacy. It seems the workload within the community pharmacies is manageable as a result of the annual high number of graduated pharmacist. However, the workload in community pharmacies has been identified as barrier of doing their work properly (Awaisu & Alsalimy, 2015).

Eden et al. (2009) reported that Pharmacists change careers in part because they are dissatisfied with high workload. It is worth pointing that the analysis also indicated that when temporary agency staff is used, they have been properly oriented and trained in the particular pharmacy environment in which they will be working with a mean of 4.59 (91.72%), T-value = 24.93 and P-value of 0.000. However, the study showed the community pharmacists didn't commit to making an annual physical examination, including vision and hearing screenings for pharmacy staff" with a mean of 1.50 (30.08%), T-value = 14.92, and P-value = 0.000. In the Palestinian MOH all new staff undergoes a full clinical examination to guarantee their fitness before recruitment, however no further checkup for the staff is carried later for all the health professionals including pharmacists. Visual and hearing checkup has to be explored for the possibility of reducing medical errors in community pharmacies.

The analysis of qualitative data showed incongruent results with the quantitative part as all interviewees agreed that, the pharmacists have high workload in pharmacies and it is very difficult to take vacations. It appears that workload isn't heavy but the main issue is the shortage of staff who can cover the daily shifts.

"The pharmacy manager is forced to increase the number of staff to meet the workload." *Senior community pharmacist*

"Working hours often do not exceed 8 hours, the main problem is the ability to take vacations, it is very difficult for pharmacists to take vacation because no one available to replace them whenever they are absent". *Community pharmacist*

4.2.8 Staff Competency and Education

Table (4.10): Means and T-values for "Staff Competency and Education"

	Item	Mean	S.D	Proportional mean %	T-value	P-value (Sig.)	Rank
1.	All new employees are subject to a competency assessment in the basics before start working independently.	4.48	1.10	89.57	21.45*	0.000	1
2.	All pharmacy staff, including float and agency staff, are educated about the specific pharmacy equipment available at each site (e.g., barcode scanner, automated dispensing equipment) and inform the staff with all guidelines of equipment then confirm before giving them the approval to use it.	3.49	1.56	69.73	4.99*	0.000	9
3.	All pharmacists, including float and agency staff, are educated about the specific patient self-administration and monitoring devices available at each site (e.g., glucose monitors, inhalation devices, pen devices, home diagnostic tests), and competency is confirmed before staff are allowed to educate a patient about the instrument.	4.17	1.12	83.35	16.64*	0.000	4
4.	Reduce the tasks assigned to staff at work to achieve training objectives safely and inclusivity of those who train new employees (trainees),	4.09	1.37	81.71	12.68*	0.000	8
5.	Pharmacy staff is educated about strategies to reduce the happening of errors.	4.32	1.10	86.46	19.33*	0.000	2
6.	As part of the overall performance appraisal process, the pharmacy manager evaluates the experience of each pharmacy employee to ensure the applying of safety practices	4.22	1.15	84.39	16.94*	0.000	3
7.	Pharmacy staff is taught about new medicines added to the pharmacy stock, including OTC medicines, and all related information and warnings associated with them must be understood before dispensing medicines.	4.10	1.12	82.04	15.64*	0.000	7
8.	Pharmacists regularly discuss medication errors and how to avoid or reduce them	4.10	1.15	82.05	15.26*	0.000	6
9.	The manager of pharmacy and its director take into account humanitarian factors and the principles of error reduction (for example, staff standardization, use of limitations and emphasis on important functions) during staff orientation	2.77	1.68	55.35	2.20*	0.014	10
10	Key management leaders and pharmacists are trained in the basics and applications of Continuous Quality Improvement (CQI) in relation to the pharmacy work system	2.13	1.50	42.69	9.16*	0.000	12
11	At least once a year, pharmacy staff must complete a training course about reducing errors, especially when using high-alert medication, narrow therapeutic index drugs, and other drug or devices that have a high potential for errors.	1.66	1.19	33.25	18.01*	0.000	13
12	When errors occur, all pharmacy staff focuses on learning to prevent the occurrence and recurrence of such an error. And not just focus on how to cure it.	4.15	1.24	83.06	14.80*	0.000	5
13	Pharmacy staff have the support and time to attend conferences within and outside country related to new medicines and / or important drug safety issues	2.40	1.38	47.92	7.01*	0.000	11
	All items of the field	3.55	0.71	71.10	12.47*	0.000	

* The mean is significantly different from 3

Table (4.10) showed that the mean score of the “Staff Competency and Education” was 3.55 (71.10%), T-value = 12.47, and P-value = 0.000 which indicates that the community pharmacists have been partially implementing the items of this dimension for some or all of the staff. This result indicates that the pharmacy staff was partially provided with ongoing education about medication error prevention and the safe use of drugs and devices that have the greatest potential to cause harm if misused. However, all pharmacists undergo a baseline proficiency evaluation before working independently in a pharmacy with a mean of 4.48 (89.57%), T-value = 21.45, and P-value = 0.000. Moreover, the study showed that pharmacy staff was educated about system-based strategies to reduce the risk of errors with mean of 4.32 (86.46%), T-value = 19.33 and P-value = 0.000. These findings might explain the reasons behind the trust among patients towards the community pharmacists. This explanation is supported by a study conducted in West Bank to explore the perception of Palestinian consumers of the services provided by the community pharmacists and found that expert pharmacist were the main reasons for patients to visit the same pharmacy (Khdour &Hallak, 2012). The study results goin the line with the Policy Statement of the University of Toledo Medical Center which stated that all employees are correctly trained and offered the information required to efficiently deliver pharmacy services and all new employees are carefully oriented. Current employees share in continuing educational programs intended to preserve learned skills. (University of Toledo Medical Center, 2019).

The qualitative part was inconsistent with quantitative one as all of the interviewees were asked about their scientific level in the community pharmacies of Gaza Strip, they believe that they need courses to increase their scientific experience and develop their skills. There is nobody or institution that provides scientific courses or workshops to pharmacists.

"Courses are important for new graduates, there is nobody conducting courses or meetings or even workshops for the development of the scientific level of pharmacists." *Senior community pharmacist*

4.2.9 Patient Education

Table (4.11): Means and T-values for "Patient Education"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	Pharmacists are allotted time by management for patient education activities.	1.76	1.19	35.28	16.57*	0.000	15
2.	Confidential areas for patient counseling and medication therapy management (MTM) services are available without any obstruction and confusion.	2.31	1.46	46.17	7.53*	0.000	14
3.	Patients are urged to ask questions about their medications and all related instruction and risks.	3.74	0.97	74.88	12.22*	0.000	5
4.	Patients are offered an opportunity for counseling. The offer includes a clear explanation of what counseling consists of (e.g., how to take and store the medication, possible side effects, interactions with other drug) and how it would benefit them.	3.88	0.98	77.64	14.30*	0.000	3
5.	Criteria have been established for selected HIGH-ALERT MEDICATIONS or high-risk patient populations to trigger required medication counseling, and a system is in place to alert the pharmacist of this need when the patient comes in to pick up the prescription (e.g., bold alert on the bag, pharmacy computer system alert).	3.25	1.05	65.04	3.82*	0.000	11
6.	The pharmacist discusses important safety concerns (e.g., those found in Medication Guides, ISMP High-Alert Medication Safety Leaflets for consumers) during patient counseling with the patient/caregiver.	2.77	1.51	55.35	2.46*	0.007	13
7.	Pharmacists answer all questions and worries of the patient (such as financial burden, inability to take, dosage form, side effects) before dispensing the drug	3.60	1.09	71.98	8.75*	0.000	7
8.	Social culture and shame is one of the obstacles that prevent the patient from asking about his illness and prevent the process of counseling that affects the effectiveness of treatment	3.28	1.14	65.56	3.88*	0.000	10
9.	The pharmacy appropriately communicate with patients with sensory problems such as poor vision or hearing	3.72	1.34	74.39	8.55*	0.000	6
10.	The pharmacy instructs the patient to call it for any questions about the drug treatment.	4.04	0.97	80.79	17.09*	0.000	2
11.	Patients are provided with a telephone number at which a pharmacist can be reached 24 hours a day .	3.84	1.01	76.77	13.22*	0.000	4
12.	Patients are educated on the good use and maintain any devices purchased from the pharmacy.	4.27	1.09	85.33	18.49*	0.000	1

Continued Table (4.11): Means and T-values for "Patient Education"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
13.	The pharmacy gets free samples of the instrument from the companies to educate the patients so that they can use them in the best way	1.66	1.17	33.18	18.32*	0.000	16
14.	Patients are informed with all important and recent information about the medications they are taking, whether writing the information manually or telling them orally	3.55	1.08	71.02	8.14*	0.000	8
15.	The pharmacy provides a comprehensive appointment-based medication synchronization (ABMS) program that includes a complete medication review and monthly contact from a pharmacist to the patient, to discuss their medication therapy and any changes before dispensing to optimize medication use.	3.52	1.05	70.43	7.91	0.000	9
16.	The pharmacy monitors certain chronic diseases such as asthma, CVDs....etc	3.03	1.36	60.63	0.37	0.356	12
17.	Last year, the pharmacy provided a similar service as the primary health care clinics by making early checking to the detection of diseases	1.44	0.93	28.71	26.81*	0.000	18
18.	The pharmacy improves and implements at least one educational program at the year or any public health-related activity aimed to improve the safe use of medication..	1.55	1.07	30.90	21.70*	0.000	17
	All items of the field	3.07	0.65	61.30	1.61*	0.055	

* The mean is significantly different from 3

Table (4.11) showed that the mean score of the "Patient Education" was 3.07 (61.30%), T-value = 1.61, and P-value=0.055. This indicates that the community pharmacists have been partially educating some or all patients. This result also reflects that the patients are partially included as active partners in their care through education about their medications and ways to avoid errors. This analysis showed that most of the patients are instructed on the proper use and maintenance of any devices dispensed from the pharmacy (e.g., glucose monitors, injectable pens, spacers used with inhalers) with a mean of 4.27 (85.33%), T-value = 18.49, and P-value = 0.000. Proper education empowers the patient to participate in their health care and safeguard against errors (Rahman & Parvin, 2015). Also, this is consistent with the study of Benjamin, (2003) who stated that many errors happen as an outcome of poor oral or written communications. Improved communication skills and well

contacts among members of the health care team and the patient are very important. (Benjamin, 2003). The study analysis revealed that the vast majority of patients are instructed to call the pharmacy for any concerns or questions about their medication therapy with a mean of 4.04 (80.79%) and T-value =17.09 *, P-value = 0.000. Such finding points out that the communication between the patients and the community pharmacist is quite important and this supported by the finding reported that the pharmacist's communication plays a key role in patient medication management and preventing medication errors (Sassoli & Day, 2017). On the other hand, the study showed that there was no activity implemented for doing screening in the past year to promote early detection of disease with a mean was 1.44 (28.71%), T-value = 26.81, and P-value = 0.000. This is contrary to the result of a systematic review study that included 50 studies, which revealed that the available evidence suggests that screening for some diseases in community pharmacies is feasible (Ayorinde & Porteous & Sharma, 2013).

Through the analysis of qualitative data, the analysis revealed that pharmacies are committed to giving proper constructions to patients on the use of medication. All of the interviewees said that the more experienced the pharmacists, the better instructions are given to patients and thus patients will comply with those instructions.

"Each patient receives advice and information depends on the experience of the pharmacist". *Senior community pharmacist*.

"If the pharmacist has the experience, he gives the appropriate and sufficient information to the patient and patients often abide to these instructions". *Senior community pharmacist*

After the analysis of the interviews with patients, it was revealed that most of the interviewees agreed that pharmacists explain to the patients the correct use of medicines, and provide them with enough information regarding the treatment. Nevertheless, one patient reported that pharmacists have never ever explained to him anything about the dispensed medications unless he urges them to do.

"Yes, we implement the instructions from pharmacists for fear of adverse reactions and disease complications" . *23 Female with pregnancy bleeding*

"I do not always get instructions from the pharmacist and most likely I go online if I need any further information." *40 Male hypertention patient*

4.2.10 Quality Processes and Risk Management

Table (4.12): Means and T-values for "Quality Processes and Risk Management"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
1.	In the pharmacy they discuss medication errors without fear and complete freedom.	4.31	1.11	86.14	18.70*	0.000	1
2.	Pharmacists are trained to avoid medication errors.	3.77	1.27	75.35	9.67*	0.000	4
3.	The patient is frankly informed about the occurrence of medication errors if they occur	3.85	0.95	76.93	14.24*	0.000	3
4.	Pharmacy managers have been trained in the safety of medicines.	2.19	1.57	43.86	8.17*	0.000	19
5.	No action shall be taken against a person who makes a drug mistake	2.83	1.60	56.54	1.72*	0.043	14
6.	The pharmacy administration receives training that qualifies it to evaluate the pharmacological work in the pharmacy and identify the risks that lead to the occurrence of drug errors.	2.11	1.35	42.29	10.43*	0.000	21
7.	Pharmacists are trained to recognize who have the wrong procedural behavior to avoid drug errors.	3.75	1.29	75.02	9.28*	0.000	5
8.	Managers motivates the employee to report medication errors.	3.34	1.63	66.85	3.36*	0.000	10
9.	An annual survey is conducted for the pharmacy staff to ensure their knowledge of safety procedures	1.69	1.24	33.76	16.67*	0.000	23
10.	The pharmacy administration is concerned with improving the safety procedures and the use of technology	3.09	1.20	61.89	1.26	0.105	11
11.	Patient safety is articulated in the organization's mission and/or vision statements.	3.47	1.23	69.33	6.08*	0.000	8
12.	All staff know the medication errors of dangerous medicines and know the mechanisms of reporting it.	2.57	1.47	51.50	4.60*	0.000	17
13.	There is a person in charge of identifying drug errors in the pharmacy and identify the reasons for their occurrence and how to deal with it.	2.46	1.31	49.25	6.54*	0.000	18
14.	The pharmacy conducts focus group sessions to discuss drug policies.	3.52	1.65	70.31	4.98*	0.000	6
15.	There is a quality system in the pharmacy to enhance the safety of patients CQI.	1.72	1.20	34.41	16.97*	0.000	22
16.	The pharmacy conducts a survey of patients to make sure that the service provided is good and accepted.	2.17	1.37	43.31	9.73*	0.000	20
17.	The process of dispensing the drug is evaluated at least once a year to identify the causes of drug errors' risks.	1.53	1.08	30.56	21.71*	0.000	24
18.	The pharmacists avoid the occurrence of mistakes by knowing the mistakes of others.	3.44	1.20	68.78	5.87*	0.000	9

Continued Table (4.12): Means and T-values for "Quality Processes and Risk Management"

	Item	Mean	S.D	Proportional mean (%)	T-value	P-value (Sig.)	Rank
19.	Everyone is notified of the occurrence of any mistake and ways of avoiding it in the future, especially when dealing with sensitive groups such as children whose doses should be checked twice.	4.25	1.16	84.94	17.23*	0.000	2
20.	The pharmacist makes sure the safety of the drug before dispensing it to any patient	3.48	1.12	69.53	6.80*	0.000	7
21.	There are quality mechanisms that allow to identify inventory and pharmacological validity and computerized system and ways to follow up and report errors	2.69	1.55	53.83	3.17*	0.001	16
22.	Errors of dispensing systems are identified and lessons taken from them so as not to be repeated in the future and in order to improve the work system in the pharmacy	2.82	1.43	56.46	1.98*	0.024	15
23.	Errors in the selection of the drug and its composition and external signs on the package of the drug are evaluated in order to identify the purpose of identifying the problems of system design and the development of mechanisms to prevent errors.	2.83	1.47	56.60	1.83*	0.034	13
24.	The pharmacy has established a system to ensure that dangerous medicines are dispensed after being examined twice	2.85	1.40	57.02	1.70*	0.045	12
	All items of the field	2.95	0.68	59.03	1.13*	0.129	

* The mean is significantly different from 3

Table (4.12) showed that the mean score of the "Quality Processes and Risk Management" was 2.95 (59.03%), T-value = 1.13, and P-value= 0.129 which indicates that the community pharmacists might discuss without implementing some of the domain items. Despite the P-value of this domain was greater than the level of significance, most of its items were with P-value less than 0.00. This result could reflect that the safety-supportive culture and model of shared accountability for safe system design and making safe behavioral choices are partially in place and partially supported by pharmacy leadership and immediate supervisors. Such a situation might be expected from a low middle-income country like Palestine. A recent systematic review assessing the status of patient safety culture in the Arab countries urged the need to promote patient safety culture for improving patient safety in the Arab World (Elmontsri et al., 2017). The occurrence of medication errors could be associated with the lack of risk management strategies or their

inefficient implementation in community pharmacies (Oltean & Crisan, 2018; De Silva, 2013, & Aronson, 2009). However، both nationally and internationally, guidelines on good pharmacy practice recommend establishing quality standards that would minimize the risks of error in the pharmacy's activities (Chertes & Crisan, 2019). The study showed the community pharmacies were not conducting surveys for pharmacy staff to assess the organization's safety culture with mean value of 1.69 (33.76%) and T-value = 16.67*, and P-value = 0.000. Furthermore, they didn't make any proactive analyses of dispensing process (once annually at least) to identify potential risk factors for medication errors using instruments as the PROACTIVE RISK ASSESSMENT tool with mean value of 1.53 (30.56%), T-value = 21.71, and P-value = 0.000. This is contrary to a study done in the USA which shows that pharmacy staff who received guided training to ensure full implementation of a continuous quality improvement (CQI) program have shown improvement in attitudes toward patient safety and the results were statistically significant in comparison to control group (Chinthammit et al., 2017).

Qualitatively, interviewees were asked to assess the size of medication errors dispensed by community pharmacists, and to which extent patients' lives are under risk by those errors. Most of the pharmacists agreed that dispensing errors were very limited because they were written by doctors in their prescriptions. Any misunderstanding in the prescriptions should be discussed in detail with the doctors.

"All pharmacists agreed that error percentage is very minimal and the doctors bear full responsibilities of medications they have prescribed". *Community pharmacist*.

"When the pharmacist suspects any error, he should contact the doctor until the correct medication is dispensed". *Senior community pharmacist.*

Qualitatively, the majority of the interviewees believed in the important role of the Ministry of Health in the inspection and control and they recommended increasing the number of visits during the years. However, one of the interviewees was very dissatisfied with these visits not to downgrade the importance of inspection and control of MOH but he opposed the performance of MOH staff during the pharmacy monitoring visits.

"Routine procedures are applied without the attention of the pharmacist or patient, the way they deal with pharmacists does not have a kind of respect, a kind of control and

aggressive approach they just search for drugs or mistakes committed by the pharmacist" *community pharmacist*.

" Yes, the ministry is conducting periodic effective monitoring visits and they are supposed to increase the number of such visits and to carry out an individual inspection to control the violators." *Senior community pharmacist*

For more investigation, the researcher asked patients about the pharmacies' environment, to which extent it is considered safe and if they were ever subjected to any medication error. Most patients stated that errors are very few and that pharmacies are a safe environment for treatment. Even in case of an error, the pharmacist will treat them and communicate directly with the patient until the problem ends.

"The pharmacist has not made a mistake".

"Yes, it is a safe environment, and pharmacies have to abide by what they are allowed to do by law to prevent mistakes". *50 Female hypertention and diabetic patient*

"Yes, safe environment, but not for medical examination or to give medication without referring to the specialist doctor". *55 Female heart disease patient*

Also, we asked the patients about the mechanism used by pharmacists in the event of an error, and if their responses is appropriate and enough. We found that there was a difference in their perspectives, some said pharmacists respond quickly and address the error immediately, and others said they evade and try to find excuses

"They fix the mistake immediately so that they do not lose a patient or a customer. They treat the problem and stand with the patient as necessary". *40 Male hypertention patient*

"Not everyone, some of their responses are sufficient and convincing and some of them deal badly and not enough". *50 Male hypertention patient*

"Some take responsibility; others try to cover up what he did". *23 Female pregnant bleeding patient*

4.3 Socio-demographic characteristics of community pharmacists and their relation with the safety of current mediation practices.

Table (4.13): Differences in perception about medication safety practice by gender

No.	Field	Means		T-Value	Sig.
		Male	Female		
1.	Patient Information	2.81	2.81	0.000	1.000
2.	Drug Information	3.37	3.27	1.053	0.293
3.	Communication of Drug Orders and Other Drug Information	3.08	3.14	0.284	0.777
4.	Drug Labeling, Packaging, And Nomenclature	2.51	2.99	3.785*	0.000
5.	Drug Standardization, Storage, and Distribution	3.48	3.73	2.579*	0.010
6.	Use of Devices and Medical Supplies	3.47	3.58	0.844	0.400
7.	Environmental Factors, Workflow, and Staffing Patterns	3.38	3.49	1.479	0.140
8.	Staff Competency and Education	3.59	3.50	0.963	0.337
9.	Patient Education	3.00	3.17	2.112*	0.036
10.	Quality Processes and Risk Management	2.96	2.94	0.201	0.841
	All items of the questionnaire	3.17	3.25	1.057	0.292

Gender

An independent T-test was used to compare the meansof medication safety dimensions and their overall score in reference to the gender (Table 4.3.1). The findings show statistically significant differences between male and female regarding the Drug Labeling, Packaging, And Nomenclature (P = 0.000) with higher mean (2.99) for female than male (2.51), with the Drug Standardization, Storage, and Distribution (p=0.01) with higher mean score (3.73) for female than male (3.48), and with Patient Education (P = 0.03) with higher mean score (3.17) for female than male (3.0). Meanwhile, there were no statistically significant differences between males and females regarding the other dimensions. The researcher said better performance with female pharmacists could be explained by the view that female pharmacists might have better knowledge about pharmaceutical care with a positive attitude than their counterparts. Also, the nature of females which are focus and ask about the smallest details, this is reflected in their performance inside the pharmacy from a careful arrangement of medicines and shelves, dealing with patients and giving them all the necessary information more than male pharmacists. However, Muqat, 2014 in his study found insignificant association between gender of public pharmacists and counseling practices.

Table (4.14): Differences in perception about the medication safety practice by Age

No.	Field	Means			T-Value	Sig.
		Less than 30 years	30 – less than 40 years	40 years and more		
1.	Patient Information	2.86	2.82	2.69	1.127	0.326
2.	Drug Information	3.36	3.34	3.28	0.207	0.813
3.	Communication of Drug Orders and Other Drug Information	3.12	3.07	3.15	0.042	0.959
4.	Drug Labeling, Packaging, And Nomenclature	2.75	2.77	2.44	2.111	0.123
5.	Drug Standardization, Storage, and Distribution	3.55	3.70	3.43	2.054	0.130
6.	Use of Devices and Medical Supplies	3.71	3.34	3.30	4.718*	0.010
7.	Environmental Factors, Workflow, and Staffing Patterns	3.42	3.52	3.28	2.858	0.059
8.	Staff Competency and Education	3.48	3.74	3.47	3.861*	0.022
9.	Patient Education	3.09	3.08	2.99	0.531	0.589
10.	Quality Processes and Risk Management	2.98	2.93	2.91	0.236	0.790
	All items of the questionnaire	3.21	3.26	3.10	1.411	0.246

* The mean difference is significant a 0.05 level

Age

Table (4.3.2) One-way ANOVA test was used to examine the differences in perception about the medication safety practice by age. The results show a statistically insignificant difference between age groups regarding most of the medication safety practices ($p > 0.05$) except for the domains “Use of Devices and Staff Competency and Education”. Despite it was expected that younger age might be with less score of performance but it appears that the age has no effect on the adherence to medication safety practices. However, such finding is similar to the result of Muqat 2014 how reported statistically insignificant differences between age groups and drug canceling.

Table (4.15): Differences in perception about medication safety practice by governorate.

No.	Field	Means					T-Value	Sig.
		North	Gaza	Middle-Zone	Khan-younis	Rafah		
1.	Patient Information	3.01	2.63	2.49	3.10	2.89	7.293*	0.000
2.	Drug Information	3.34	3.33	3.06	3.67	3.19	3.975*	0.004
3.	Communication of Drug Orders and Other Drug Information	3.27	2.90	2.56	3.69	3.20	3.171*	0.014
4.	Drug Labeling, Packaging, And Nomenclature	3.23	2.12	1.80	3.51	3.07	46.181*	0.000
5.	Drug Standardization, Storage, and Distribution	3.81	3.30	3.10	4.01	3.78	14.516*	0.000
6.	Use of Devices	3.79	3.30	2.84	4.08	3.55	11.100*	0.000
7.	Environmental Factors, Workflow, and Staffing Patterns	3.53	3.29	3.11	3.71	3.54	7.942*	0.000
8.	Staff Competency and Education	3.46	3.59	3.28	3.91	3.49	4.818*	0.001
9.	Patient Education	3.10	2.85	2.73	3.58	3.30	15.496*	0.000
10.	Quality Processes and Risk Management	2.83	2.92	2.62	3.45	3.05	9.961*	0.000
	All items of the questionnaire	3.28	3.06	2.82	3.63	3.32	16.266*	0.000

Governorate

One-way ANOVA test was used to examine the differences in perception about the medication safety practice by governorate(table 4.3.3). The findings show statistically significant differences between the five governorates (North, Gaza, Middle-Zone, Khanyonis, and Rafah) regarding all study dimensions. The P-value (Sig.) is smaller than the level of significance $\alpha = 0.05$ for each field, then there is a significant difference among the respondents toward each field due to governorate. It can be said that governorate has an effect on each field. As the table shows Khanyonis has the highest mean score (3.63) in comparison to other governorates while Middle-Zone took the lowest one (2.82).

Table (4.16): Differences in perception about the medication safety practice by salary

No.	Field	Means			T-Value	Sig.
		Less than 1000 NIS	1000- Less than 1500 NIS	1500 and more		
1.	Patient Information	2.79	2.96	2.66	1.867	0.158
2.	Drug Information	3.13	3.53	3.40	4.584*	0.012
3.	Communication of Drug Orders and Other Drug Information	3.20	3.00	3.15	0.720	0.488
4.	Drug Labeling, Packaging, and Nomenclature	2.65	2.92	2.94	1.474	0.232
5.	Drug Standardization, Storage, and Distribution	3.55	3.75	3.66	1.109	0.332
6.	Use of Devices and Medical Supplies	3.51	3.82	3.59	1.629	0.199
7.	Environmental Factors Workflow, and Staffing Patterns,	3.41	3.45	3.55	0.440	0.645
8.	Staff Competency and Education	3.46	3.64	3.42	1.149	0.319
9.	Patient Education and	3.18	3.14	2.95	1.132	0.325
10.	Quality Processes and Risk Management	2.95	2.93	2.97	0.022	0.979
	All items of the questionnaire	3.19	3.28	3.20	0.447	0.640

* The mean difference is significant a 0.05 level

Salary

Table (4.16) One-way ANOVA test was used to examine the differences in perception about the medication safety practice by salary. The results show a statistically insignificant difference between the salary levels regarding most of the medication safety practices ($p > 0.05$) except for drug information. It seems that the motivation of community pharmacists towards the better implementation of medication safety practices might be influenced by other factors rather than the salary itself. Monthly income, work experience, and collaboration with managers and colleagues werefound to increase pharmacists' satisfaction with job (Mengesha & Tigabu, 2014). However, a relatively recent study found that pharmacists 'satisfaction with salary and promotion was significantly affected their dispensing precaution behavior (Urbonas & Kubilienė & Urbonienė, 2015).

The researcher said that the deterioration of the economic situation in the Gaza Strip since 2007 until now, especially at the community pharmacies, greatly affected the performance of pharmacists, as that reflects on speculation in the price of medications and lack of commitment to the instructions and pricing of the Pharmacy Syndicate, and also some pharmacists resorting to the treatment of many diseases that are needed to prescribed by a doctor and many violations were caused to increase the pharmacist's monthly income.

Table(4.17): Differences in perception about the medication safety practice by Qualification

No.	Field	Means				T-Value	Sig.
		Diploma	Bachelor	Master	PhD		
1.	Patient Information	3.07	2.76	2.70	3.00	3.053*	0.029
2.	Drug Information	3.37	3.28	3.51	3.80	1.150	0.329
3.	Communication of Drug Orders and Other Drug Information	3.20	3.09	3.08	3.00	0.068	0.977
4.	Drug Labeling, Packaging, And Nomenclature	2.92	2.67	2.45	3.00	1.630	0.183
5.	Drug Standardization, Storage, and Distribution	3.71	3.53	3.56	3.17	0.843	0.471
6.	Use of Devices and Medical Supplies	3.80	3.43	3.43	4.50	2.064	0.106
7.	Environmental Factors, Workflow, and Staffing Patterns	3.48	3.42	3.35	3.75	0.497	0.684
8.	Staff Competency and Education	3.68	3.50	3.64	3.77	1.056	0.368
9.	Patient Education	3.23	3.05	2.91	3.28	1.776	0.152
10.	Quality Processes and Risk Management	2.99	2.94	2.96	3.42	0.230	0.876
	All items of the questionnaire	3.34	3.17	3.16	3.45	1.387	0.247

* The mean difference is significant a 0.05 level

Qualification

Table (4.3.5) One-way ANOVA test was used to examine the differences in perception about the medication safety practice by qualifications. The results showed a statistically insignificant difference between the qualification degree regarding most of the medication safety practices ($p>0.05$) except for patient information. Although the test showed generally that the highest educated individuals have highe rmeans, the differences did not reach statistically significant levels between the levels of qualification regarding the implementation of medication safety practices ($p >0.05$). Similarly, Al-Tameemi & Sarriff, (2019) found statistically insignificant differences between the qualification degree and the medication therapy management among Malaysian pharmacists. The researcher said in an opinion that contradicts the results, the pharmacist's performance is greatly affected based on the academic degree that appears in the way he/she deals with patients or deals with drugs and describes them correctly. I think the results here are different because the majority of pharmacists are bachelor holders.

Table (4.18): Differences in perception about the medication safety practice by specialization

No.	Field	Means			T-Value	Sig.
		General Pharmacy	Clinical Pharmacy	Other		
1.	Patient Information	2.79	3.03	2.87	1.467	0.233
2.	Drug Information	3.27	3.75	3.70	5.675*	0.004
3.	Communication of Drug Orders and Other Drug Information	3.05	3.54	3.33	1.073	0.343
4.	Drug Labeling, Packaging, And Nomenclature	2.58	3.53	2.90	11.568*	0.000
5.	Drug Standardization, Storage, and Distribution	3.50	4.10	3.78	7.777*	0.001
6.	Use of Devices and Medical Supplies	3.44	4.01	3.96	4.347*	0.014
7.	Environmental Factors, Workflow, and Staffing Patterns	3.37	3.75	3.78	6.211*	0.002
8.	Staff Competency and Education	3.53	3.65	4.17	2.617	0.075
9.	Patient Education	3.03	3.30	3.26	2.274	0.105
10.	Quality Processes and Risk Management	2.91	3.16	3.54	3.860*	0.022
	All items of the questionnaire	3.15	3.53	3.56	7.185*	0.001

* The mean difference is significant a 0.05 level

Specialization.

Table (4.18) One-way ANOVA test was used to examine the differences in perception about the medication safety practice by specialization. The results showed a statistically significant difference between the different specialties regarding most of the medication safety practices ($p < 0.05$) except for patient information, communication of drug orders and other drug information, staff competency and education, and patient education. Despite the analysis showed a statistically significant differences between the different specialties regarding the overall mean ($p=0.001$), with higher mean (3.56) for other "pharmacist with diploma" than the mean of general pharmacist (3.15) or clinical pharmacists (3.53), the pharmacists with clinical pharmacy specialty scored higher mean than the other "pharmacist with diploma" regarding the domains drug information, drug labeling, packaging, and nomenclature, drug standardization, storage, and distribution, and use of devices. Such a finding could be attributed to the higher skills of this group.

Table (4.19): Differences in perception about the medication safety practice by Years of Experiences

No.	Field	Means					T-Value	Sig.
		Less than 5 years	5-less than 10 years	10-less than 15 years	15- less than 20 years	20 years and more		
1.	Patient Information	2.87	2.84	2.87	2.54	2.70	1.398	0.235
2.	Drug Information	3.29	3.48	3.34	3.08	3.41	1.422	0.227
3.	Communication of Drug Orders and Other Drug Information	3.05	3.20	3.15	3.28	2.93	0.239	0.916
4.	Drug Labeling, Packaging, And Nomenclature	2.71	3.01	2.48	2.28	2.54	3.160*	0.015
5.	Drug Standardization, Storage, and Distribution	3.50	3.82	3.64	3.34	3.46	2.598*	0.037
6.	Use of Devices and Medical Supplies	3.62	3.71	3.26	3.18	3.28	2.403*	0.050
7.	Environmental Factors, Workflow, and Staffing Patterns	3.37	3.64	3.47	3.03	3.47	5.586*	0.000
8.	Staff Competency and Education	3.49	3.65	3.82	3.17	3.65	3.696*	0.006
9.	Patient Education	3.12	3.08	3.11	2.74	3.07	1.833	0.123
10.	Quality Processes and Risk Management	2.99	2.98	2.95	2.60	3.05	1.948	0.103
	All items of the questionnaire	3.20	3.33	3.24	2.87	3.20	3.028*	0.018

* The mean difference is significant a 0.05 level

Years of experience.

Table (4.19) One-way ANOVA test was used to examine the differences in perception about the medication safety practice by years of experience. The results showed a statistically significant difference between the years of experience and the overall mean regarding the implementation of medication safety practices ($p < 0.05$) with a higher mean score for the age group (5-10) years old than other groups. The analysis also showed a significantly higher mean score of the same age group regarding the domains drug labeling, packaging, and nomenclature, drug standardization, storage, and distribution, use of devices, and environmental factors, workflow, and staffing patterns. Such a striking result could be explained this age group might combine the theoretical knowledge of the younger age and the long experience of the older age. However, this result was incongruent with the finding revealed the insignificant effect of work experience on the perception of Ethiopian community pharmacists towards dispensing errors (Asmelashe & Binega, 2017). The researcher said that years of experience are very affected on the performance of

the pharmacist, but I noticed during my work in the field of pharmacy that pharmacists with an average age of 10-20 years of experience were their most efficient performance as the pharmacist is more experienced than those who are less than 10 years experience and more generous for who are more than 20 years working experience.

Table (4.20): Differences in perception about the drug information practice by salary

Salary	Less than 1000 NIS	1000- Less than 1500 NIS	1500 and more
Less than 1000 NIS			
1000- Less than 1500 NIS	-.0395*		
1500 and more	-0.270	0.125	

* The mean difference is significant a 0.05 level

Post Hoc test was used to examine the relationship between drug information and salary. From the results shown in table (4.20), it was found that there were differences between the averages of the answers of those with a salary less than 1000 NIS and those with a salary of 1000- Less than 1500 NIS, in favor of those with a salary of 1000- Less than 1500 NIS, while it was found that there were no differences between the rest of the other categories.

Table (4.21): Differences in perception about the patient information practice by qualification

Qualification	Diploma	Bachelor	Master	PhD
Diploma				
Bachelor	0.31			
Master	-0.37*	0.06		
PhD	0.07	-0.24	-0.30	

* The mean difference is significant a 0.05 level

Post Hoc test was used to examine the relationship between patient information and qualification. From the results shown in table (4.21), it was found that there are differences between the averages of the answers of those who have a diploma and whose academic qualification is Master, in favor of those whose educational qualification is Master, while it was found that there are no differences between the rest of the other categories.

Table (4.22): Differences in perception about the medication safety practice by Years of experience

Years of experience	Less than 5 years	5-less than 10 years	10-less than 15 years	15- less than 20 years	20 years and more
Less than 5 years					
5-less than 10 years	-0.127				
10-less than 15 years	-0.039	0.089			
15- less than 20 years	0.327	0.454*	0.366		
20 years and more	-0.002	0.125	0.037	-0.329	

* The mean difference is significant a 0.05 level

Post Hoc test was used to examine the differences in perception about medication safety practice and years of experience. From the results shown in table (4.22), it was found that there are differences between the averages of the answers of those whose years of experience range from 5 to less than 10 years and those whose years of experience range from 15 to less than 20 years, for the benefit of those whose years of experience range from 5 to less than 10 years While it was found that there were no differences between the other groups.

Chapter Five

Conclusion and Recommendation

5.1 Conclusion

The study aimed at assessing the medication safety practices within the community pharmacies (CP) in Gaza Strip. The study revealed many findings that could be used in improving the situation inside the CP targeting the pharmacists, pharmacies, and patients. It also can help the decision-makers and health care planners to develop effective strategies for better medication safety practices.

This research is highlighting the safety practices in the community pharmacies in the Gaza Strip, where this is the first local study that addresses this topic. It dealt with 10 dimensions through which the strengths and weaknesses of pharmacies in the Gaza Strip were identified.

The study utilized a mixed methodology as follows:

A- The quantitative, cross-sectional where the researcher targeted the eligible pharmacists at community pharmacies through Interview questionnaires. The population was 617 pharmacies and the study sample was 270 pharmacists, the number of respondents was 258 (95.5%).

B- The qualitative, key informant interviews were used as data collection tools where 7 senior pharmacists who own large pharmacies were targeted through a semi-structural questionnaire, then 5 patients were interviewed to highlight the patient perspective of drug safety practices within community pharmacies

The overall results of the study indicated that the pharmacist's commitment to the application of drug safety practices was partial to some patients, some prescriptions or some drugs, or from some pharmacists. The mean of the dimensions ranged between (2.69) and (3.57) and the overall weighted mean for the 10 domains was (3.20). Both the quantitative and qualitative components of the research showed that the best performance of the drug safety was seen in the Drug Standardization, Storage, and Distribution domain, which shows the presence of an effective process to get urgently needed medications in the pharmacies. Refrigerated medications are stored in an organized manner and the pharmacies have adequate space to safely organize and separate the storage of medications

and drug supplies. Appropriately segregated and secured areas of the pharmacies have been established to keep expired medications till they are properly disposed. All hazardous chemicals and other non-drug substances are clearly labeled and stored.

The study shows that the environment of the pharmacies is enhancing a safe medication handling practice by pharmacists as concluded from the higher score of the field of drug standardization, storage, and distribution, environmental factors and use of devices, however barcode should be introduced in pharmacies to promote avoiding medications errors. The analysis showed that the patient information is the weakest area that has to be concentrated upon. This domain showed that patient personal information and history of allergies are not entered into the pharmacy computer system, the same is applied on the medication list, including prescription and over-the-counter (OTC) medications, immunizations, list of vitamins, herbal products, and dietary supplements, are neither obtained nor entered into the pharmacy computer system. Alternative medicines currently used by the patient are neither obtained nor entered into the pharmacy computer system. The pharmacies do not take steps to obtain patient weight when dispensing weight-based drugs, such as those used in treatment of pediatrics. Recent clinical data such as blood glucose levels, liver enzymes, and renal function, blood pressure, and cholesterol levels are not available to pharmacists to support clinical drug monitoring.

Khanyunis scored the highest mean in applying the drug safety measures in the community pharmacies, while the least score was in the middle zone. There is no statistically significant difference between both genders regarding the domains of medication safety practices except for Drug Labeling, Packaging, and Nomenclature, Drug Standardization, Storage, and Distribution, and Patient Education where the females obtained higher scores in implementation of these fields. The participants were divided according to their age to three categories less than 30 , between 30- 40 and above 40. Age shows no significant statistical effect on the drug safety practice among participants except for the domains of Use of Devices, Medical Supplies, Staff Competency and Education where the middle age group showed higher implementation of these fields. The participants were divided into three categories according to their salaries. Less than 1000 NIS, between 1000 and 1500, and above 1500 NIS. The results show no statistically significant difference except for the domain Drug Information where the higher salary group showed a higher implementation of this field. The various academic degrees of pharmacists showed no effect of drug safety handling within the community pharmacies except for the domain Patient Information

where the less educated group showed higher implementation of this field. The study revealed that patients are encouraged to ask questions about the medications, and are offered an opportunity for counseling about how to use, store the medication, possible side effects, and interactions with other medications. Pharmacists communicate effectively with patients who are visually or hearing impaired, and the patients are instructed to call the pharmacy for any concerns or questions about their medication. However, the participants informed that pharmacists are not allowed to spend enough time in patient education activities. No confidential areas in the pharmacies for patient counseling and medication therapy management.

The qualitative interviews showed that:

Pharmacists interviews

- The pharmacists informed that care provided in pharmacies to the patients ranges between good to very good and this care covers the information about treatment dosage and dealing with side effects.
- The majority of pharmacists believe that there is nothing to worry about safety practices in pharmacies and considered those practices as risk-free, while another pharmacist mentioned that there are safety procedures followed by everyone when giving an injection.
- Pharmacists informed that medication errors are very minimal; if they occur, they are always under control but never documented.
- Pharmacists should be urged to document any medication error to avoid the recurrence of the same error in the future and this necessitates the creation of an error notification system to the entire pharmacists in any pharmacy.

Patients interview

- The patients confirmed that pharmacists don't register their personal information, clinical data or laboratory results.
- The patients also seek advice from doctors rather than consulting community pharmacists whose advice is only required when patients seek OTC medications.
- Pharmacists agreed about the insufficient registration of patient information and this necessitates urging all pharmacists to start asking about patients' clinical data, illness history, and laboratory analysis results.

- The patients agreed that some pharmacists offer medications to them without consulting the doctors.
- This is so critical point as a pharmacist must abide by the doctors' prescriptions without any interventions that may put live of patients at risk.
- In the future, there is a need to start registering patients' personal data and his drug history in a computer system to obtain full data of patients whenever needed.
- Pharmacists should spend more time in patient education and whenever possible it is preferred to have an area for counseling to occur.
- Drug labeling and barcode use will help mitigating medication errors.

5.2 Recommendations

The last objective of this study was to highlight the recommendations that might enable decision-makers to plan and set national strategies for promoting safe medication practices and preventing medication errors.

1. Using a computer system for entering patient personal information, clinical history, drug history and any history of drug allergy and clinical laboratory tests.
2. Documentation of errors that happen at the community pharmacies and disseminating those errors to all pharmacists working in the pharmacy to avoid getting them repeated in the future..
3. Creating a mechanism to help the pharmacists to differentiate between drugs with similar names and packaging.
4. The label put on medication package is enhanced to enable patients to communicate with their community pharmacist and to help pharmacists to recognize medications through bar codes to avoid transcription errors.
5. Encouraging barcode scanning to verify drug names and so enhanced patient safety by reducing the overall rate of ADEs and the rate of transcription errors.
6. Improving environmental factors by using the lighted magnifying lens to facilitatereading prescriptions.
7. Doing physical examination to the pharmacy staff including vision and hearing screenings every year.
8. Conducting pharmacy staff training courses and educational programs about human factors and principles of reducing errors.

9. Enabling pharmacists to spend enough time in patient education within pharmacies.
10. Allocating special areas in the pharmacies for the patient to be used for counseling and guidance.
11. Encouraging pharmacies to be involved in screening to promote early detection of disease as hypertension for those above 40 years.
12. Pharmacy Leadership and directors have to receive formal education or training to avoid errors and how to deal with it.
13. Enhancing patient safety through any quality systems as Continuous Quality Improvement (CQI) program.

5.3 Future research studies.

The researcher suggests the following topics:

- Knowledge and attitude of community pharmacists towards the risk assessment and error prevention guidelines.
- Assessing the influence of organizational culture on medication safety practices.
- Effect of using the risk assessment tool in minimizing the medication errors within the community pharmacies: randomized control trial.
- Evaluation of the types and frequencies of medication errors in the community pharmacies and its effects on patient life threating.
- A qualitative study on outpatient's perspectives and knowledge towards the measures used community pharmacies to enhance patient safety.

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Annexes

Annex 1: Gaza Strip Map

Annex 2: Helsinki Committee Ethical Approval

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee

For Ethical Approval

Date: 2019/06/17 **Number:** PHRC/HC/581/19

Name: Reem Bashir Khamis Ghannam الاسم:

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Assessing drug dispensing safety practices at community pharmacies in the Gaza Strip

The committee has decided to approve the above mentioned research. *Approval number PHRC/HC/581/19 in its meeting on 2019/06/17*

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Dr. Yehia Abed

Signature

Member **Member**

Chairman

Dr. Asaad 17/6/2019

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

E-Mail:pal.phrc@gmail.com

Annex 3: Consent Form

استبانة الدراسة

أخي المشارك المحترم، أختي المشاركة المحترمة،

السلام عليكم ورحمة الله وبركاته. .

تهدف هذه الدراسة إلى تحديد العوامل التي تعيق تطبيق ممارسات السلامة الدوائية وسلامة المرضى في صيدليات المجتمع في قطاع غزة، وتأتي هذه الدراسة استكمالاً لمتطلبات الحصول على درجة الماجستير في الإدارة الصحية بجامعة القدس أبو ديس– كلية الصحة العامة.

أُقدِّر لكم كثيراً مشاركتكم بتعبئة هذا الاستبيان علماً بان الوقت المتوقع للانتهاء من تعبئتها هو30–40 دقيقة. المشاركة في هذه الدراسة هي طوعية ولديكم الحق في الانسحاب في أي وقت. كما أن إجابتكم ستُعامل بسرية تامة ولا تستخدم إلا لأغراض البحث العلمي فقط. كتابة اسمك اختيارياً..

لذا أرجو تعبئة الاستبيان كاملا بدقة وواقعية وبما هو فعلا موجود ومطبقفي صيدليتكم

شكراً لحسن تعاونكم

توقيع المشارك

الباحثة:

ريم بشير غنام

0567933601

Annex 4: The Study Questionnaire

No.	Characters	Answer
A	**Work related information**	
1	Pharmacy name	
2	Governorate	
3	Phone No.	
B	**Socio-demographic Characteristics**	
4	Gender	□Male □ Female
5	Age	
6	Salary	
7	Location	
C	**Work related Characteristics**	
8	Qualification	□Diploma □Bachelor □Master □PhD □Other, Specify…….
9	Specialization	□General Pharmacy □Pharm D □Other, Specify……
10	Years of Experiences	
11	Working Hours	
12	Pharmacy ownership	□Yes □No
13	Specific Training on Pharmaceutical Care	□Yes □No

A: No activity to implement

B: Discussed, but not implemented

C : Partially implemented for some or all patients, prescriptions, drugs, or staff

D: Fully implemented for some patients, prescriptions, drugs, or staff

E :Fully implemented for all patients, prescriptions, drugs, or staff

I. Patient Information

No.	**Question**	A	B	C	D	E
1.	Complete information about the patient is obtained and then entered into the pharmacy computer system before providing the patient's prescription, and also updated at each new visit					
2.	The pharmacy uses the appropriate language for patients to communicate, raise awareness and healthy culture Taking into account any factors that may have an impact on the success of the treatment, and also any auditory and/or visual diseases that may affect the process of drug therapy					
3.	After obtaining the current list of drugs, they are entered into the computer system of the pharmacy, including over-the-counter medicines (specifying the dosage, the amount of dispensing and the pharmaceutical dosage form) and then updated when purchasing any new drug class					
4.	The list of vitamins, herbal and supplements, or any type of drugs currently used by the patient, is entered into the computer system of the pharmacy and updated at each visit.					
5.	The pharmacy takes steps to obtain patient weight when dispensing weight- based drugs, such as those used in chemotherapy treatment or pediatrics.					
6.	When receiving a prescription from the patient through the phone, they are asked about their date of birth, weight, whether they have allergies, or have a chronic illness, what is the					

	medical problem they face and what is their diagnosis.					
7.	The pharmacist informs about all recent laboratory data of the patient to regulate and monitor the patient's treatment plan by setting a dosage regimen and schedules.					
8.	Pharmacists check any important clinical data about the patient to ensure that the treatment are appropriate to the patient's health condition (such as the sensitivity of the patient to certain ingredients, , tolerance to narcotic substances, and the results of laboratory tests).					
9.	The pharmacy computer system contains a warning alert when dispensing a drug classified as (narcotic or addiction drugs) to obtain or verify important information about the patient					
10.	Pharmacists look to the necessity for change the dose based on the patient's health condition like the patients suffer from renal difficulties					

II. Drug Information

11.	Online drug information references are easily accessible in all dispensing areas and include user-friendly, up-to-date information on prescription, OTC, herbal, and alternative medicines.					
12.	The pharmacist checks the medical condition of the patient if is appropriate with the prescribed medication before he dispenses it.					
13.	The pharmacy computer system alerts staff when safety screening does not occur due to data not being available.					
14.	When adding new products to the pharmacy store, the probability of an error in this drug is assessed (for example, drugs that are similar in sound, packaging or way of using).					
15.	After the drug appears in the markets for a period of time, staff in the pharmacy are instructed to monitor whether errors have been reported in the drug industry or any side effects and if safety measures are strengthened in case of complications with patients, as a result of using this product.					

III. Communication of Drug Orders and Other Drug Information

16.	There is a law that enables a pharmacist to change any unusual doses or uses of medicines and cancel them if they are incorrect					
17.	Pharmacists have a written protocol followed, to resolve differences between the doctor and pharmacist on patient safety when taking the prescription					

IV. Drug Labeling, Packaging, And Nomenclature

18.	Labels on shelves, packaging, and drug storage boxes for that have complex names					
19.	Medications with a similar label and packaging are separated by the staff because they are a problem and therefore are not stored next to each other so that there is no error while preparing the prescription					
20.	Prescription labels are easy to read on patients, written in clear handwriting, sufficient space, and appropriate instructions for patient self-management.					
21.	The pharmacy uses a suitable language for patients who need it (those who do not speak Arabic) when applying the label to the drug					
22.	A description of the product (e.g., shape, imprints, color, scent) appears .on the pharmacy label					

V. Drug Standardization, Storage, and Distribution

23.	There is a mechanism to obtain the necessary medicines in the pharmacy very easily and quickly by communicating with representatives of pharmaceutical companies.					
24.	There is a mechanism to determine the reasons why the patient does not take the medicine after the pharmacist prepare of the prescription.					
25.	Electronic systems are used to record temperatures all the time and give warning of abnormalities in cooling system that the drug are storing in it and improved procedures for how to deal with any system problem					
26.	Refrigerators of sufficient size, are used to store drugs that need to be .cooled so as not to damage					
27.	The pharmacy has enough space to organize and separate medicines safely, everywhere in the store, refrigerator or shelves					
28.	When storing shelves, the staff					

	ensures that labels do not remove any essential information about medicines on its label					
29.	There is a separate and fully enclosed area in the pharmacy to place the returned, expired or corrupted drugs until they are disposed of.					
30.	Active pharmaceutical ingredients and chemicals used in pharmaceutical formulations are evaluated at least every three months, and unused components are regularly disposed of					
31.	Active pharmaceutical ingredients and chemicals used in pharmaceutical formulation are obviously marked with their contents, the date of opening the product, and the expiration date of the manufacturer. (If there is no expiration date, the date is set for one year from the date the product was first opened.)					
32.	The pharmacy stores chemicals used in compounding in a separate area according to current USP <795> and <797> standards.					
33.	All caustic or hazardous chemicals and other toxic substances are visibly marked and stored on separate shelves from all other products in the pharmacy warehouse.					
34.	Pharmacy prescription bottles and labels are not used to re-package non-drug substances (e.g., liquid chemicals, cleaning compounds, insecticides, soaps).					

VI. Use of Devices and Medical Supplies

35.	All pharmacists follow standards for hand washing, wearing gloves, and equipment disposal to minimize the risks of disease transmission during the administration of vaccines.					
36.	Employees at the pharmacy wash their hand in a suitable manner before preparing any product.					
37.	Barcode scanning or a checklist/sign-off sheet is used to verify the drug name, strength, NDC, lot number, and expiration date of each stock bottle before the contents are added to an automated dispensing system (e.g., robotics).					
38.	a machine-readable code is used to .check the dispense of the drug					

VII. Environmental Factors, Workflow, and Staffing Patterns

39.	The lighting is appropriate and convenient for reading labels and other important information about the medicine and patient clearly.					
40.	A lighted enlarge lens is located at the settled place and is used to make labels and prescriptions easier to read					
41.	The heat and moisture at the pharmacy comply with the requirements for storing medication.					
42.	The region, where orders are checked, are isolated and free from deviations and interruptions					
43.	Pharmacy tries not using high storage areas that make the staff climb for taking products.					
44.	Areas, which are used for the preparation of prescriptions, are clean, tidy and free from chaos..					
45.	When considering adding a new drug or services to the pharmacy, all pharmacy workers are well connected and discussed, and appropriate consideration of resources is addressed before implementation .					

46.	When prescriptions are set up, pharmacy employees work with one medicinal product at a time and place the mark on the patient's medication before working on the next prescription.					
47.	All drug orders (whether a paper copy or an image) are set at the eye level while the drug is being entered.					
48.	An annual medical examination is carried out for pharmacy employees, the most important of which is hearing and vision examination					
49.	The pharmacist does not work for more than 12 sequential hours					
50.	The pharmacist has the right to take at least 8 hours of rest between shifts					
51.	Pharmacy staff are allowed to take a break of 15 - 30 minutes during daily working hours even when there is pressure at work.					
52.	There is a supportive plan when the number of staff is reduced because of someone taking a vacation for example or pressure at work inside the pharmacy.					
53.	Pharmacy recruitment standards are sufficient to provide safe care services to patients at all times, including during increased work frequency (eg, beginning of the month, immediately before or immediately after the holidays)					
54.	When there are temporary employees (such as training or unemployment), they are properly directed and trained in the private pharmacy environment in which they will work.					
55.	The prescription rate is periodically checked to see the appropriate number of employees, even during peak times when the demand is higher.					

VIII. Staff Competency and Education

56.	All new employees are subject to a competency assessment in the basics before start working independently.					
57.	All pharmacy staff, including float and agency staff, are educated about the specific pharmacy equipment available at each site (e.g., barcode scanner, automated dispensing equipment) and inform the staff with all guidelines of equipment then confirm before give them the approval to use it.					
58.	All pharmacists, including float and agency staff, are educated about the specific patient self-administration and monitoring devices available at each site (e.g., glucose monitors, inhalation devices, pen devices, home diagnostic tests), and competency is confirmed before staff are allowed to educate a patient about the instrument.					
59.	Reduce the tasks assigned to them at work to achieve training objectives safely and inclusivity of those who train new employees (trainees),					
60.	Pharmacy staff is educated about strategies to reduce the happening of errors.					
61.	As part of the overall performance appraisal process, the pharmacy manager evaluates the experience of each pharmacy employee to ensure the applying of safety practices					
62.	Pharmacy staff is taught about new medicines added to the pharmacy stock, including OTC medicines, and all related information and warnings associated with them must be understood before dispensing medicines.					
63.	Pharmacists regularly discuss medication errors and how to avoid or reduce them					
64.	The management of Pharmacy and its Director take into account humanitarian factors and the principles of error reduction (for					

	example, staff standardization, use of limitations and emphasis on important functions) during staff orientation					
65.	Key management and pharmacists are trained in the basics and applications of Continuous Quality Improvement (CQI) in relation to the pharmacy work system					
66.	At least once a year, pharmacy staff must complete a training course about reducing errors, especially when using high-alert medication, narrow therapeutic index drugs, and other drug or devices that have a high potential for errors					
67.	When errors occur, all pharmacy staff focuses on learning to prevent the occurrence and recurrence of such an error. And not just focus on how to cure it					
68.	Pharmacy staff have the support and time to attend conferences within and outside country related to new medicines and / or important drug safety issues					

IX. Patient Education

69.	Pharmacists are allotted time by management for patient education activities.					
70.	Confidential areas for patient counseling and medication therapy management (MTM) services are given without any obstruction and confusion					
71.	Patients are urged to ask questions about their medications and all related instruction and risks.					
72.	Patients are offered an opportunity for counseling. The offer includes a clear explanation of what counseling consists of (e.g., how to take and store the medication, possible side effects, interactions with other medications) and how it would benefit them.					

73.	Criteria have been established for selected HIGH-ALERT MEDICATIONS or high-risk patient populations to trigger required medication counseling, and a system is in place to alert the pharmacist of this need when the patient comes in to pick up the prescription (e.g., bold alert on the bag, pharmacy computer system alert).					
74.	The pharmacist discusses important safety concerns (e.g., those found in Medication Guides, ISMP High-Alert Medication Safety Leaflets for consumers) during patient counseling with the patient/caregiver.					
75.	Pharmacists answer all questions and worries of the patient (such as financial burden, inability to take, dosage form, side effects) before dispensing the drug					
76.	Social culture and shame is one of the obstacles that prevent the patient from asking about his illness and prevent the process of counseling that affects the effectiveness of treatment					
77.	The pharmacy appropriately communicate with patients with sensory problems such as poor vision or hearing					
78.	The pharmacy instructs the patient to call it for any questions about the drug treatment.					
79.	Patients are provided with a telephone number at which a pharmacist can be reached 24 hours a day .					
80.	Patients are educated on the good use and maintain any devices purchased from the pharmacy.					
81.	The pharmacy gets free samples of the instrument from the companies to educate the patients so that they can use them in the best way.					
82.	Patients are informed with all important and recent information about the medications they are taking, whether writing the information manually or telling them orally.					

83.	The pharmacy provides a comprehensive appointment-based medication synchronization (ABMS) program that includes a complete medication review and monthly contact from a pharmacist to the patient, to discuss their medication therapy and any changes before dispensing to optimize medication use.					
84.	The pharmacy monitors certain chronic diseases such as asthma, CVDs....etc					
85.	Last year, the pharmacy provided a similar service as the primary health care clinics by making early checking to the detection of diseases					
86.	The pharmacy improves and implements at least one educational program at the year or any public health-related activity aimed to improve the safe use of medication..					

X. Quality Processes and Risk Management

87.	In the pharmacy they discuss medication errors without fear and complete freedom				
88.	2-Pharmacists are trained to avoid medication errors				
89.	The patient is frankly informed about the occurrence of medication errors if they occur				
90.	Pharmacy managers have been trained in the safety of medicines				
91.	No action shall be taken against a person who makes a drug mistake				
92.	The pharmacy administration receives training that qualifies it to evaluate the pharmacological work in the pharmacy and identify the risks that lead to the occurrence of drug errors.				
93.	Pharmacists are trained to recognize who have the wrong procedural behavior to avoid drug errors				
94.	Managers motivates the employee to report medication errors				
95.	An annual survey is conducted for the pharmacy staff to ensure their knowledge of safety procedures				

96.	The pharmacy administration is concerned with improving the safety procedures and the use of technology				
97.	The vision and the message of the pharmacy address the issue of drug safety				
98.	All staff know the medication errors of dangerous medicines and know the mechanisms of reporting it.				
99.	There is a person in charge of identifying drug errors in the pharmacy and identify the reasons for their occurrence and how to deal with it.				
100.	The pharmacy conducts focus group sessions to discuss drug policies.				
101.	There is a quality system in the pharmacy to enhance the safety of patients CQI				
102.	The pharmacy conducts a survey of patients to make sure that the service provided is good and accepted				
103.	The process of dispensing the drug is evaluated at least once a year to identify the causes of drug errors' risks.				
104.	The pharmacists avoid the occurrence of mistakes by knowing the mistakes of others				
105.	Everyone is notified of the occurrence of any mistake and ways of avoiding it in the future, especially when dealing with sensitive groups such as children whose doses should be checked twice.				
106.	The pharmacist makes sure the safety of the drug before dispensing it to any patient				
107.	There are quality mechanisms that allow to identify inventory and pharmacological validity and computerized system and ways to follow up and report errors				
108.	Errors of dispensing systems are identified and lessons taken from them so as not to be repeated in the future and in order to improve the work system in the pharmacy				
109.	Errors in the selection of the drug and its composition and external signs on the package of the drug are evaluated in order to identify the purpose of identifying the problems of system design and the development of mechanisms to prevent errors.				
110.	The pharmacy has established a system to ensure that dangerous medicines are dispensed after being examined twice				

الرقم	الصفة	الإجابة
أ		معلومات عن مكان العمل
1	اسم الصيدلية	
2	المحافظة	
3	رقم الجوال	
ب		الصفات الاجتماعية و الديمغرافية
4	الجنس	ذكر ☐ أنثى ☐
5	العمر	
6	الراتب الشهري	
7	الموقع	
ج		صفات متعلقة بالعمل
8	المؤهل العلمي	دبلوم ☐ بكالوريوس ☐ ماجستير ☐ دكتوراه ☐
9	التخصص	صيدلة عامة ☐ دكتور صيدلي ☐ تخصص آخر ☐
10	سنوات الخبرة	
11	ساعات العمل	
12	ملكية الصيدلية	نعم ☐ لا ☐
13	هل تلقيت تدريبا عن سلامة استخدام و صرف الأدوية	نعم ☐ لا ☐

محاور الإجابة:

1- لا يتم تنفيذه.
2- تم مناقشته ، ولكن لم ينفذ.
3- ينفذ جزئيًا لبعض أو جميع المرضى أو الوصفات الطبية أو الأدوية أو الموظفين.
4- نفذت بالكامل لبعض المرضى ، والوصفات الطبية ، والأدوية ، أو الموظفين.
5- نفذت بالكامل لجميع المرضى ، والوصفات الطبية ، والأدوية ، أو الموظفين.

1-معلومات المريض:

الرقم	السؤال	1	2	3	4	5
1-	يتم الحصول على معلومات المريض (الاسم الكامل والعنوان، رقم هاتف المنزل، وسائل الاتصال البديلة [على سبيل المثال، عنوان البريد الإلكتروني أو رقم الهاتف الخلوي] ونوع الجنس، وتاريخ الميلاد، وإذا كان لديه أي نوع من الحساسية)ثم إدخالها في نظام كمبيوتر الصيدلية قبل تقديم الوصفة الطبية للمريض، وأيضا تحديثها في كل زيارة جديدة.					
2-	تقوم الصيدلية باستخدام اللغة المناسبة للمرضى من أجل التواصل ، زيادة الوعي و الثقافة الصحية مع الأخذ بعين الاعتبار أي عوامل قد يكون لها تأثيرها على العلاج الدوائي ، وأيضا أي أمراض سمعية و / أو بصرية قد تؤثر على عملية العلاج الدوائي.					
3-	بعد الحصول على قائمة الأدوية الحالية، يتم إدخالها في نظام الكمبيوتر للصيدلية ، بما في ذلك الأدوية التي تصرف بدون وصفة طبية (مع تحديد الجرعة و كمية الصرف والشكل الصيدلاني للدواء) ومن ثم تحديثها عند شراء أي صنف دوائي جديد					
4-	قائمة الفيتامينات، المنتجات العشبية، المكملات الغذائية، والأدوية البديلة المستخدمة حاليًا من قبل المريض ، يتم إدخالها في نظام الكمبيوتر للصيدلية ، وتحديثها في كل زيارة .					

5-	تتخذ الصيدلية خطوات للحصول على وزن المريض عندما يلزمه نوع من الأدوية التي تعتمد على الوزن ، مثل أدوية العلاج الكيميائي أو الأطفال.					
6-	عند تلقي وصفة طبية من المريض عبر الهاتف ، يتم سؤاله عن تاريخ ميلاده، و وزنه ، إن كان يعاني من الحساسية ، أو لديه مرض مزمن، وما هي المشكلة المرضية التي يواجهها وما هو تشخيصها.					
7-	يتوفر لدى الصيدلي البيانات المخبرية الحديثة عن المريض مثل مستوى السكر في الدم ، أنزيمات الكبد ، وظائف الكلى ، ضغط الدم ، ومستوى الكولسترول، لتنظيم ومراقبة الخطة العلاجية للمريض من خلال تحديد نظام و مواعيد للجرعات الدوائية.					
8-	يقوم الصيادلة بالتحقق من أي معلومات سريريه مهمة حول المريض للتأكد من ملائمة الدواء والجرعة مع حالة المريض الصحية (مثل حساسية المريض اتجاه مواد معينة، وزنه، تحمله للمواد المخدرة، ونتائج التحاليل المخبرية).					
9-	يحتوي نظام الصيدلية على مطالبات خاصة عند إدخال دواء يصنف على انه medication HIGH- ALERT للحصول على معلومات مهمة عن المريض أو التحقق منها (كاستخدام الأدوية المخدرة ، ومحاليل المورفين المركزة ، والأفيونيات طويلة المفعول) وذلك ضروري لملائمة الجرعة الدوائية ، طريقة الاستخدام و مدة الاستخدام بما يتناسب مع وضع المريض.					
10-	يراعي الصيادلة الحاجة إلى تعديلات جرعة الأدوية بناءً على بيانات سريريه حديثة (على سبيل المثال ، المرضى الذين يعانوا من قصور كلوي بحاجة لتعديل الجرعة خاصة الأدوية التي يتم التخلص من سميتها من خلال الكليتين					

2- معلومات متعلقة بالدواء

11-	يمكن الوصول بسهولة إلى المراجع المتعلقة بمعلومات الأدوية عبر الإنترنت في جميع مناطق التوزيع، و تتضمن معلومات حديثة عن الأدوية التي تحتاج لوصفة طبية، الأدوية التي تصرف بدون وصفة طبية ، الأدوية العشبية ، و الأدوية البديلة .					
12-	يتحقق الصيدلي من الغرض السريري لكل وصفة طبية قبل صرف الدواء للتأكد من أن العلاج الموصوف مناسب لحالة المريض.					
13-	ينبه نظام الكمبيوتر في الصيدلية الموظفين عند انتهاء دواء معين و عدم توافره داخل الصيدلية					
14-	عند إضافة عنصر جديد إلى مخزن الصيدلية ، يتم تقييم احتمال حدوث خطأ في هذا الدواء (على سبيل المثال ، الأدوية التي تتشابه في الصوت أو التعبئة أو التعليمات الخاصة بالمرضى مثل الجرعات ومتطلبات المراقبة السريريه).					
15-	بعد ظهور الدواء في السوق لعدة أشهر ، يتم تكليف الموظفين في الصيدلية بمتابعة ما إذا كان قد تم الإبلاغ عن أخطاء في صناعة الدواء أو أي أثار جانبية ظهرت منذ إطلاق المنتج ، و يتم تعزيز إجراءات السلامة عند الضرورة في حال حدوث مضاعفات مع المرضى نتيجة ذلك المنتج .					

3- التواصل و تبادل المعلومات حول الأدوية

16-	يتمتع الصيدلي بالصفة الرسمية لتقييم وتوضيح أي جرعات أو استخدامات غير عادية للأدوية والاستغناء عنها إذا كانت غير صحيحة					
17-	يوجد لدى الصيادلة برتوكول و سياسة مكتوبة يتم إتباعها ، لتسوية الاختلافات التي تحدث بين الطبيب والصيدلي حول سلامة المريض عند أخذه الوصفة الطبية					

4- تسمية، تصنيف، وتغليف الأدوية

18-	تُستخدم علامات على الرفوف وملصقات على العبوات وصناديق تخزين الأدوية التي تحتوي على أسماء ، وتسميات معقدة					
19-	يتم فصل المنتجات التي تحتوي على تسمية وتغليف متشابه من قبل الموظفين لأنها تمثل مشكلة ولذلك لا يتم تخزينها بجوار بعضها البعض ،حتى لا يحدث خطأ أثناء تحضير الوصفة الطبية					
20-	ملصقات الوصفات سهلة القراءة على المرضى ،حيث تحتوي مساحة كافية، ولها حجم خط مقروء (على سبيل المثال ، خط من 12 نقطة لاسم المريض ، اسم الدواء ، القوة طريقة الاستخدام) وتحتوي على المعلومات المناسبة للإدارة الذاتية الآمنة من قبل المريض.					
21-	تستخدم الصيدلية لغة أجنبية مناسبة للمرضى الذين يحتاجونها(من لا يتحدثون اللغة العربية) عند وضع الملصق على الدواء					
22-	يظهر وصف للمنتج (على سبيل المثال ، الشكل ، اللون ، الرائحة) على الملصق الخاص بالصيدلية					

5- توحيد معايير الأدوية ، تخزينه و توزيعه

23-	توجد آلية فعالة وفي الوقت المناسب للحصول على الأدوية اللازمة بشدة أو إخطار مندوبي شركات الأدوية عندما لا تكون متاحة على الفور (على سبيل المثال ، بسبب نقص الدواء)					
24-	توجد آلية لتحديد الأسباب وراء عدم اخذ المريض الدواء بعد تحضير الوصفة الطبية له.					
25-	يتم استخدام الأنظمة الإلكترونية التي توثق درجات الحرارة على مدار الساعة وتوفر إشعارًا بالمشكلات في الثلاجات والمجمدات التي تخزن الأدوية الحساسة للحرارة ، وقد تم تطوير الإجراءات المكتوبة المتعلقة بكيفية التعامل مع أي مشكلة في النظام و إتباعها					
26-	يتم استخدام الثلاجات ذات الحجم الكافي ، لتخزين الأدوية التي تحتاج لتبريد حتى لا تفسد					
27-	تحتوي الصيدلية على مساحة كافية لتنظيم تخزين الأدوية وفصلها بأمان ، وتستخدم المقسمات على أرفف المخزن ، في خزائن الأدوية المخدرة ، وفي الثلاجات ، حسب الحاجة					
28-	عند تخزين الأرفف ، يضمن الموظفون أن الملصقات أو خطوط التقاطع لا تمحو المعلومات الأساسية الخاصة بالأدوية داخل المخزن					
29-	يوجد منطقة منفصلة ومؤمنة بشكل صحيح في الصيدلية لوضع الأدوية التي تم إرجاعها ، أو انتهاء صلاحيتها أو فسادها ، حتى يتم إتلافها أو إزالتها من الصيدلية					
30-	يتم تقييم المكونات الصيدلانية الفعالة والمواد الكيميائية السائبة المستخدمة في التركيبات الدوائية على الأقل كل ثلاثة أشهر ، ويتم التخلص من المكونات غير المستخدمة بانتظام من المخزن					

31-	يتم تمييز المكونات الصيدلانية الفعالة والمواد الكيميائية المستخدمة في التركيبات الصيدلانية بوضوح مع محتوياتها ، وتاريخ فتح المنتج لأول مرة ، وتاريخ انتهاء صلاحيته من الشركة المصنعة (إن وجد). (في حالة عدم توفر تاريخ انتهاء الصلاحية من الشركة المصنعة ، يتم تعيين تاريخ انتهاء الصلاحية لمدة عام واحد من تاريخ فتح المنتج لأول مرة.)					
32-	تخزن الصيدلية المواد الكيميائية المستخدمة في التركيب في منطقة منفصلة وفقًا لمعايير USP الحالية.					
33-	يتم تمييز جميع المواد الكيميائية الكاوية أو الخطرة وغيرها من المواد السامة بوضوح وتخزينها على أرفف منفصلة عن جميع الأدوية والمستلزمات الأخرى الموجودة في مستودع الأدوية بالصيدلية.					
34-	لا يتم استخدام زجاجات وصفات الدواء في الصيدلية لإعادة تعبئة المواد غير الدوائية (مثل المواد الكيميائية السائلة ومركبات التنظيف والمبيدات الحشرية والصابون).					

6- استخدام الأجهزة و المعدات

35-	يتبع جميع الصيادلة معايير غسل اليدين وارتداء القفازات والتخلص من المعدات لتقليل مخاطر انتقال الأمراض و العدوى					
36-	يتبع الموظفون إجراءات غسل اليدين المناسبة قبل تحضيراي منتج .					
37-	يتم استخدام مسح الباركود أو قائمة تدقيق للتحقق من اسم الدواء وقوته ورقم القطعة وتاريخ انتهاء الصلاحية لكل دواء مخزون قبل أن يتم صرفه					
38-	يستخدم الباركود للتحقق من اختيار الدواء.					

7- العوامل البيئية، وسير العمل، وأنواع الموظفين

39-	الإضاءة كافية وملائمة لقراءة الملصقات وغيرها من المعلومات الهامة عن الدواء والمريض بوضوح.					
40-	توجد عدسة مكبرة مضاءة في موقع ثابت وتستخدم لتسهيل إمكانية قراءة الوصفات والعلامات					
41-	تتوافق درجة الحرارة والرطوبة في الصيدلية مع متطلبات تخزين الدواء.					
42-	المناطق ، حيث يتم التحقق من أوامر الدواء ، معزولة وخالية من الانحرافات والانقطاع.					
43-	تتجنب الصيدلية استخدام أماكن التخزين العالية التي تتطلب من الموظفين رفع ايديهم أعلى من رؤوسهم للوصول أو التسلق للحصول على المنتجات.					
44-	مساحات العمل ، حيث يتم إعداد الأدوية و الوصفة الطبية ، نظيفة ومنظمة و خالية من الفوضى.					
45-	عند التفكير بإضافة صنف جديد إلى الصيدلية يتم التواصل و النقاش بشكل جيد مع جميع العاملين بالصيدلية ، ويتم تناول الاعتبار المناسب للموارد قبل التنفيذ					
46-	عند إعداد الوصفات الطبية ، يعمل موظفو الصيدلية مع منتج دوائي واحد في كل مرة ويضعون العلامة على الدواء للمريض قبل العمل على الوصفة الطبية التالية.					
47-	يتم عرض جميع أوامر الوصفة الطبية (سواء كانت نسخة ورقية أو صورة) على مستوى العين أثناء إدخال الطلب.					
48-	يخضع موظفي الصيدلية لفحص طبي سنوي ، بما في ذلك فحوصات الرؤية والسمع.					
49-	لا يعمل طاقم الصيدلية أكثر من 12 ساعة متتالية.					
50-	يتمتع موظفو الصيدلية بما لا يقل عن 8 ساعات من الراحة بين نوبات العمل.					

51-	يسمح لموظفي الصيدلة بأخذ استراحة لمدة 15 دقيقة على الأقل أو استراحة لمدة 30 دقيقة (لتناول الطعام) في كل 8 ساعات من العمل يوميًا حتى بوجود ضغط في العمل.					
52-	يوجد خطة احتياطية فعالة لعدة أيام عندما يكون عدد الموظفين قليلًا بسبب المرض والإجازات والغياب التعليمي والتقلبات بسبب ضغط العمل.					
53-	معايير التوظيف في الصيدلية كافية لتوفير خدمات رعاية آمنة للمرضى في كل الأوقات ، بما في ذلك خلال زيادة وتيرة العمل (على سبيل المثال ، بداية الشهر ، قبل العطلات أو بعدها مباشرة)					
54-	عند وجود موظفين مؤقتين (كالتدريب أو البطالة) ، يتم توجيههم وتدريبهم بشكل صحيح في بيئة الصيدليات الخاصة التي سيعملون فيها					
55-	يتم فحص معدل الوصفات الطبية بشكل دوري لمعرفة عدد الموظفين المناسبة، حتى أثناء أوقات الذروة عندما يكون الطلب أعلى.					

8- كفاءة الموظفين و تعليمهم

56-	يخضع جميع الموظفون الجدد لتقييم كفاءة في الأساسيات قبل العمل بشكل مستقل					
57-	يتم توعية جميع موظفي الصيدليات حول معدات الصيدلية المتوفرة في كل موقع (على سبيل المثال ، ماسح الباركود ، معدات الصرف الآلية) والبروتوكولات / الإرشادات المرتبطة به، ومن ثم يتم التحقق من الكفاءة في استخدام المعدات قبل السماح للموظفين باستخدامها.					

58-	يتم تثقيف جميع الصيادلة عن كيفية تعليم المريض الاستعمال الذاتي للأجهزة (مثل ، أجهزة مراقبة الجلوكوز وأجهزة الاستنشاق وقلم الأنسولين أو أي اختبارات التشخيص المنزلي) ، ويتم التحقق من الكفاءة قبل السماح للموظفين بتثقيف المريض حول الجهاز.					
59-	أولئك الذين يقومون بتدريب موظفين جدد(المتدربين) ، يتم تقليل المهام الموجهة لهم في العمل لإنجاز أهداف التدريب بأمان وشمولية.					
60-	يتم تثقيف موظفي الصيدلية حول الاستراتيجيات الممكن إتباعها للتقليل من مخاطر حدوث الأخطاء العلاجية.					
61-	كجزء من عملية تقييم الأداء الشاملة ، يقوم مدير الصيدلية بتقييم مهارات كل موظف في الصيدلية ومعرفته المتعلقة بممارسات الدواء الآمن.					
62-	يتم تدريس موظفي الصيدلة حول الأدوية الجديدة المضافة إلى مخزون الصيدلية ، بما ، وكل ما يتعلق به من OTCفي ذلك أدوية توجيهيان أو قيود أو احتياطات خاصة مرتبطة به يتم فهمها قبل صرف الأدوية (على سبيل المثال ، اللقاحات).					
63-	تتم مناقشة الأخطاء الدوائية وطرق تجنبها بشكل روتيني في اجتماعات الموظفين وفي المحادثات بين الصيادلة والفنيين والمديرين.					
64-	تراعي إدارة الصيدلية و مديرها العوامل الإنسانية ومبادئ الحد من الأخطاء (على سبيل المثال ، التوحيد بين العاملين واستخدام القيود والتأكيد على الوظائف المهمة) أثناء توجيه الموظفين					
65-	يتم تدريب موظفي الإدارة والصيادلة الأساسيين على مبادئ وتطبيقات التحسين المستمر (بما يتعلق بنظام العمل داخل CQIللجودة) الصيدلية .					

66-	مرة في السنة على الأقل، يجب على العاملين في الصيدلية إكمال برنامج تعليمي حول طرق تجنب الأخطاء باستخدام الأدوية عالية (، والأدوية high-alert medicationالتنبيه) narrowذات المؤشرات العلاجية الضيقة ، وغيرها من الأدوية أو therapeutic index الأجهزة المعرضة للخطأ.					
67-	عند حدوث أخطاء ، تبذل جهود تعليمية واسعة النطاق بين جميع العاملين في الصيدلية بدلاً من جهود علاجية تقتصر فقط على أولئك الذين شاركوا في الخطأ					
68-	يتم تزويد موظفي الصيدلية بالدعم والوقت اللازمين لحضور البرامج التعليمية الداخلية والخارجية المتعلقة بالأدوية الجديدة و / أو قضايا السلامة الدوائية الهامة.					

9- تثقيف المرضى

69-	يتم تخصيص وقت للصيادلة من قبل الإدارة لأنشطة تثقيف المرضى.					
70-	تتوفر منطقة خاصة لتقديم المشورة و الخدمات العلاجية للمرضى الدوائي ، خالية من الإلهاء و الانقطاع.					
71-	يتم تشجيع المرضى على طرح أسئلة حول الأدوية التي يتلقونها.					
72-	يتم تقديم المشورة الكاملة للمرضى بحيث تتضمن شرحًا واضحًا لما يحتاجه المريض من معلومات (على سبيل المثال ، كيفية تناول الدواء وتخزينه ، والآثار الجانبية المحتملة ، والتفاعلات مع الأدوية الأخرى) وما هي النتيجة المرجوة من العلاج.					
73-	HIGH-ALERTيوجد معايير لبعض أدوية أو مجموعات من المرضى المعرضين لمخاطر عالية بسبب وضع صحي حرج لزيادة المشورة					

	حول الأدوية ، ولذلك يوجد نظام معمول به لتنبيه الصيدلي بهذه الحاجة عندما يأتي المريض لصرف الوصفة الطبية .					
74-	يناقش الصيدلي مع المريض المعاير المهمة المتعلقة بالسلامة الدوائية(على سبيل المثال ، تلك الموجودة في أدلة الأدوية ، وكتيبات السلامة الدوائية للمستهلكين) .					
75-	يقوم الصيادلة بالتحقيق الكامل في جميع مخاوف المريض و إجابة الأسئلة المتعلقة بالدواء (مثل القدرة على تحمل التكاليف ، وعدم القدرة على البلع ، وصعوبة الالتزام بالجرعات ، ولو حدث تغيير مظهر المنتج) قبل صرف الدواء.					
76-	يتم تحديد القضايا الثقافية التي قد تؤثر على الامتثال للعلاج الموصوف والنظر فيها عند تقديم المشورة للمرضى حول أدويتهم مثل بعض الأدوية المخدرة.					
77-	تتخذ الصيدلية خطوات للتواصل الفعال مع المرضى الذين يعانون من ضعف البصر أو السمع.					
78-	يُطلب من المرضى الاتصال بالصيدلية لأية مخاوف أو أسئلة حول العلاج الدوائي.					
79-	يتم تزويد المرضى برقم هاتف يمكن من خلاله الوصول إلى الصيدلي على مدارال 24 ساعة لأي مخاوف أو أسئلة حول علاجهم الدوائي.					
80-	يتم توجيه المرضى بشأن الاستخدام الصحيح لأية أجهزة يتم صرفها من الصيدلية وصيانتها (مثل أجهزة مراقبة الجلوكوز والأقلام القابلة للحقن والأدوات المستخدمة مع أجهزة الاستنشاق).					
81-	تحصل الصيدلية على عينات مجانية للأجهزة من الشركات المصنعة ليتم استخدامها في تثقيف المريض و الشرح له عن كل ما يتعلق بالجهاز .					

82-	يتم تزويد المرضى بمعلومات حديثة ومفيدة ومكتوبة بلغتهم الأساسية عن الأدوية التي يتلقونها التأكد من تقديم معلومات مهمة شفهية و / أو مكتوبة.					
83-	تقدم الصيدلية خدمات إدارة العلاج الدوائي من خلال الصيدلي، وتركز على تحسين النتائج العلاجية للمرضى.					
84-	تقوم الصيدلية بمتابعة بعض الأمراض السريرية مثل الربو وارتفاع ضغط الدم والسكري أو ارتفاع الكولسترول					
85-	في العام الماضي ، قدمت الصيدلية خدمة مشابهة للعيادة من خلال الفحص مبكر للكشف عن الامراض بصورة مبكرة					
86-	تقوم الصيدلية بتطوير وتنفيذ برنامج تعليمي سنوي واحد على الأقل أو أي نشاط متعلق بالصحة العامة يهدف إلى تحسين الاستخدام الآمن للأدوية في المجتمع.					

10- عمليات متابعة الجودة وإدارة المخاطر

87-	يناقش موظفو الصيدلية الأخطاء دون إحراج أو خوف من العقاب من إدارة الصيدلية أو المشرفين المباشرين					
88-	يتم تدريب موظفي الصيدلية على الإجراءات السريرية والإدارية للاستجابة للأخطاء العلاجية.					
89-	في حالة حدوث خطأ علاجي وتناول المريض الدواء ، بغض النظر عن مستوى الضرر الناتج ، يتم الكشف عن الخطأ وإخبار كاتب الروشتة في الوقت المناسب.					
90-	تلقى إدارة الصيدلية والمشرفون المباشر و تدريبا رسميًا حول إنشاء و / أو الحفاظ على بيئة عمل عادلة					
91-	يتم اتخاذ أي إجراء تأديبي ضد موظفي الصيدلية لإجراء أي خطأ بشري.					

92-	تتلقى إدارة الصيدلية والمشرفون المباشرون تدريباً رسميًا على طرق التقييم الفعال لكفاءة وأداء العاملين في الصيدلية ، والإشراف على الموظفين وإرشادهم بشأن المهارات السريرية، وسلوكيات المخاطر، والتعامل مع سلوك موظفي الصيدلية الصعب دون السماح بان يكون وجود الأخطاء الدوائية عامل لهم على السلوك الغير مرغوب به					
93-	يقوم المشرفون أو أصحاب العمل بتدريب الموظفين الذين ينخرطون في سلوك معرض للخطر متعلق بسلامة المرضى ، لمساعدتهم في اتخاذ خيارات سلوكية أكثر أمانًا في المستقبل					
94-	توفر إدارة الصيدلية والمشرفين المباشرين حوافز إيجابية للأفراد للإبلاغ عن حدوث الأخطاء.					
95-	يتم إجراء مسح لموظفي الصيدلية بشكل سري مرة كل سنة على الأقل لتقييم ثقافة السلامة في المنظمة.					
96-	تُظهِر إدارة الصيدلية التزامها بسلامة المرضى (وممارسات الدواء الآمنة) من خلال الموافقة على خطة السلامة ، وتشجيع موظفي الصيدلية الإبلاغ عن الأخطاء ، والموافقة على تعزيز تصميم النظام و التكنولوجيا ، التي من دورها تساهم في تقليل حدوث الأخطاء.					
97-	يتم توضيح المقصود من سلامة المرضى في مهمة المنظمة و / أو رؤيتها					
98-	تم وضع تعريف واضح وأمثلة للأخطاء الدوائية والحالات الخطرة التي يجب الإبلاغ عنها ونشرها على الموظفين.					
99-	يتم تكليف واحد أو أكثر من الصيادلة في كل صيدلية بمسؤولية تعزيز الكشف عن أخطاء الدواء ، والإشراف على تحليل أسبابها ، وتنسيق خطة فعالة للحد من الأخطاء (مع دعم الشركات إذا أمكن).					

100-	يسهل الصيدلي أو المدير إنشاء مجموعات دورية معلنة لمناقشات "غير رسمية" للتعرف على المشكلات الملحوظة في نظام الصرف.					
101-	تستخدم الصيدلية برنامج تحسين الجودة المستمر (CQI) لتعزيز سلامة المرضى.					
102-	تجري الصيدلية بشكل دوري دراسات واسعة لمعرفة مدى رضا المرضى عن خدمات الرعاية المقدمة لهم ، وذلك بهدف تحسين خدمات رعاية المرضى.					
103-	يتم تحليل عملية الصرف بشكل استباقي مرة واحدة على الأقل كل عام (على سبيل المثال ، a باستخدام أداة تقييم المخاطر الاستباقية) PROACTIVE RISK ASSESSMENT tool لتحديد عوامل الخطر المحتمل حدوثها نتيجة أخطاء في الدواء.					
104-	يقوم موظفو الإدارة والصيدلية بقراءة تجارب الأخطاء المنشورة من المؤسسات الطبية الأخرى بشكل روتيني لإجراء تحسينات إستباقية على عملية الصرف.					
105-	يتم تزويد موظفي الصيدلية بملاحظات منتظمة حول الأخطاء المبلغ عنها في الصيدلية ، والمواقف الخطرة التي حدثت، وهل يتم وضع استراتيجيات للحد من هذه الأخطاء .					
106-	بالنسبة للمجموعات المختارة من المرضى (على سبيل المثال ، مرضى الأطفال والمرضى الذين يتلقون أدوية حسب العمر أو الوزن)، يتم إجراء فحص مزدوج للجرعة المكتوبة من الواصف قبل إعداد الدواء وصرفه.					
107-	يتحقق الصيدلي من تركيبة الأنسولين التي يصرف دون وصفة طبية للمريض قبل صرف المنتج.					
108-	يقوم الصيادلة بشكل دوري بإجراء فحوصات لمراقبة الجودة من خلال مراجعة الوصفات					

	الطبية المكتملة، وفحص علامات(ملصقات) الصيدلية ، وإدخالات الكمبيوتر ، والمخزون وما تم استخدامه أو استبدالها في المخزن، وإجراء أشكال أخرى من الاختبارات العشوائية التي تعزز اكتشاف الأخطاء.					
109-	يتم الإبلاغ عن أخطاء اختيار الدواء وإعداده ووضع الملصقات عليه التي تم تحديدها أثناء ومن ثم ;عمليات الفحص الروتينية للأدوية جمعها لغرض توضيح مشكلات تصميم النظام وتطوير استراتيجيات جديدة لمنع هذه الأخطاء.					
110-	أنشأت الصيدلية عملية خاصة لتشمل فحصًا مستقلاً مزدوجًا للوصفات الطبية المتعلقة بأدوية عالية التنبيه المختارة قبل صرفها.					

Annex 5: Qualitative part

Annex 5.1: Characteristics of the Key InformantPharmacists

No	Location of pharmacy	Gender	Age	Educational level	Years of Experience	Working Hours
1	Gaza/ Al.Naser St.	Male	40	Bachelor of pharmacy	15 years	8 hrs
2	Gaza/ Al-Azhar crossroad	Male	48	Master of pharmaceutical science	21 years	10 hrs
3	Gaza/ Al-Azhar crossroad	Female	43	Bachelor of pharmacy	18 years	7 hrs
4	North/ Bait lahia	Male	37	Bachelor of pharmacy	11 years	10 hrs
5	North/ Jbalia	Female	40	Bachelor of pharmacy	12 years	8 hrs
6	Al-Sftawi	Male	38	Master of nutrition	13 years	8 hrs
7	Khan-younis	Male	50	Bachelor of pharmacy	25 years	

Annex 5.2: Characteristics of the Key InformantPatients

No	Location	Gender	Age	Type of disease	Educational level	Type of disease	Duration of disease
1	Gaza/ Tal-Hwa	Male	45	Hypertension	Bachelor of English Language	Hypertension	5 years
2	Gaza/ Al-Jlaa St.	Female	50	Hypertension, Diabetes	Bachelor of Arabic Language	Hypertension, Diabetes	7 years
3	North/ Bait-Lahia	Female	55	Heart disease	Master of Business Administration	Heart disease	12 years
4	Khan-younis	Female	23	Pregnancy problems as(bleeding)	Bachelor of Optometrist	Pregnancy problems as(bleeding)	At pregnancy
5	Khan-younis	Male	40	Hypertension	Bachelor of Basic edu.	Hypertension	2 years

Annex 5.3: Interview Guide (For expert community pharmacists)

1- Socio-demographic information: Location, gender, age, educational level, specialization, monthly salary, work experience at a community pharmacy, work daily hours, pharmacy ownership.

2- How can you describe and evaluate the care within the community pharmacies in Gaza Strip?

3- To which extent the community pharmacies are considered a safe setting for providing care to patients? Can you give examples regarding patient safety measures implemented in the community pharmacies in Gaza Strip? Do you think these safety measures are appropriate and enough?

4- What types of incidents or errors are reported and not reported in community pharmacies? Do the community pharmacists disclose and report this error? To whom they report this error? How do the community pharmacists respond if errors happen? Is that enough?

5- How can you rate the magnitude of dispensing errors by the community pharmacists (such as dispensing an incorrect medication, dose, directions) in the Gaza Strip? To which extent these errors or adverse reactions put the lives of patients in danger?

6- How can you evaluate the instructions form the community pharmacists about using/dispensing the medications? To which extent these instructions are useful? Do you think the patients follow and adhere to these instructions? Why?

7- Does the MoH regularly visit and monitor/inspect the community pharmacies in order to check the medication safety measures? How can you evaluate these monitoring? What should the MoH do to enhance these monitoring?

8- Do you think that the community pharmacies should be computerized to register patient information, dispensed medications, medication list, medication errors, high alert medications?

9- How can evaluate the resources available in the community pharmacies such as spaces, stores, refrigerators, lighting, workload?

10- Do you think that the community pharmacist in Gaza Strip are qualified and have enough knowledge and skills in medication dispensing and medication safety? What type of courses (short and long term) are specifically needed to ensure high medication safety? What about the new staff community pharmacists, are they provided orientation training

programs before starting the work? Is this orientation appropriate and enough? What should be done for these new staff before starting the work?

11- What are your suggestions to improve medication safety and decrease medication errors in the community pharmacies?

Annex 5.4: Interview Guide (For patients)

1- Socio-demographic information: Location, gender, age, educational level, monthly salary, duration of chronic diseases (diabetes, hypertension, heart disease, respiratory disease, cancer).

2- How can describe and evaluate the care received from the community pharmacies?

3- Do you prefer taking care from the community pharmacies rather than primary healthcare, private doctor and other healthcare providers? Why?

4- How many times do you monthly visit the community pharmacy?

5- How often do you purchase OTC and prescribed medications from the community pharmacy?

6- Do the community pharmacists discuss with you your disease history before medication dispensing? Do they check your recent clinical data such as blood glucose levels, blood pressure, liver enzymes, renal function, and allergies before dispensing the medications? How can you evaluate the usefulness of these checks?

7- Do you receive appropriate instructions from the community pharmacists about using the medications? To which extent these instructions are useful? Do you follow and adhere to these instructions? Why?

8- Do you think the community pharmacies are a safe setting for receiving the care? Have you ever been exposed to any dispensing errors by the community pharmacists (such as dispensing an incorrect medication, dose, frequency, and route)? If yes, to which extent this error or adverse reactions put your life in danger?

9- Up to your knowledge, how the community pharmacists respond in case of disposing errors? Are their responses appropriate and enough? What should they do more to improve the response during errors or adverse events?

10- What are your suggestions to improve medication safety and decrease medication errors in the community pharmacies?

Annex 6: List of instrument validation and review panel

Dr. KefahToman	Primary Health Care Pharmacy Manage.
Dr. Ayman Korda	Director of Drug Control Department.
Dr. Zakariya Grad	Community pharmacist.
Dr. Osama Balawi	Health expert.
Dr. NaelSkeik	Director of Al-Shifa Pharmacy and Community Pharmacist.
Dr.AlaaHelles	Director at Al-Shifa Pharmacy and Community Pharmacist.

عنوان الدراسة: تقييم ممارسات السلامة الدوائية داخل الصيدليات المجتمعية في قطاع غزة.

إعداد: ريم بشير غنام

إشراف: د. محمود رضوان

الملخص:

إن سلامة الدواء قضية رئيسية ضمن أجندة سلامة المرضى، وإن الأخطاء الدوائية لها العديد من الآثار الجانبية وفي كثير من الأحيان قد تؤثر سلبيا على حياة المرضى.

في فلسطين، تعتبر عملية صرف الأدوية هي المهمة الأساسية للصيدلياتالمجتمعية، بما في ذلك جميع الأدوية التي تصرف بدون وصفة طبية.

ومع ذلك، فإن جودة الخدمة التي تقدمها الصيدليات المجتمعية في البلدان النامية كثيراً ما كانت موضع تساؤل وغالبًا ما تكون دون المستوى الأمثلولذلك تهدف هذه الدراسة إلى تقييم ممارسات السلامة الدوائية الحالية في الصيدليات المجتمعية داخل قطاع غزة.

صممت الدراسة على أنها دراسة مقطعية وصفية تحليله متسلسلة توضيحية (كمي ونوعي) باستخدام الاستبيانات القائمة على المقابلة ومقابلات أصحاب الخبرة كوسيلة لجمع البيانات.

تم استخدام عينة عشوائية من مرحلتين بشكل منتظم لتحديد صيدليات المجتمع المؤهلة والمشاركين المؤهلين. كان حجم العينة المحسوب 270 صيدلية، شارك منهم 258 في تعبئة الاستبيانات، وكان معدل الاستجابة 95.5 ٪.

تم عمل ملائمة لأداة السلامة الدوائية العالمية MSSA (10 أبعاد) بما يناسب الصيدليات المجتمعية في غزة لجمع البيانات الكمية كان معدل الثبات لأداة الدراسة ممتازًا 0.95.ثم أجريت مقابلات شبه منظمة، وجها لوجه،مسموعة، متعمقة مع سبعة من الصيادلة الذين يعملوا في صيدليات مجتمعية رئيسية ف قطاع غزة،وخمسة من المرضى الذين يعانوا من أمراض مزمنة.

تم تحليل المعطيات بواسطة الإصدار 23 من SPSS، وكشفت النتائج أن النتيجة الكلية المتوسطة لممارسات سلامة الدواء كانت مرضية بمعدل 3.20 (64.05٪). وأظهر التحليل أنالبعد الخاص بمعايرة وتخزينوتوزيع الادوية سجل أعلى مستوى من تطبيق ممارسات السلامة الدوائية بمعدل 3.57 (71.44٪)، يليها كفاءة الموظفين وتعليمهم بمعدل 3.55 (71.10٪)، ثم استخدام الأجهزة والمستلزمات الطبية بمعدل 3.51 (70.20٪)، العواملالبيئية، سير العمل،وأنماط التوظيف بمعدل 3.42 (68.44٪)، ثم معلومات الدواء بمعدل 3.33 (66.69٪).

بينما كانت أقل درجة كانت في وصف الدواء وتعبئته وتسميته بمعدل 2.69 (53.7٪) ومعلومات المرضى 2.81 (56.2٪). وأظهرت النتائج تباينًا ضئيلًا في ممارسات سلامة الدواء فيما يتعلق بنوع الجنس والعمر والراتب والمؤهلات وخبرات العمل، باستثناء المحافظات والتخصص حيث يؤثر كل منها على الممارسات المتعلقة بسلامة الأدوية كانت قيمة $P < 0.05$.ركزت المقابلات بشكل أساسي على شرح نتائج الجزء الكمي واستكشاف الواقع من وجهات نظر أخرى.

يمكن التوصية باستخدام أداة التقييم الذاتي لسلامة الدواء (MSSA) لتقييم ممارسات سلامة الدواء داخل الصيدليات المجتمعية.وتوصي الباحثة بشدة باستخدام استراتيجيات تنفيذ متعددة الأوجه تستهدف استخدام طرق الكترونية في تسجيل الوصفة الطبية مع المعلومات الشخصية للمريض، والتاريخ المرضي، وإدارة أسماء الأدوية المتشابهة وتعبئتها بشكل صحيح، واستخدام أدوات تم التحقق منها لتحديد عوامل الخطر المحتملة لتجنب الأخطاء الدوائية بالإضافة إلى استخدام برامج التحسين المستمر للجودة (CQI) في صيدليات المجتمع.