Mutah University
College of Graduate Studies

Attitudes of Healthcare Providers Towards the Role of Clinical Pharmacists in Jordanian Hospital setting

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جامعة مؤتـة
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والموسومة بـ: **Attitude of Healthcare ptoviders Towards the Role and Practices of Clinical Pharmacists in Jordanaian Hospital setting**

استكمالا لمتطلبات الحصول على درجة الماجستير في إدارة الصحة العامة

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أ.د.محمد سليمان الطراونة

Dedication

I dedicate this thesis firstly to my beloved family: my parents for their unconditional love and for all sacrifices they did in their life for us, my lovely wife who has been always a constant source of support and encouragement, my sisters for their endless kindness and love.

I dedicate my thesis also to the rest of my family and my close friends.

Those with pure hearts who love me, believe in me, have my name in their prayers…

Thank you. My love for all of you can never be quantified. God bless you.

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List of contents

List of tables

List of figures

List of abbreviations

CP	Clinical pharmacists
ACCP	American college of clinical pharmacists
HCP	health care provider
DRP	Drug related problem
CPS	Clinical pharmacy service
ADR	Adverse Drug Reactions

List of appendices

Abstract

Attitudes of Healthcare Providers Towards the Role of Clinical Pharmacists in Jordanian Hospital setting

Mohammad Suleiman Almsedien

Mutah University, 2022

Background: There is an international interest in clinical pharmacy after extensive research about clinical, economic and humanistic benefits of clinical pharmacy services, several studies recommended clinical pharmacist to be a crucial part of the Multidisciplinary health care team. However, in Jordan implementation of clinical pharmacy services is still in the early stage.

Objectives: The main objective is to assess the attitudes, expectations and barriers of health care providers (hospital managers, wards' supervisors, pharmacists, and clinical pharmacists) regarding clinical pharmacy services in hospital setting in Jordan.

Methods: A cross-sectional study was conducted during the period from November 2021 to February 2022. A study sample (n=243) was recruited from eligible health care providers working in governmental hospitals on a national level. Data was collected using a validated self-administered questionnaire. Descriptive and inferential statistics were used to analyze data using SPSS version 27.

Results: 93 % of study participants had positive attitude. 91% study sample had positive expectation regarding clinical pharmacy services. Participants with pharmaceutical professions had higher proportion of both positive attitudes and expectations compared with managerial related participants. Participants working in pharmacy department and ICU department appeared to have higher proportion of positive attitudes and expectations compared with other participants. Participants with less than 10 years of experience appeared to have higher percentages of both positive attitudes and expectations. Lack of awareness about the benefits of having a clinical pharmacist was the most reported barriers (82%), followed by lack of support from administrations (78%).

Conclusion: HCPs have positive attitudes and expectations, however, multiple factors that prevent the implementation of clinical pharmacy services were found. More practical steps are encouraged to solve these barriers. This can be achieved by joint efforts between ministry of health and medical associations to ensure that clinical pharmacy services are fully implemented.

Keywords: attitudes ,expectations ,barriers, clinical pharmacy , Jordan.

الملخص

توجهات مقدمي الرعاية الصحية لدور الصيادلة السريرين في مستشفيات الاردن

محمد سليمان المسيعدين

جامعة مؤته، 2022

الخلفية: هناك اهتمام دولي بالصيدلة السريرية بعد إجراء العديد من الابحاث حول الفوائد السريرية والاقتصادية والإنسانية لخدمات الصيدلة السريرية ، أوصت العديد من الدراسات بأن الصيدلاني السريري يجب ان يكون جزءًا مهمًا من فريق الرعاية الصحية.

الأهداف: تهدف هده الدراسة الى تقييم المواقف والتوقعات والعوائق لمقدمي الرعاية الصحية بما يتعلق بخدمات الصيدلة السريرية في المستشفيات الحكومية في الأردن.

الطريقة: أجريت دراسة مقطعية خلال الفترة من تشرين الثاني (نوفمبر) 2021 إلى شباط (فبراير) 2022. تم اختيار عينة الدراسة (ن=243) من مقدمي الرعاية الصحية المؤهلين العاملين في المستشفيات الحكومية على المستوى الوطني. تم جمع البيانات باستخدام استبيان تم التحقق منه ذاتيًا. تم استخدام الإحصاء الوصفي والاستنتاجي لتحليل البيانات باستخدام الإصدار 27 من SPSS.

النتائج: بشكل عام ، كان لدى 93٪ من المشاركين في الدراسة مواقف إيجابية ، كما كان لدى 91٪ من عينة الدراسة توقعات إيجابية فيما يتعلق بخدمات الصيدلة السريرية. تظهر نتائج البحث بان العاملين في مجال الصيدلة لديهم نسبة أعلى من كل من المواقف الإيجابية والتوقعات مقارنة بالعاملين في المجال الاداري. ايضا تظهر نتائج الدراسة أن المشاركين العاملين في قسم الصيدلة وقسم العناية المركزة لديهم نسبة أعلى من المواقف والتوقعات الإيجابية مقارنة مع المشاركين الآخرين. ختاما فقد كان عدم وعي مقدمي الرعاية الصحية بفوائد وجود الصيدلي السريري هو أكثر العوائق التي تمنع من تطبيق خدمات الصيدلة السريرية (82٪) ، يليه نقص الدعم من الإدارات (78٪).

الخلاصة: كان لمقدمي الرعاية الصحية مواقف وتوقعات إيجابية ، ومع ذلك ، كانت هناك عوامل متعددة تمنع تنفيذ خدمات الصيدلة السريرية ، يجب تشجيع المزيد من الخطوات العملية لحل هذه العوائق ، ويمكن تحقيق ذلك من خلال الجهود المشتركة بين وزارة الصحة والجمعيات الطبية لضمان أن خدمات الصيدلة السريرية تم تنفيذها بالكامل.

الكلمات المفتاحية: المواقف ، التوقعات ، الحواجز ، الصيدلة السريرية ، الأردن.

Chapter One
Introduction

1.1 Introduction

The word “pharmacy” was coined from the Greek word “pharmakon” meaning “medicine” or “drug “. Therefore, a pharmacist is a medicine or drug man (*Pharmapproach.com* , 2021).

Nowadays, Pharmacy is defined as “the science and art concerned with the preparation and standardization of drugs. (*Pharmacy | Britannica*, 2021.)

The scope of pharmacy includes the seeding and caring of plants that are used as drugs, the synthesis of chemical compounds of medicinal value, and the analysis of medicinal agents. Pharmacists are responsible for the preparation of all pharmaceutical dosage forms such as tablets, capsules, suspensions and sterile solutions for injection (Krantz et al, 2017).

The development of the pharmaceutical industry since World War II led to giving a more comprehensive theory about the methods of extracting and using drugs which help in discovery and use of new and effective drug substances. It also changed the role of the pharmacists (Miller et al., 1981).

While traditional pharmacy profession focused on preparation and dispensing of drugs, clinical pharmacy profession focuses on making optimal pharmaceutical care plan for each patient.

Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, and disease prevention (American College of Clinical Pharmacy (ACCP) , 2008).

Clinical pharmacists care for patients in all health care settings. They have a combined pharmaceutical knowledge integrated with the socio-behavioral and biomedical sciences. Moreover, clinical pharmacists are a primary source of scientifically valid and updated information regarding the safe, appropriate, and cost-effective use of medications (ACCP, 2008) .

There is a difference between pharmacy practice and clinical pharmacy practice. While traditional pharmacy practice (also called product oriented practice) deals with drugs compounding and dispensing; clinical pharmacy practice (also called patient oriented practice) is mainly focused on the new concept of patient oriented care (Zerrin & Hussain, 2013).

Patient oriented care focuses on the patient and the individual's particular health care needs. Its goal is to empower patients and give them an authorization to become active participants in their care which requires that health care providers develop effective communication skills and address patient needs effectively (Reynolds, 2009).

Patient oriented care is conducted through teamwork between health care providers and patients where they seek the best available ways to treat patient's conditions. In addition, it aims to form positive relationship with

patients by teaching them about their medications as well as the best way to take these medications. Other roles of patient's-oriented care include evaluation of the appropriateness and effectiveness of the patient's medications and adverse drug reaction monitoring (Babiker et al., 2014).

Following the introduction of clinical pharmacy concept in the 1960s (Miller et al., 1981), the world started to recognize the importance of this profession from both patient and hospital perspectives.

This was followed by a substantial number of studies to evaluate the implementation effect of clinical pharmacy services in reducing drug related problems. Findings provided evidence that implementation of clinical pharmacy was reflected in reduction in treatment cost, hospitalization period, drugs related adverse effects, and increase in overall quality of life. For example, a systematic review was conducted to identify the main effects of Clinical Pharmacists´ (CPs) interventions in the management of type 2 diabetes mellitus (Pousinho et al., 2020). This study included 39 randomized clinical trials, involving 5,474 participants, considering clinical, humanistic, and economic outcomes. Pousinho et al reported significant beneficial effects on various clinical outcomes such as improved glycemic control, blood pressure, lipid profile, body mass index and coronary heart disease risk.

These findings support the importance of integration of CPs into multidisciplinary teams as one of the health care providers and emphasize their important roles in improving the management of clinical conditions.

1.2 Pharmacy profession in Jordan

Pharmacists in Jordan practice in various settings; these include: community pharmacy, drug stores, hospital pharmacy, drug information service, pharmaceutical industry, marketing, sales, regulatory agencies, academia, and drug distribution. Currently, there are few clinical pharmacists working in the governmental sector, Royal Medical Services (RMS) and the private sector.

The Jordan Pharmacists Association (JPA) reports that there are around 30.000 registered pharmacists (until June,2022) according to official website for JPA . However, the unemployment rate accelerated to reach 24% according to last official record from Jordan Pharmacists Association (JPA,2018) .

The profession of clinical pharmacy is still young and developing. In Jordan clinical Pharmacy programs (Bs of pharm-D, Ms of clinical pharmacy) were introduced about 20 years ago (pharm-D program started in 2001 in Jordan University of Science and Technology ((JUST)). However, only a small proportion of employed pharmacists are a pharm-D graduate.

In 2009, the Department of Clinical Pharmacy was established at the King Abdullah University Hospital in an effort to provide health care services. The Department of Clinical Pharmacy at KAUH comprises 12

clinical pharmacists who provide services to all hospital wards and units (Alefan & Halboup, 2016).

Moreover, during the same year, the King Hussein Cancer Center (KHCC) in Amman fully implemented a clinical pharmacy department and established a collaborative agreement with St. Jude Children's Research Hospital in Tennessee for advanced training of Jordanian clinical pharmacists.

In Jordan , a study done to evaluate the impact of clinical pharmacy services on Prescribing Errors (PEs) that included 18003 patients found that the involvement of Clinical Pharmacists significantly reduced PEs in the emergency department by 76% .(Abdel-Qader et al., 2021).

1.3 Limitations of Clinical Pharmacy Applications

The integration of clinical pharmacists in patients' care plan which is conducted either directly through morning rounds or indirectly through writing recommendations through the patient information system is very limited.

A considerable number of studies were done to identify the main factors that prevent clinical pharmacists from being active participants of health care team.

One of the main barriers reported was the negative expectations of health care providers toward clinical pharmacy role in hospitals.

For example, a study done in Pakistan aimed to measure HCP's experience, perceptions and expectations regarding pharmacists' role in hospital setting . the study found that most HCPs in the study (84.9%) disagreed with the idea of introducing pharmacists in prescribing medicine for patients. Moreover 80.5% of the respondents did not believe that pharmacists could review and stop antimicrobial agents if they feel it to be unnecessary (Khan et al., 2020).

Lack of administrative support was considered as a crucial factor that prevent implementation of clinical pharmacy services in China (Penm et al., 2014)

In Jordan, the difficulties that limit the implementation of clinical pharmacy services may be partly due to the relatively new introduction of clinical pharmacy services in Jordan. Therefore, there is a lack of institutional policies that describe the roles, responsibilities, or clinical pharmacist position as a health care professional. In addition, the clinical pharmacist concept in Jordan is yet not fully developed and has weak communication with other professions (Alefan & Halboup, 2016).

1.4 Strategies to implement clinical pharmacy services:

Effective implementation of clinical pharmacy profession is a challenging process as it involves making changes at the individual, organizational or health system levels.

Identifying the factors that facilitate the implementation process is an important first step to achieve those changes.

Facilitators to implement clinical practice guidelines (CPGs) which include clinical pharmacy practice as described by (Correa et al., 2020) are divided into :

- Political and social context:

Include clear communication between CPs , HCPs and management with defined roles and responsibilities , also appropriate use of technology and integrated information systems.

- Health organizational system context:

Include adequate time to promote new practice, also management incorporation to the implementation process, finally to ensure that the staff involved have sufficient training on the implementation process .

- Health professional context

Ensure that HCPs have good communication and behavior change skills and Positive attitudes toward clinical pharmacy services

- Patient context:

structured management plans for patient

1.5 Concept of Attitude

In the early years of social psychology, attitude was acknowledged as one of the main psychological experiences. Over the centuries, the importance of attitude has gradually increased and its measuring technique has changed noticeably (Jain, 2014) .

Researching on attitudes is gaining importance because of its influence over an individual's behavior. Despite the long history of research on attitudes, there is no universally agreed-upon definition. For example, very early literature on attitudes defined an attitude as a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence on the individual's response to all objects and situations to which it is related. It is a tendency to respond to some object or situation (Allport, G.W., 1935).

In practice, the term attitude is often used as an umbrella expression covering such concepts as preferences, emotions, feelings, judgments, beliefs, expectations, appraisals, values, principles, opinions, and intentions (Bagozzi, R. P. (1994) .

Based on the above discussion, one may conclude that attitudes can be personalized. Moreover, attitudes combined can reflect a psychological phenomenon where single attitude is invisible. Therefore, attitudes are subjective and are personal attributes and are not easy to measure (Jain, 2014).

Usually, attitudes are used in explaining changes in human behaviors. By identifying the attitudes toward something, it is easier to state the problem if it's exists, eventually leading to practical steps to overcome such problems.

This can be explained by KAP theory (Knowledge, Attitudes and Practices) where attitudes are the driving force of behavior change.

KAP surveys that investigate attitudes can generate data that can be used for various following purposes such as identifying knowledge gaps, cultural beliefs, and behavioral patterns that may identify needs, problems, and barriers to help plan and implement interventions. Moreover, it can help in deepening the understanding of commonly known information, attitudes, and factors that influence behavior. In addition to that it may be used to generate baseline levels and measure changes that result from interventions. Finally, it can assess in identifying communications processes and sources important for program implementation and effectiveness (June, 2014).

These types of studies usually help set program priorities and make program decisions.

1.6 Study rationale

With the accelerated development of health care systems, the clinical pharmacist becomes a crucial element of healthcare team and promotes patient care by interacting with physician and patient.

The role of the clinical pharmacists yet needs to be explored with regards to how it is perceived in the clinical settings in Jordan.

Moreover, as discussed above, researching attitudes can be a first step on practice change by shedding light on how the clinical pharmacy profession is perceived in clinical settings.

Expectations toward clinical pharmacy profession and perceived barriers that may hinder the application of clinical pharmacy services are key factors in the research process.

In addition, studies that investigated attitudes, expectations or barriers of healthcare workers towards the clinical pharmacy profession are limited.

Therefore, the study aims to investigate the attitudes, expectations of health care provider towards clinical pharmacists and try to understand what are the possible barriers that limit the clinical pharmacy profession in a hospital setting.

It is hoped that findings of this study can aid to inform policy makers in Jordan regarding future developments in health care delivery, and to highlight the possible need for the activation of clinical pharmacy practice and roles in order to support quality improvement of healthcare system delivery.

1.7 Research questions

This study was developed to answer the following questions:

1. What are the attitudes of hospital managers and wards' supervisors toward clinical pharmacy profession in a hospital setting?
2. What are the attitudes of pharmacists and clinical pharmacists toward clinical pharmacy profession in the hospital setting?
3. What are the expectations of hospital managers , wards' supervisors , pharmacists and clinical pharmacists toward clinical pharmacy profession in the hospital setting?
4. What are the main barriers that may prevent the application of clinical pharmacy services in the hospital setting?

1.8 Study Objectives

The main objectives of this study are divided into general objectives and specific objectives as follows:

1.8.1 General objective

- The main objective is to assess the attitudes, expectations and barriers of hospital managers, wards' supervisors, pharmacists, and clinical pharmacists regarding clinical pharmacy services in hospital setting in Jordan.

1.8.2 Specific objectives

- To explore the attitudes towards clinical pharmacy profession by the healthcare managers, ward supervisors, pharmacists and clinical pharmacists.
- To examine expectations of health care providers toward clinical pharmacists in the hospital.
- To investigate factors influencing the implementation of clinical pharmacy services.
- To highlight the differences in attitudes , expectations and perceived barriers between study participants according to their sociodemographic factors.
- To compare attitudes and expectations between management related participants and pharmacy related participants.

Chapter Two
literature Review

2.1 Introduction

This chapter provide an overview of the previous research on clinical pharmacy and attitudes of HCPs toward clinical pharmacy services. It begins with definition of clinical pharmacy and the differences between traditional pharmacy practice and clinical pharmacy practice.
Following that, the chapter highlights the main activities of clinical pharmacists, theoretical background about the evaluation of clinical pharmacy services from clinical, economic and humanistic perspectives are presented.
The final part discusses in detail the relevant research about attitudes, expectations and barriers toward clinical pharmacy services.

2.2 Definition of clinical pharmacy

One of the most substantial changes that affect pharmaceutical education and guide the future of pharmaceutical practice is the emerging concept of clinical pharmacy.

As mentioned in Chapter 1, pharmacy practice has evolved dramatically with the recent focus of changes in practice from medication oriented to patient outcomes-oriented care.

During the last few decades, role of clinical pharmacists has shifted globally from dispensing and distribution activities to clinical activity. Accordingly, the definition of clinical pharmacy practice changed. For example, in the early 1990s, clinical pharmacy practice was limited to the analysis of samples of urine, blood, microbiology, and drug concentrations for hospitalized patients (LeBlanc & Dasta, 2005) .

In 2000, the European society of Clinical Pharmacy defined clinical pharmacy as “a health specialty, which describes the activities and services of the clinical pharmacist to develop and promote the rational and appropriate use of medicinal products and devices by the individual and society “ (LeBlanc & Dasta, 2005).

ACCP defines Clinical pharmacy as “a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, and disease prevention” (American College of Clinical Pharmacy, (ACCP) , 2008) .

2.3 Activities of Clinical Pharmacists

In many countries, clinical pharmacy services were not fully developed. Therefore, pharmacists were spending a predominant amount of time on dispensing , distributing and manufacturing activities (LeBlanc & Dasta, 2005).

However, the global trend recently is to give pharmacists more clinical duties by making substantial development of clinical services at all health care levels. For instance, in developed countries, clinical pharmacists are performing various activities depending upon the available resources and healthcare system.

The Society of Hospital Pharmacists of Australia (SHPA) demonstrate these activities as follow ((SHPA) , 2013):

1. **Patient Medication History:**

   It involves collecting and recording of information regarding past and present medications used by the patient through direct interview with the patient and by reviewing of past medical records.

2. **Profile Patient Review:**

   It involves evaluation of patient and medications by making full patient assessment chart.

3. **Adverse Drug Reaction Management:**

   It involves detection, prevention, management and documentation (reporting) of Adverse Drug Reactions (ADRs).

4. **Therapeutic Drug Monitoring (TDM):**

   It involves application of clinical pharmacokinetics especially for drugs with low therapeutic index to monitor drug's efficacy and toxicities.

5. **Drug Information Management:**

   It involves collection, appraisal, utilization and presentation of information relating drug.

6. **Discharge Patient Counseling:**

   It involves patient counseling regarding medication use and possible adverse effects at the time of discharge.

2.4 Value of clinical pharmacy services:

The value of clinical pharmacy is defined by its ability to improve clinical, humanistic and economic outcomes.

A vast set of published literature has assessed the impact of all aspects of clinical pharmacy services in different patient groups.

Multiple randomized controlled trials (RCTs) demonstrated that pharmacists have a positive impact on patient health outcomes both in the community and hospital setting (Rotta et al., 2015).

An RCT study done by (Wright et al., 2002) evaluated the value and significance of inpatient pharmaceutical counselling to elderly patients prior to discharge. The finding highlighted the positive role of in-patient pharmaceutical counselling, which contribute to better drug knowledge and compliance which enhance total patient quality of life, in addition to reduced re-admissions.

This study and others over the course of more than two decades prove the actual importance of the services provided by the clinical Pharmacy department.

2.4.1 : Value of Clinical Pharmacy in improving clinical outcomes:

Several systematic reviews and meta-analyses showed that pharmaceutical care was associated with improvements in health outcomes of patients with heart failure, diabetes, hypertension and hyperlipidemia.

A systematic review includes 12 RCTs (2060 patients) done to identify the importance of CP's Care in Patients with Heart Failure. The systematic review found the benefits of pharmaceutical care in reducing hospitalization in patients with Heart Failure by almost one-third (Koshman et al, 2008).

Another study which included 7 systematic reviews done to find out The impact of CP's care on diabetes outcomes in primary care settings.

Improvement in HbA1c was the mostly reported clinical outcome of CP intervention in the literature (reported in six SRs), moreover, CP's interventions led to significant cost-saving ($8–$85,000 per person per year) concluding that, the incorporation of CP's into multidisciplinary diabetes care teams is helpful and should be strongly considered by clinicians and health policymakers (Abdulrhim et al., 2019).

Bond & Raehl, 2006 study was also done to evaluate the relationship between the implementation of clinical pharmacy services and adverse drug reactions (ADRs) . The study which include 584 United States hospitals (providing specific information on clinical pharmacy services and had functional ADR reporting systems) found that the most significant reductions occurred in hospitals offering pharmacist-provided admission drug histories, drug protocol management and ADR management.

In Jordan a study done to evaluate the impact of clinical pharmacy services on preventing prescribing errors, the study which was conducted on the emergency department of a governmental hospital in Jordan as pre-post study in period from October and November 2019. The study found that the incidence decreased from 24.6% to 5.4%. also contraindication, drug selection, and dosage form error types were significantly reduced from 32.6%, 9.1% and 3.7% to 12.6%, 0.0% , and 0.0% respectively. Moreover significant and serious errors were significantly reduced from 68.7% and 3.0% concluding that clinical pharmacists significantly reduced prescribing errors s in the emergency department (ED) (Abdel-Qader et al., 2021).

A study done in Iran to evaluate the role of clinical pharmacists' interventions in detection and prevention of medication errors, the study which includes 861 patients found that mean number of medication errors per patient was 0.13 , concluding that CP's interventions can effectively prevent these errors(Khalili et al., 2011).

Another study by (Folli et al., 1987) done to identify the role of CP in preventing medication errors at two large pediatric hospitals. the study was conducted prospectively during a 6-month period. A total of 281 and 198 errors were detected in both hospitals. the most common type of errors was overdosage and the most common class of drugs detected was antibiotics. The study concludes that involving clinical pharmacists in reviewing drug orders significantly reduced the potential harm resulting from medication orders.

2.4.2 :Value of clinical pharmacy in improving economic outcomes:

Clinical and cost-effectiveness evidence is needed to justify the urgent needs for existence or extension of routine clinical pharmacy services in hospital settings. This relation can be more explained with pharmacoeconomic concept.

Pharmacoeconomics is the branch of economics related to the most economical and efficient use of pharmaceuticals, economic approaches are applied to pharmaceuticals to guide the use of limited resources to yield maximum value to patients, health care payers and society in general

(Tosti et al., 2005).

It is noticed that importance of Pharmacoeconomics is more urgent than ever for health policy decision-making.

A study (States, 2001) done in a large academic medical center to analyses the cost-effectiveness of CP's interventions in term of direct cost saving and cost avoidance (by avoiding adverse drug events [ADEs]).

CPs performed a total of 4959 interventions during a 12-month period. The interventions provided direct cost savings of $92,076 and an estimated cost avoidance of $488,436.

In addition, another systematic review evaluated the quality of economic interventions of clinical pharmacy services in order to inform administrators and policy makers about their roles in making cost-effective interventions.

The study included 25 studies from 2006 to 2010 and found that clinical pharmacy services were cost-effective with a good benefit: cost (B:C) ratio (Touchette et al., 2014) .

2.4.3:Value of clinical pharmacy in improving humanistic outcomes:

In addition to clinical benefits, clinical pharmacist interventions have also demonstrated positive outcomes when measured using health-related quality of life assessments (HRQoL) .(Gallagher et al., 2014).

This involves a multidimensional assessment of a patient's physical, emotional, functional and social wellbeing.

Pharmacist interventions targeting specific conditions including asthma, hypertension and chronic heart failure have tended to be more studied and show noticeable improvements in HRQoL.

A systematic review (Pickard & Hung, 2006) of published studies looking for impact of clinical pharmacy services on health-related quality of life (HRQL) finding that Certain clinical pharmacy services, such as asthma management, appear to offer the most convincing evidence for the value of clinical pharmacy services in terms of measurable short-term HRQL benefit.

2.4.4 Summary:

Successful implementation of all clinical pharmacy services which include identification, resolution, and prevention of drug-related problems (DRP) is associated with reduced incidence of medical errors which contributes to better disease management and shorter length of stay and mortality.

Monitoring of inpatient's response to drug therapy and their compliance to medications is considered one of best applied examples of beneficial roles of clinical pharmacists in the hospital.

At discharge, role of clinical pharmacists is summarized by checking medications list and counselling patients about their medications with the goal to improve total patient quality of live.

Clinical pharmacist's interventions have financial benefits to hospital, at an international level, health care policy makers think of CPSs as a source of cost-saving process which is explained by the concept of Pharmacoeconomics.

2.5 Attitudes, perceptions and expectations of health care providers toward clinical pharmacy services:

Health care providers' attitudes toward clinical pharmacy services and collaborating with clinical pharmacists may facilitate or hinder the implementation and expansion of the CPs and the role of the clinical pharmacist in hospital wards (Vinterflod et al., 2018).

Effective interdisciplinary collaboration between all health team members has demonstrated positive impacts on patient management, their health outcomes and safety, however, it appears that collaboration between healthcare providers is complex and rarely performed in such a way. Numerous elements have been shown to negatively influence interdisciplinary collaboration, including, cultures and values specific to each profession, power and boundary concerns, lack of understanding of other professions' activities and responsibilities, distrust, communication breakdown (Béchet et al., 2016).

Various studies have been conducted on the field of interdisciplinary collaboration, concerning health care providers–pharmacist working relationships, and their expectations toward clinical pharmacy services.

Internationally, a study done to explore physicians' perceptions regarding clinical pharmacy services performed at hospital wards in Northern Sweden. the study which conducted as face-to-face interviews found that all physicians

were positive regarding clinical pharmacy services and were satisfied with the collaboration with the clinical pharmacists (Vinterflod et al., 2018).

In Cyprus, a study done to assess the perception and attitude of healthcare professionals towards clinical pharmacists. The study which included a total of 256 healthcare providers (45 physicians, 80 nurses, and 131 intern medical students) found that (55.6%) of physicians were comfortable with the clinical pharmacist participating in the ward rounds and providing consultation to physicians regarding individual patients. Moreover, (71.3%) of the nurses have confirmed the clinical pharmacist as playing a role in the identification of the drug interactions. finally, (66.4%) of intern medical students have recognized the role of clinical pharmacists in minimizing adverse drug reaction and improving therapeutic outcome of the patients (Malik et al., 2020).

In Sri Lanka , a study done to determine the level of acceptance and attitudes of doctors and nurses towards the introduction of a ward-based clinical pharmacy service .The study which included 274 HCPs (physicians and nurses) found that the doctors' views and attitudes were highly positive (91.6%) regarding the inclusion of a ward-based pharmacist to the healthcare team (Shanika et al., 2017).

In China , a study done to explore physicians' perceptions and overall attitudes toward CPS , the study which include 990 physicians in the inpatient units of 22 general hospitals found that physicians' attitudes were positive (81.3 %) toward clinical pharmacy services (Li et al., 2014).

A study done in Pakistan to investigate doctors' perception and expectations of the role of pharmacists in Pakistan's healthcare system, the study which included 462 doctors working in governmental hospitals found that (68%) of the doctors appeared comfortable with pharmacists playing patient-centered roles. In addition to that, most doctors (84.5%) expected pharmacists to take personal responsibility for resolving any drug-related problem (Khan et al., 2020).

A study was conducted in Ethiopia in 2019 to assess knowledge and attitude of health care professionals towards clinical pharmacy services. Results of this study revealed that 67.3% of the HCPs (n=110) had a positive attitude about CPS. It also showed that 60.9% of the participants had a good knowledge about CPS (Fekadu et al., 2019).

Regarding attitudes from Arabic region perspective:

In Qatar, a study done to assess Perceptions and expectations of health care providers towards clinical pharmacy services at a tertiary cancer center. The study which included 375 healthcare providers including physicians, operational pharmacists, nurses and dietitians found that healthcare providers have a high level of trust in the clinical pharmacists' abilities. Also most of the healthcare providers (74%) perceived the increasing interest in clinical pharmacy services (Omar et al., 2020).

In Palestinian, a study done to evaluate the awareness and acceptance levels among healthcare providers about clinical pharmacy specialty. Results revealed that 70.2%of participants had a good acceptance level toward the implementation of clinical pharmacy services among the health worker team (Naseef et al., 2020).

Another Saudi study with the aim of exploring the views of hospital doctors on the clinical role of pharmacists, in addition to their expectations. the study which include 400 participants found that 74% were willing to collaborate with a clinical pharmacist, and Approximately 67%of the doctors strongly agreed that a clinical pharmacist was a reliable source of drug information. It also reported that most of the doctors (70%) expected the clinical pharmacist to advise them on rational use of drugs, to resolve drug-related problems and to counsel patients (Abdel-Latif, 2017).

In United Arab Emirates (UAE), a study done to investigate the perceptions and experience of physicians regarding the clinical role of the pharmacists. the study that include 285 physicians with different years of experience and specialty found that the physicians who had fewer years in practice (less than 10 years) and recently graduated had more acceptances to the clinical role of the pharmacist and believed that there should be a clinical pharmacy services in their hospitals (Ibrahim & Ibrahim, 2014).

In Egypt, a study done to investigate the perceptions and experience of physicians regarding the role of the clinical pharmacists. the study which included 583 physicians found that 33% of participants believed that pharmacists could be a reliable source of clinical information, identify clinically related problems or advise the physicians about medication's cost effectiveness. In addition to that, More than 80% agreed that physicians and clinical pharmacists should have daily cooperation (Sabry & Farid, 2014).

In Kuwait, a study to evaluate the perceptions, expectations and experience of physicians with hospital pharmacists. the study which included 200 physicians practicing in four government hospitals in Kuwait found that 57% of participants appear comfortable with pharmacists carrying out patient-directed roles. In addition, they appeared to have high expectations of pharmacists, with 79% of them regarding pharmacists as knowledgeable drug therapy experts (Matowe et al., 2006).

A study in Jordan to investigate physicians' perceptions, expectations, and their actual experiences with pharmacists in hospital settings in Jordan. the study which included 284 physicians selected randomly from 4 main hospitals in northern Jordan found that about 52% of the physicians were comfortable with pharmacists providing patient education. moreover, most physicians (62.5%) expect the pharmacist to educate their patients about safe and appropriate use of drugs; however, approximately one third (33.9%) of them do not expect the pharmacist to be available for consultation during rounds. Approximately 54% of the physicians agreed that pharmacists were

always a reliable source of information. Nevertheless, only 28.2% agreed that pharmacists frequently inform them that their patients have experienced some problem with their medications (Tahaineh et al., 2009).

Same study was reconducted in 2017 to assess differences in these areas (perceptions, expectations of and experiences with clinical pharmacists) between the 2017 and the 2006/2007 samples. The study found that the overall score was improved in all areas evaluated.

2.5.1 Summary:

The overall attitudes of HCPs toward clinical pharmacy services varied. While we can see that studies done in developed countries revealed that they have more positive attitudes and participants are more willing to cooperate with clinical pharmacists and their health care systems have already established a collaborative strategy for clinical pharmacists to be active participants with the health care teams

On the other hand, studies from developing countries including Arabic region generally reported less willingness to cooperate with clinical pharmacists, and only few concluded that there is need for clinical pharmacists to be in the rounds.

Analysis of the literature suggest that the weak attitudes towards clinical pharmacy profession might be partly due to health care policies are still underdeveloped and need to be updated to meet the international trend.

2.6 Factors affecting the implementation of clinical pharmacy services:

The degree of implementation of clinical pharmacy services has varied internationally , while advanced clinical pharmacy services such as pharmaceutical care plans are highly implemented in countries like : Canada , the United States and Australia , other developed countries and developing countries implement clinical pharmacy services to a lesser extent (Brazinha & Fernandez-Llimos, 2014).

However, simple clinical pharmacy services such as: patients counselling and presentation of the last updated therapeutic protocols to HCPs reported to be implemented widely.

It’s important to have a comprehensive understanding of factors that may prevent the implementation of clinical pharmacy services in health system.

A study done in Kuwait to identify barriers that may hinder the implementation of clinical pharmacy services. The study which includes a total of 166 pharmacists and 284 physicians across 6 public hospitals in Kuwait found that the major barriers to implement CPS were shortage of staff, inadequate clinical education/training, lack of clarity of job description and authority for pharmacists and difficult communication between pharmacists and physicians (Lemay et al., 2018).

(Dos Santos Júnior et al.) expressed barriers that may prevent implementation of clinical pharmacy services into five categories (Dos Santos Júnior et al., 2018):

- Local healthcare network:

Related to physical and human resources factors:

Physical factor: including a lack of private area for pharmacists' clinical activities, material resources like furniture, internet, access to patients' records, computer equipment, and devices.

Human resources factors: including unawareness of some managers regarding CPS which lead to managers' resistance to implement the CPS.

- Healthcare team:

Unawareness of the healthcare team about the clinical pharmacists' work.

- Pharmacists:

Insufficient clinical education and training during undergraduate degree in Pharmacy, in addition to gaps in pharmacist-health unit communication.

- Implementation process of the CPS:

Including a Lack of electronic health records (documentation system)، in addition to requirement for adequate physical structure in the health unit.

2.7 The Conceptual Framework:

Attitudes towards clinical pharmacy services depend largely on social and demographic properties of health care providers, which can also assess their expectations about the importance of CPs in routine clinical basis.

By identifying attitudes and expectations of HCPs, importance of the role and practice of clinical pharmacy services should be highlighted.

Finally, assessment of barriers as perceived from HCPs' point of view and the relationships between HCPs' sociodemographic factors and these barriers.

Perceived barriers preventing CPS from being implemented give an insight about career development and how policy makers should support the efforts in making legislations and regulations that optimize the active roles of CPS.

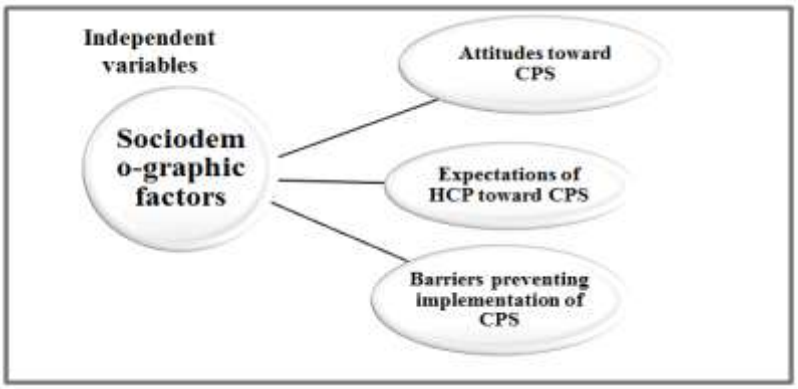


Figure 2.1) Conceptual framework for attitudes ,expectations and barriers of HCPs toward the role of CPS in Jordanian hospital setting

Chapter Three
Methods and Materials

3.1 Introduction

This research is concerned with the attitudes of health care providers toward the role and practice of clinical pharmacy. Therefore, this chapter will outline in detail the processes and methods that were carried out in order to answer the research questions.

3.2 Study design

This study follows a cross -sectional design.

3.3 Study setting

In Jordan, the health sector consists of public sector, private sector, and non-for profit sectors.

The public sector comprises the Royal Medical Services (RMS), the Ministry of Health (MOH), and two university hospitals (King Abdullah University Hospital and University of Jordan Hospital) and the National Center for Woman's Health in addition to the National Centre for Endocrinology, Diabetes, and Genetics (NCEDG).

The current study included participants working in the public sector, specifically in Ministry Of Health (MOH) hospitals.

Ministry of health (MOH) provides health care services by two major branches : Governmental hospitals and Health Directorates . the present study has targeted employees from hospital settings due to the lack of clinical pharmacy services in the health directorates.

Governmental hospitals distributed in Jordan according to (MOH, 2021) as follow (see appendix 1 for more details):

Table 3.1 Hospital distribution in Jordan according to MOH 2021

Region	Number of hospitals
North region	15 hospital
Central region	16 hospital
South region	6 hospital
Total	37

3.5 Study population

Participants of the study were categorized into four subgroups:

- Hospital managers.
- Physicians and nurses working as supervisors of selected departments (departments with direct contact with clinical pharmacists and have the major opportunities to get benefits of clinical pharmacy services which include: Internal medicine, ICU, Pediatrics', Outpatient clinic , Surgery Obstetrics/Gynecology, Emergency Medicine and pharmacy.

- Pharmacists working in hospitals.
- Pharm Ds working in hospitals.

Addition of pharmacists and pharm Ds to study sample was to compare attitudes , expectations and perceived barriers between managerial perspective and pharmacy perspective .

3.6 Eligibility criteria

3.6.1 Inclusion criteria:

- Health care professionals working in one of the above-mentioned subgroups at the time of data collection.

3.6.2 Exclusion criteria:

- Health care professionals and hospital employees working in departments such as : Orthopedic , dental , Ophthalmology , ENT , human resources , medical and non-medical supplies , stores , quality , infection control, rehabilitation ..etc. were not selected for participation as they have minimal or no direct contact with clinical pharmacy services .
- Other health care providers working in health care facilities outside MOH because of feasibility issues.

3.7 Sample size calculation and sampling techniques:

Data of detailed numbers of all health care workers in MOH were obtained from MOH offices and Civil Service Bureau (CSB) by the researcher after recurrent visits between October and November, 2021 as shown in Table3.2.

Table 3.2 Population size of each subgroup according to MOH and CSB 2021

Job description	Count
Hospital managers	37
Ward supervisors	230
Pharmacists	410
pharm D	60
Total	737

The sample size was determined using OpenEpi version 3.01 (OpenEpi Menu, Dean, A. G.,2013) .

There is no previous study in Jordan about attitudes of HCPs toward clinical pharmacy services , however , a study done Qatar (Omar et al., 2020) with the same aim of the current study found that 74% of the HCPs had a positive attitude about clinical pharmacy services, and based on total number of target population of study and with consideration to the non-response rate of 10% . The sample size of the study was calculated to be 234 to achieve 95% level of confidence and 5% margin error.

Jordan was divided into North, South and Central areas. After that, Cluster sampling was done through choosing hospitals as one unit and distributing questionnaires to all eligible participants in these hospitals.

3.8 Data collection

3.8.1 Study tool

A self-administered questionnaire was used. It was constructed using two reliable and validated questionnaires (Omar et al., 2020) and (Gelaw et al., 2017) chosen after a thorough literature search on the same area of research .

The questionnaire consists of four sections with a total of 39 questions. (See Appendix 2 and Appendix 3 for full details of both Arabic and English versions of the used questionnaire)

- Section One : sociodemographic information

Include 7 questions aimed to identify sociodemographic characteristics of the respondents which are : gender , age , profession , area of practice , working region , total years of experience , previously involved in clinical pharmacy related meetings and/or workshops.

All of these questions are close – ended questions (except age question) that have a distinct set of pre-defined responses to choose from.

By collecting such background information, the researcher was able to segment and differentiate groups based on a range of different demographic factors, in addition to comparing and evaluating how responses can vary according to different demographic criteria in further analysis.

- Section Two: Attitudes towards clinical pharmacy practice in Jordan . It consists of 11 questions intended to measure the attitudes of HCPs towards the clinical pharmacy services.

Each item in this section received a response of five options (measured by Likert scale (strongly agree , agree , neutral , disagree , strongly disagree) .

- Section Three: Expectations of health care managers and health care providers about the role of clinical pharmacists at hospital setting which consists of 11 questions intended to measure the expectations of health care managers and health care providers from the clinical pharmacy services.
- Section Four: Barriers that may limit the current clinical pharmacy services, consists of 9 questions intended to obtain the perceived barriers that can hinder clinical pharmacist's role.

3.8.2 Tool translation

The questionnaire was originally available in the English language. It was initially translated into Arabic language by the researcher, after that it was reviewed separately by an assistant professor in English language and an assistant professor in pharmaceutical sciences, both have extensive experience in academic research. (see appendix 4 for more details).

Changes were made according to the provided comments by the expert panel. A final version in Arabic language was developed and used.

3.8.3 Validity

Face validity of the measurement tool was tested through pilot study where 20 person from relevant participants were asked to complete the questionnaire, the purpose of the pilot study was to make sure that the statements were simple and easily understood, also, to figure out if there is any comments about the questionnaire before the distribution process, however, no comments where encountered. Finally, pilot study responses were not included in the research sample.

Content validity was tested through content validity index (CVI) form, where two experts with extensive experience in academic research in public health and pharmaceutical sciences were asked to complete this form (see Appendix 5 for more details).

A content validity index is obtained for each item. The experts answer the questions about each item independently, these questions represent three categories as follow:

- Linked: Is this item directly related to job performance?
  - yes
  - No
- Essential to job performance: To what extent is the content of this item essential to job performance?
  - Definitely essential
  - Maybe essential
  - Useful but not essential
  - Unnecessary
- Quality of item : What is the quality of the item in terms of the stem, the options, and the key?
  - Excellent quality
  - Good quality
  - Fair quality
  - Poor quality

In our study , total CVI score was 86% .Subsequently, all comments and suggestions from experts in addition to findings from the pilot sample and the content validity were taken into consideration and while preparing the final version of the used questionnaire.

3.8.4 Reliability:

To test internal consistency of the paragraphs in each domain of the study, the research use Cronbach's alpha tool, which calculate the degree of interrelation between items in each domain. (sociodemographic domain was excluded).

The results of Cronbach's alpha reliability are presented in table (3.3) below:

Table 3.3 : Cronbach's alpha reliability values for each domain of the questionnaire used in the study

domain	Number of items	Cronbach's alpha value
Attitudes of HCPs towards clinical pharmacy practice in Jordan	11	0.868
Expectations of HCPs about the role of clinical pharmacists at hospital setting	11	0.864
Barriers that may prevent implementation of CPSs	9	0.753
Total score	31	0.867

The value of reliability test ranges from 0.753 of barriers domain to 0.868 of attitude domain with a value for the entire questionnaire od 0.867 which give a satisfactory internal consistency result of the questionnaire.

3.8.5 Data collection procedure

In each hospital visit and after taking the permission for distributing the questionnaire, forms were distributed through HR department.

The questionnaire was shared as a link of Google forms aimed at the eligible respondents except for hospital managers' subgroup where questionnaire forms were distributed and collected using hard copies due to bureaucratic issues.

After that, responses were collected and assembled in one dataset. data collection process lasted for about 12 weeks (November 2021-febreuary 2022).

3.9 Study variables:

3.9.1 Independent variables:

Socio-demographic variables which include age, gender, profession , years of practice , site of pratice , geographical workplace.

3.9.2 Dependent variables :

- The overall attitudes of health care providers towards clinical pharmacy services in Jordanian hospital setting.
- The overall expectations of HCPs toward the role of clinical pharmacists in Jordanian healthcare system.
- The overall Expected barriers that may prevent the application of clinical pharmacy services .

3.10 Ethical Considerations

3.10.1 Ethical approval

Ethical approval was obtained from Mutah University Ethical committee, as well as from the Ethics committee of MOH. (Appendix 6). Informed consent from each participant in the study was also obtained.

A permission was obtained from each hospital manager after presenting a brief summary about the research and its importance.

3.10.2 Confidentiality

All participants responses in the distribution process were kept confidential. The names of the participants were not required, in the questionnaire, or during data entry.

3.11 Data analysis

Data were collected and checked for errors, after that data were coded in SPSS version 27 .

Data collected in the attitudes, expectations and barriers were measured using 5 point Likert scale: (strongly agree , agree , neutral , disagree , strongly disagree) , then they were combined and represented in the results as two categories as follow :

- (Strongly agree, agree) reduced into (positive attitude, positive expectations and presence of barriers)
- (Strongly disagree, neutral, disagree) reduced into (negative attitude, negative expectations and absence of barriers).

Overall scores and the division of categories of the study outcomes was calculated as follows:

Regarding attitudes and expectations ,total score had a value of 11-22 (since negative response was coded with number 1 and positive response was coded with number 2 and total items in these sections were 11) depending to this:

- Participants with total score of 11-16.5 was considered to have negative attitudes and expectations .

Participants with total score of 16.6-22 was considered to have positive attitudes and expectations .Regarding barriers, total scores were ranged from 9-18 (number of items was 9) , accordingly :

- Participants with total score of 9-13.5 was considered to report absence of barriers .
- Participants with total score of 13.6-18 was considered to report presence of barriers .

Descriptive analyses were used for characteristics of the respondents using frequencies and percentages.

ANOVA test was intended to be done to measure differences between groups in relation to the examined factors. However, data did not meet the assumptions for Analysis of Variance (ANOVA) where (p-value < 0.05) as shown in Tables (3.4) and (3.5).

Table 3.4 tests of normality

	Kolmogorov-Smirnov[a]		
	Statistic	**df**	**Sig.**
Total attitude score	.539	242	0.000
Total expectation score	.535	242	0.000
Total barrier score	.455	242	0.000

Table 3.5 Test of Homogeneity of Variances

Dependent variables		**Levene Statistic**	**df1**	**df2**	**Sig.**
Attitudes	Based on Mean	21.234	3	238	.000
expectations	Based on Mean	13.407	3	239	.000
Barriers	Based on Mean	8.903	3	239	.000

Testing for homogeneity of variances revealed that distributions of the outcomes in each independent group were not equal as expressed in Table (3.6), (p-value < 0.05).

Consequently, non-parametric tests were used to verify differences. Kruskal–Wallis's test was used for three and more groups and Mann–Whitney U-test used for two groups.

3.12 Operational definitions

Attitude: is defined as "A psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" (Eagly & Chaiken, 1993).

Expectations: beliefs that something will happen or is likely to happen.

PharmD program: The PharmD is a professional degree granted by the Faculty of Pharmacy. The PharmD is like the bachelor's degree in pharmacy in the fact that it is a first degree. The PharmD program is patient-oriented, with emphasis on pharmaceutical care**.**

Clinical pharmacy profession: is a branch of pharmacy that involves the provision of patient care with the use of medications to optimize the health outcomes of patients.

Chapter four
Results, Discussion and Conclusion

4.1 Introduction

This chapter presents the findings of this study in form of descriptive analysis for socio-demographic information of the respondents (section1), attitudes, expectation, barrier findings

Inferential analysis take place to identify the actual relationship between socio-demographic characteristics of the respondents and their attitudes, expectations and perceived barriers.

4.2 Sample characteristics

A total of 243 responses were collected and analyzed, the sample characteristics are presented in Table 4.1.

The results show that more than half of respondents were females 56.4% (N= 137) while males represent 43.6% (N=106).

41.6% (N=101) of respondents belong to age group of 30-39 years old, the mean age was 38.68 ± 7.8 years. Followed by the category of (40-45) years old with 38.3%. The oldest participant was 59 years old, and the youngest was 23 years old.

Regarding participants' position, ward supervisors represented the highest proportion of the total sample(42.8%) followed by pharmacists and clinical pharmacists 33.4% and 16.9% respectively). Hospital managers constituted 6.6% of the study sample..

Regarding geographical distribution of the study sample, participants from South and Central area represented 36.6% and 34.6% respectively. The remaining were participants working in the North areas in Jordan (28.8%).

Regarding hospital department, pharmacists who work in Pharmacy department comprised the highest percentage of respondents (42.4%). Followed by respondents from Internal Medicine and Intensive Care Units (12.3 % and 13.6% respectively). The remaining were distributed among other departments with variable percentages.

Regarding respondents' years of experience, 29.3% of the participants had 5-10 years of experience followed by the category of 11-15 years of experience (24.7%). Other categories had comparable proportions.

Finally, more than half of participants (59%) reported attending a scientific meeting or workshop presented by clinical pharmacy department at least once during their working period.

Table 4.1: Sociodemographic/general characteristics of study participants in selected variables:

Characteristic	N	%
Gender		
Female	137	56.4
Male	106	43.6
Age (years)		
20-29	31	12.8
30-39	101	41.6
40-49	93	38.3
≥50	18	7.4
Position		
Clinical pharmacists	41	16.9
Pharmacists	82	33.7
Ward Supervisor	104	42.8
Hospital managers	16	6.6
Working region		
South area	89	36.6
Central area	84	34.6
North area	70	28.8
Department		
Internal medicine	30	12.3
Intensive care unit	33	13.6
Paediatrics	17	7.0
Outpatient clinic	7	2.9
Surgery	23	9.5
Obstetrics/Gynaecology	14	5.8
Emergency Medicine	16	6.6
Outpatient pharmacy	75	30.9
Ward pharmacy	28	11.5
Experience		
Less than 5 years	43	17.7
From 5-10 years	71	29.2
From11-15 years	60	24.7
From16-20 years	36	14.8
More than 20 years	33	13.6
Have attended relevant workshop		
Yes	144	59.3
No	99	40.7
Total	243	100.0

4.3 Overall attitudes, Expectations and perceived barriers

Figure 4.1 shows the overall scores calculated for each section included in the study. The total score of each domain was divided into positive and negative categories. While the barriers domain was represented into two categories of presence or absence of barriers.

The majority of respondents (93.8%) shows positive attitudes towards clinical pharmacy profession. Similarly, 91.8 % of respondent's expectations were positive and they expect clinical pharmacists to have a crucial role as professionals of health care team.

On the other hand, two thirds (65.4%) of the study sample perceive the presence of barriers as obstacles that prevent clinical pharmacy services from being implemented, while the remaining think that these barriers do not present.

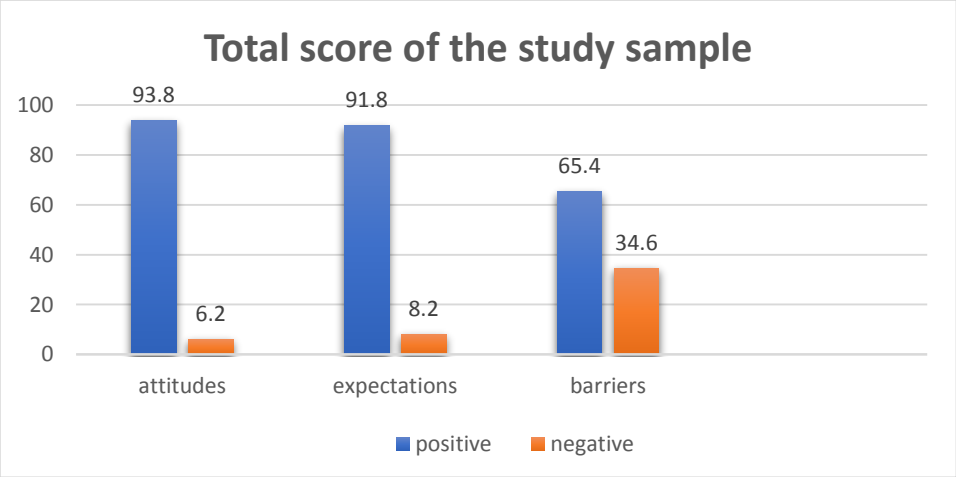


Figure 4.1: respondent's total score for each domain of the study

4.4.1 Attitudes of HCPs toward the role and practice of clinical pharmacists:

Table 4.2 : attitudes of HCPs toward clinical pharmacy profession

Item	negative attitudes		positive attitudes	
Clinical pharmacists' involvement in ward round is desirable	20	8.2%	223	91.8%
Clinical pharmacist can play important role in patient education and counselling?	13	5.3%	230	94.7%
Clinical pharmacist can monitor patient response to drug therapy from toxicity/side effects perspective)	27	11.1 %	216	88.9%
Clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective	32	13.2 %	211	86.8%
The clinical pharmacist in a clinical ward team is a requirement for hospital accreditation	46	18.9 %	197	81.1%
Clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors	30	12.3 %	213	87.7%
Clinical pharmacist can provide relevant drug information to health care professionals	21	8.6%	222	91.4%
Clinical pharmacist can detect and prevent medication use Errors	24	9.9%	219	90.1%
Clinical pharmacy services enhance patient's satisfaction	24	9.9%	219	90.1%
I think that Clinical pharmacists can improve over all patient outcome/ quality of patient care?	24	9.9%	219	90.1%
I think that clinical pharmacy services should be available in hospital's wards on a full time schedule	21	8.6%	222	91.4%
Total score		**Percent**		
Negative attitudes		6.2%		
Positive attitudes		93.8%		
Total		100.0%		

All items in attitudes domain appeared to have comparable positive ratio which represented as follow:

- (94%) of participants agreed that clinical pharmacist can play important role in patient education and counselling.
- (91%) of participants believed that clinical pharmacists' involvement in ward round is desirable, also they believed that clinical pharmacist could provide relevant drug information to health care professionals, for that reason they think that clinical pharmacy services should be available in hospital's wards on a full time schedule.
- (90%) of study participants reported that they had positive attitudes regarding the role of clinical pharmacists in enhancing patient's satisfaction and in detecting and preventing medication use Errors, also they think that clinical pharmacists can improve overall patient outcome/ quality of patient care.
- (88%) of study participants agreed that clinical pharmacist can monitor patient response to drug therapy from toxicity/side effects perspective.
- (87%) of study participants informed they believe that clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors.
- (86%) of study participants reported that clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective.
- Lowest positive attitude ratio of study participants (81%) was that they believed that clinical pharmacist in a clinical ward team is a requirement for hospital accreditation.

4.4.2 attitudes as perceived per study subgroups

Table 4.3: attitudes as perceived per study subgroups

Items	Hospital managers		Ward supervisors		pharmacists		pharmDs	
	Positive	negative	Positive	negative	Positive	negative	Positive	negative
Clinical pharmacists' involvement in ward round is desirable	93%	7%	91%	9%	95%	5%	95%	5%
Clinical pharmacist can play important role in patient education and counselling?	75%	25%	95%	5%	96%	4%	97%	3%
Clinical pharmacist can monitor patient response to drug therapy from toxicity/side effects perspective	81%	19%	89%	11%	88%	12%	92%	8%
Clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective	81%	19%	84%	16%	90%	10%	92%	8%
The clinical pharmacist in a clinical ward team is a requirement for hospital accreditation	62%	38%	79%	21%	85%	15%	87%	13%

Clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors	43%	57%	91%	19%	93%	7%	92%	8%
Clinical pharmacist can provide relevant drug information to health care professionals	81%	19%	94%	6%	93%	7%	92%	8%
Clinical pharmacist can detect and prevent medication use Errors	61%	39%	91%	9%	94%	6%	95%	5%
Clinical pharmacy services enhance patient's satisfaction	75%	25%	91%	9%	94%	6%	95%	5%
I think that Clinical pharmacists can improve over all patient outcome/ quality of patient care?	75%	25%	91%	9%	94%	6%	95%	5%
I think that clinical pharmacy services should be available in hospital's wards on a full time schedule	68%	32%	93%	7%	94%	6%	95%	5%

Table 4.3 shows differences in each item in attitude's section as perceived by study subgroups, 93% of hospital managers reported that clinical pharmacists' involvement in ward round is desirable while only 43 % of them agreed that clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors .

The highest proportion other subgroups (ward supervisors, pharmacists and pharmDs)agreed that clinical pharmacist can play important role in patient education and counselling, also the agreed on that clinical pharmacist in a clinical ward team is a requirement for hospital accreditation as the lowest reported attitude toward clinical pharmacy profession.

4.4.3 Differences in overall attitude between study subgroups:

Table 4.4 : differences in overall attitudes toward clinical pharmacy profession between study subgroups

position	**Negative attitudes**		**positive attitudes**		**total**	
Hospital manager	4	25%	12	75%	16	100%
Ward supervisor	8	10%	74	90%	82	100%
Clinical pharmacist	1	2%	40	98%	41	100%
Pharmacist	2	2%	102	98%	104	100%
Total	15		228		243	100%

Table (4.4) show differences between study groups in their attitudes according to position (hospital managers, ward supervisors, pharmacists and pharmDs) by calculating total attitude score and compare the differences between each subgroup.

Highlighting differences between study participants helps in minimizing sympathetic perceptions that could be derived from pharmacists and pharm Ds regarding attitudes toward clinical pharmacy profession.

While participants from pharmacy-related positions (pharmacists and pharmDs) had the highest positive attitude score (98%) , participants from managerial related positions had relatively lower positive attitude score and relatively more negative attitude score (90% of ward supervisors had positive attitude score and 75% of hospital managers had positive attitude score).

4.5.1 Expectations of HCPs toward clinical pharmacy practice in Jordan:

Table 4.5: expectations of HCPs toward clinical pharmacy practice in Jordan:

Total score Item	frequency negative attitudes		Percent positive attitudes	
Providing evidence-based drug therapy recommendations when requested	14	5.7%	229	94.3%
Providing information about medication efficacy and safety	18	7.4%	225	92.6%
Clinical pharmacist selects appropriate general dosing regimens	26	10.6%	217	89.4%
Providing information about drug interactions	28	11.5%	215	88.5%
Monitoring outcomes of drug therapy and treatment plans	34	14%	209	86%
Monitoring adverse drug reactions in hospitalized patients	30	12.3%	213	87.7%
Assessing patient adherence to drug therapy	39	16%	204	84%
Providing information about medication availability and shortages	40	16.4%	203	83.6%
Making medication decisions based on medication pricing	42	17.2%	201	82.8%
Managing the dosing of total parenteral nutrition (TPN)	49	20.1%	194	79.9%
Performing medication reconciliation for hospitalized patients	44	18.1%	199	81.9%

(Table 4.5) shows responses to each item in the expectations section, also it showed overall positive and negative expectations of study participants regarding clinical pharmacy profession in Jordan.

91.8% reported positive expectations toward clinical pharmacy profession, while 8.2% had negative expectations.

Unlike responses of study sample in attitudes section, more variation was noticed about expected roles and duties of clinical pharmacists in hospital

setting. The result of each item in expectations section can be summarized as follows:

- 94% of study sample expected that clinical pharmacists can Provide evidence-based drug therapy recommendations when requested.
- 92% of study participants agreed with that clinical pharmacists can provide information about medication efficacy and safety.
- 89% of study sample informed that they expect clinical pharmacist to select appropriate general dosing regimens for patients.
- 88% of study participants believed that clinical pharmacists can provide information about drug interactions.
- 87% of study participants agreed that clinical pharmacists can monitor adverse drug reactions in hospitalized patients.
- 86% of study participants expected that clinical pharmacists can monitor outcomes of drug therapy and treatment plans.
- 84% of study participants expected that clinical pharmacists have a role in assessing patient adherence to drug therapy.
- 83% of study participants agreed that clinical pharmacists can provide information about medication availability and shortages.
- 82% of study participants expected that clinical pharmacists can make medication decisions based on medication pricing.
- (81%) of study participants agreed that clinical pharmacists can perform medication reconciliation for hospitalized patients.
- Finally, (79%) of study participants expected that clinical pharmacists can manage the dosing of total parenteral nutrition (TPN).

4.5.2 Expectations as perceived per study subgroups

Table 4.6 : Expectations as perceived per study subgroups

Items	Hospital managers		Ward supervisors		pharmacists		pharmDs	
	Positive	negative	Positive	negative	Positive	negative	Positive	negative
Providing evidence-based drug therapy recommendations when requested	93%	7%	91%	9%	96%	4%	95%	5%
Providing information about medication efficacy and safety	93%	7%	89%	13%	95%	5%	92%	8%
Selecting appropriate general dosing regimens	62%	38%	89%	13%	90%	10%	97%	3%
Providing information about drug interactions	68%	32%	89%	13%	90%	10%	90%	10%
Monitoring outcomes of drug therapy and treatment plans	43%	57%	86%	14%	91%	9%	87%	13%

Monitoring adverse drug reactions in hospitalized patients	50%	50	90%	10%	90%	10%	90%	10%
Assessing patient adherence to drug therapy	56%	44%	86%	14%	73%	27%	87%	13%
Providing information about medication availability and shortages	68%	32%	82%	18%	82%	18%	90%	10%
Making medication decisions based on medication pricing	87%	13%	82%	18%	82%	18%	80%	20%
Managing the dosing of total parenteral nutrition (TPN)	37%	63%	78%	22%	85%	15%	85%	15%
Performing medication reconciliation for hospitalized patients	43%	57%	84%	16%	85%	15%	85%	15%

Table 4.6 shows differences in each item in expectation's section as perceived by study subgroups , most reported expected duty as perceived by all study subgroups was the role of clinical pharmacists in Providing evidence-based drug therapy recommendations , managing the dosing of total parenteral nutrition (TPN) was the lowest expected duty of clinical pharmacists according to both hospital managers and ward supervisors , on the other hand pharmacists reported that assessing patient adherence to drug therapy as lowest expected role of clinical pharmacists, finally pharmDs reported that Making medication decisions based on medication pricing to be the lowest expected practice to clinical pharmacists.

4.5.3 Variation in overall expectations between study subgroups:

Table 4.7: differences in overall expectations toward clinical pharmacy profession between study subgroups

position	**Negative expectations**		**Positive expectations**		**total**	
hospital manager	5	31%	11	69%	16	100%
ward supervisor	8	10%	74	90%	82	100%
clinical pharmacist	2	4%	39	96%	41	100%
pharmacist	5	5%	99	95%	104	100%
total		20		223	243	100%

Table (4.7) shows differences in expectations toward clinical pharmacy profession between study subgroups according to their profession, total score in expectation's section was calculated and used to classify responses of study participants into positive and negative subgroups.

Pharmacy related profession (pharmacists and pharm Ds) had more positive expectations toward clinical pharmacy profession (95% and 96%) respectively , while managerial related profession (hospital managers and ward supervisors) had lower positive expectations toward clinical pharmacy profession (69% and 90%)respectively.

4.6.1 Barriers preventing the implementation of clinical pharmacy services :

Table 4.8 : barriers preventing the implementation of CPSs in Jordanian's hospitals

Item	Absent		Present	
Physicians and other healthcare members are unaware of the benefits of having a clinical pharmacist on their team	44	18%	199	82%
Lack of support from administration	54	22%	189	78%
Inconvenient hospital setup for provision of clinical pharmacy service	59	25%	184	75%
Healthcare professionals have no prior experience of working with a clinical pharmacist	65	27%	178	73%
shortage of staff	66	27%	177	73%
The specific responsibilities of a clinical pharmacist are not clearly defined.	73	30%	170	70%
Lack of active communication skill	107	44%	136	56%
Lack of clinical knowledge on disease management	128	52%	115	48%
Lack of confidence to interact with the health care team	134	55%	109	45%
Total score	**frequency**		**percent**	
low perceived barriers	159		65.4%	
high perceived barriers	84		34.6%	
Total	243		100.0%	

Table 4.8 represent barriers preventing the implementation of CPSs in Jordanian's hospitals, these barriers are presented in descending order as follow :

- (82%) of study participants believed that a problem of unawareness of Physicians and other healthcare members about the benefits of having a clinical pharmacist on their team as a major problem preventing the implementation of clinical pharmacy services.
- (78%) of study participants agreed that lack of support from administration is considered as obstacle.
- (75%) of study participants confirmed that there is a problem of inconvenient hospital setup for provision of clinical pharmacy service which hinder the application of CPSs.

- Shortage of staff and absence of prior experience of healthcare professionals in working with a clinical pharmacist were consider as an obstacle for (73%) of study participants.
- (70%) of study participants believed that the specific responsibilities of a clinical pharmacist are not clearly defined.
- Lack of active communication skill between clinical pharmacists and health care members was considered a barrier in (56%) of study sample.
- Only (48%) of study sample reported that there is a lack of clinical knowledge on disease management among clinical pharmacists.
- Finally, lack of confidence to interact with the health care team was considered a barrier in (45%) of study sample.

4.6.2 barriers as perceived per study subgroups

Table 4.9 barriers as perceived per study subgroups

Barriers	Hospital managers		Ward supervisors		pharmacists		Pharm Ds	
	present	absent	present	absent	present	absent	present	absent
Lack of active communication skills	75%	25%	58%	42%	55%	45%	43%	57%
The specific responsibilities of a clinical pharmacist are not clearly defined	68%	32%	70%	30%	68%	32%	73%	27%
Lack of confidence to interact with the health care team	56%	44%	45%	55%	45%	55%	39%	61%
Lack of clinical knowledge on disease management	43%	57%	45%	55%	50%	50%	43%	57%
Lack of support from hospital administration	62%	38%	71%	29%	97%	3%	97%	3%
Physicians and other healthcare members are unaware of the benefits of having a clinical pharmacist on their team	75%	25%	79%	21%	82%	18%	87%	13%
Inconvenient hospital setup for the provision of clinical pharmacy services	50%	50%	75%	25%	75%	25%	87%	13%
Healthcare professionals have no prior experience of working with a clinical pharmacist	56%	44%	69%	31%	76%	24%	78%	22%
shortage of staff	50%	50%	69%	31%	74%	26%	85%	15%

Table 4.9 shows responses to each item in barrier's section according to position, most reported barriers by hospital managers were unawareness of HCPs toward the benefits of clinical pharmacy services and lack of communication skills between clinical pharmacists, same barrier of unawareness of HCPs toward the benefits of clinical pharmacy services was the most reported barrier by ward supervisors. on the other hand, lack of support from administration was the most reported barrier by pharmacists and PharmDs.

4.6.3 Variations in overall perceived barriers between study subgroups

Table 4.10: variations in overall perceived barriers between study subgroups

position	absent		Present		total	
Hospital manager	6	37%	10	63%	16	100%
Ward supervisor	24	29%	58	71%	82	100%
Clinical pharmacist	6	15%	35	85%	41	100%
Pharmacist	31	29%	73	71%	104	100%
Total	67		176		243	100%

Table 4.10 shows differences in perceived barriers among study subgroups , clinical pharmacists group was the highest reporting category that expressed the presence of obstacles that prevent the work of the clinical pharmacy department(85%), followed by both pharmacists and ward supervisors (71%), the lowest reporting group was hospital managers (63%).

4.7 Relationships between study sample's attitudes and expectations and selected Socio-demographic factors

4.7.1 Kruskal–Wallis test and Mann–Whitney U-test for attitudes section

Table 4.11 Kruskal–Wallis test and Mann–Whitney U-test for attitudes section

	Kruskal–Wallis test	
Independent variable	**Median rank**	**Asymp. Sig.**
Age		0.000
20-29	129.50	
30-39	129.50	
40-49	112.52	
≥50	116.00	
Profession		0.001
Hospital manager	99.13	
Ward supervisor	117.65	
Clinical pharmacist	126.54	
Pharmacist	127.16	
Working region		0.119
South area	126.77	
Central area	120.82	
North area	117.35	
Department		0.177
Internal medicine	121.40	
Intensive care unit	129.50	
Pediatrics	122.35	
Outpatient clinic	112.14	
Surgery	108.37	
Obstetrics/Gynecology	112.14	
Emergency Medicine	121.91	
Outpatient pharmacy	123.02	
Ward pharmacy	129.50	

Years of experience		0.001
Less than 5 years	129.50	
From 5-10 years	129.50	
From11-15 years	117.35	
From16-20 years	105.88	
More than 20 years	122.14	
	Mann–Whitney U-test	
Independent variable	Median score	Asymp.Sig
gender		0.435
Female	123.29	
Male	120.33	
Attendance to CP workshop		0.253
Yes	120.22	
No	124.59	

Table 4.11 showed differences in median rank between study sample's subgroups according to their independent variables.

It was divided into two parts: Kruskal–Wallis H test which used for variables with three and more groups, and Mann–Whitney U-test which used for variables with two groups.

- **Kruskal–Wallis H test**

Attitudes showed no significant differences between study participants in relation to variables of geographical region and department of practice. On the other hand variables of age , profession and years of experience were found to have significant differences in attitudes as follows :

Age:

Participants with younger age had more positive attitudes toward clinical pharmacy profession. Age group of (20-29) years and (30-39) years had a median rank of 126 in comparison with age group of 40 and more which had lower positive attitudes.

Profession:

Pharmacists and clinical pharmacists had the highest median rank (126 and 127) respectively, while ward supervisors had a lower median rank (117) and hospital managers had the lowest median rank (99).

Years of experience:

Participant's group of less than 5 years of experience,5-10 had the highest median rank , followed by participants with more than 20 years of experience , followed by participants with 11-15 years of experience. Participants with 16-20 years of experience had the lowest median rank (105).

- **Mann–Whitney U-test**

Table 4.11 shows the result of Mann–Whitney U-test for two independent variables (gender and attendance to clinical pharmacy meeting or workshop since both had only two subgroups, p-value in both variables was more than (0.05) which means that there is no statistical differences between study subgroups in their attitudes regarding clinical pharmacy profession.

4.7.2 Kruskal–Wallis test and Mann–Whitney U-test for expectations section

Table : 4.12 Kruskal–Wallis test and Mann–Whitney U-test for expectations section

Independent variable	Kruskal–Wallis test median rank	Asymp. Sig.
Age		0.036
20-29	132.00	
30-39	125.99	
40-49	116.32	
≥50	111.75	
Profession		0.003
hospital manager	94.03	
ward supervisor	120.15	
clinical pharmacist	126.07	
pharmacist	126.16	
Working region		0.300
south area	125.17	
central area	117.54	
north area	123.32	
Department		0.036
internal medicine	115.80	
intensive care unit	124.64	
pediatrics	132.00	
outpatient clinic	114.64	
surgery	100.30	
Obstetrics/Gynecology	114.64	
Emergency Medicine	132.00	
outpatient pharmacy	125.52	
ward pharmacy	127.66	
Years of experience		0.067
less than 5 years	132.00	
from 5-10 years	125.15	
from11-15 years	119.85	
from16-20 years	111.75	
more than 20 years	117.27	
	Mann–Whitney U-test	
Gender		0.124
female	124.91	
male	118.25	
Attendance to CP workshop		0.586
yes	121.03	
no	123.41	

- **Kruskal–Wallis test :**

Table (4.12) shows that variables of working region and years of experience had insignificant statistical differences between study sample,

while other variables of age, profession and department of work had a statistical difference summarized as follow:

Age:

Younger age group (20-29 years) appeared to have more expectations about clinical pharmacists in their job (median rank=132), followed by age group of (30-39 years) which had median rank of 125, followed by age group of (40-49 years)which had median rank of 116. Age group of more than 50 had the lowest expectations toward clinical pharmacists (median rank =111).

Profession:

Pharmacists and clinical pharmacists had the highest expectations reflected in high median rank score (126) compared to ward supervisors who had a score of 120 and hospital managers group who had a score of 94.

Department:

While participants working in pediatrics and emergency department appeared to have highest median rank score(132), participants working in surgery department had the lowest expectations with a median rank score of (100).

- **Mann–Whitney U-test**

Table 4.12 showed the result of Mann–Whitney U-test for two independent variables, both variable (gender and attendance to clinical pharmacy meeting or workshop) had two subgroups.

p-value in both variables was more than (0.05) which means that there is no statistical differences between study subgroups in their expectations regarding clinical pharmacy profession.

4.8 Discussion and Conclusion

4.8.1 Introduction

The aim of this cross-sectional study was to explore the attitudes, expectations and perceived barriers of health care professionals toward the role and practices of clinical pharmacy services in Jordanian hospital setting.

The study reveals that the majority of respondents (93.8%) shows positive attitudes towards clinical pharmacy profession. Similarly, 91.8 % of respondent's expectations were positive, also two thirds (65.4%) of the study sample perceive the presence of barriers as obstacles that prevent clinical pharmacy services from being implemented.

The main findings of this study, which included participants working in governmental hospitals distributed over South, Central and North areas of Jordan representing various professions (i.e., hospital managers, ward supervisors, pharmacists and pharm Ds) will be discussed and compared to similar literature in this chapter.

Attitudes toward clinical pharmacy services

Overall attitudes toward clinical profession were found to be highly positive 93.8% N=228). This is similar to a study done in Qatar where 95.7% of pharmacists, 90 % of physicians and 64.2% of nurses reported positive

attitudes (Omar et al., 2020). Another similar findings were reported by (Shanika et al., 2017) where 91% of physicians from Sri Lanka showed positive attitudes .

On the other hands, studies from Egypt (Sabry & Farid, 2014) and Cyprus (Malik et al., 2020) showed much lower positive attitudes score (33% and 55% for physicians) respectively.

In Jordan, a previous study showed that the percentage of physicians who had positive attitudes toward clinical pharmacy services was 55% (Tahaineh et al., 2009). Which is much lower than the current study. However, the same authors conducted another study with the same objectives in 2017 and found that Physicians in the 2017 sample were more comfortable than 2006/2007 sample in suggesting the role of pharmacists in prescribing medications such as antibiotics .This might be due to the timing of the first study when the profession of clinical pharmacy was still recently introduced in Jordan.

This study showed that Pharmacists and clinical pharmacists had the highest proportion of positive attitudes (98%) followed by ward supervisors (90%) followed by hospital managers with (75%) having positive attitudes regarding CP profession.

Hospital managers had the lowest overall positive attitudes which maybe explained various reasons. Firstly, lack of communication between hospital managers and other working members makes a gap which is consistent with a qualitative study reported that the greatest challenge in clinical pharmacy implementation was lack of consistent understanding of the role of clinical pharmacists which cause communication deficiencies and affected the level of involvement with health care teams (Alsuhebany et al., 2019). This study also found that fresh graduates and participants with experience of less than 10 years had the highest proportion of positive attitudes (100%). This might be attributed to relatively recent introduction of the profession of CP where the participants with longer experience can be expected to have more resistance to changing roles while the participants with shorter experience are more accepting of CPs engagement as part of the clinical team and had more exposure with CPs during training years.. this is consistent with a study in UAE reporting that physicians who had fewer years in practice (less than 10 years) and recently graduated had more acceptances to the clinical role of the pharmacist and believed that there should be a clinical pharmacy services in their hospital (Abu-Gharbieh et al., 2010).

Participants working in intensive care unit (ICU) and ward pharmacy had the highest proportion of positive attitudes, this might reflect the actual importance of CPs presence in these departments. a study emphasized that documented improvements in the management of anticoagulation therapy, sedation, infections, and analgesia for patients receiving mechanical

ventilation and in emergency response help to justify the need for clinical pharmacy services for critically ill patient (Preslaski & Lat, 2013).

Participants who attended a clinical pharmacy workshop at least once had more positive attitudes (60%) compared with participants who didn't attend (40%). As this is expected, it suggests that more efforts should be paid to enable clinical pharmacists to educate other health care members about latest updates in clinical practice guidelines and drugs. Moreover, these workshops might facilitate healthcare professionals encountering CP at several occasions and reinforcing the importance of their roles.

As mentioned in Chapter Four , among attitude items, patient education and counselling had the highest score of positive attitude by the participants. This finding is consistent with the result of (Wilhelm & Petrovitch, 2011) study which was conducted to assess the importance of patients education done by clinical pharmacists in anticoagulation teaching service, this study concluded that implementing an anticoagulant teaching services provided by pharmacists significantly lowered readmission rates .

Expectations of HCPs toward clinical pharmacy services

Overall expectations of HCPs toward clinical pharmacy services was very high (91%). This is similar to study done in Pakistan (Khan et al., 2020) where (84%) of physicians expected clinical pharmacists to take personal responsibility for resolving any drug-related problem. Another study in Qatar showed similar result regarding expectations about clinical pharmacy services where 82% of study participants reported that they expect clinical pharmacists to provide consultations regarding appropriate medication choices and to provide information about medication availability and shortages (Omar et al., 2020).

Similar to the attitudes section, hospital managers had the lowest proportion of positive expectations compared to other participant groups (69%).Whereas 90 % of ward supervisors , 95% of pharmacists and 96% of pharm Ds reported positive expectations.

(Calvert, 1999) suggested in his paper that "strong leaders have developed their own style of service varying from a supply orientated to a patient orientated service". The relatively lower expectations among hospital managers toward the CPs might be related to the traditional view of hospital managers where they see that CPs role should be restricted to hospital pharmacy as documented in (al-azzam et al.,2013) study. Additionally, their lower expectations might be related to lower positive attitudes. Our study found attitudes and expectations to be correlated . Moreover, it is found in literature that hospital managers have various leadership styles that can influence the role they assign to CPs in hospitals that can be as limited as dispensing oriented to more extended clinical oriented roles(Calvert, 1999).finally, financial aspect could be one of the main reasons for lower attitudes and expectations among hospital managers as described by a Chinese

study which found that hospital administrators were often concerned about the financial aspect of clinical pharmacists, moreover a hospital administrator in the same study reported that "since clinical pharmacists cannot make profits for the hospital, then their future is uncertain" (Penm et al., 2014).

94% of study sample expected that clinical pharmacists can provide evidence-based drug therapy recommendations when requested. This might reflect a high acceptance of recommendations. This is consistent with the result of a Jordanian study done to assess the implementation of clinical pharmacy services at King Abdullah University Hospital (KAUH) found that physicians' rate of acceptance of clinical pharmacists' recommendations was 69.4% (al-azzam et al.,2013).

Meanwhile, a Swedish study that evaluated physician's acceptance to clinical pharmacy recommendations. The study found that physicians accepted and implemented 90% of the clinical pharmacists' recommendations. Of which, 83% were classified as significant recommendations. (Holmdahl et al., 2012).

The least expected duties of clinical pharmacists according to study participants was that clinical pharmacists could manage the dosing of total parenteral nutrition (TPN) with a score of (79%), However, higher expectation about this role of clinical pharmacists was reported in a study done in Qatar (Omar et al., 2020)

In addition to that (G meers et al,2015)'s study concluded that additional monitoring of the appropriateness of total parenteral nutrition by a clinical pharmacist has a positive influence on therapy quality and healthcare costs.

Barriers preventing the implementation of clinical pharmacy services:

The highest proportion (82%) of participants reported that unawareness of HCPs about the benefits of having a clinical pharmacist as a barrier to implementation of clinical pharmacy services .

Followed by lack of support from administration and inadequate hospital setup reported by 78% and 75% of the study sample respectively. This finding could be explained in light of what is reported by (Alefan & Halboup, 2016)'s regarding pharmacy practice in Jordan which summarized the reasons for weak implementations of clinical pharmacy services to be a lack of institutional policies that describe the role, responsibilities, and clinical pharmacist position as a health care member. Authors also stated that clinical pharmacy profession, being considered relatively new in Jordan which means it is not fully developed (Alefan & Halboup, 2016).

Moreover,(al-azzam . 2013) suggested that one of the main reasons of low acceptance of clinical pharmacist's recommendations by Jordanian doctors was physicians' traditional view of the pharmacist's role,

On the other hand, lack of clinical knowledge on disease management among clinical pharmacists and lack of confidence to interact with HCPs were considered the least reported barriers in this study by 48% and 45% of study

sample respectively. This might reflect the quality of graduates proving acceptable theoretical knowledge and clinical skills.

4.8.2 Strengths and limitations

This is the first study in Jordan looking for attitudes and expectations of hospital managers regarding clinical pharmacy profession which may give insights about administrational perspectives of clinical pharmacy profession in Jordan. Another strength of this study lies in focusing on attitudes and expectations of managerial level of HCPs of physicians and nurses as they are ward supervisors. Moreover, this study evaluated attitudes and expectations of pharmacists and clinical pharmacists about their career. This has allowed comparison in attitudes and expectations between managerial side and the pharmacists side measured at one point of time. In addition to that including participants with pharm D degree allowed to discover the main barriers that may interfere with clinical pharmacy implementation process. The study also shows strength point in being conducted on a national level. This allows the study to increase representativeness and ability to generalize findings. The current study highlighted barriers that might be hindering the implementation of clinical pharmacy services as viewed by study participants. This helps in giving a broader picture regarding the situation of CPs in Jordan. Nonetheless, it is acknowledged that the cross-sectional nature of the study design may have interfered with our ability to draw casual conclusions, and therefore limited our findings to associations between the examined variables.
Participants from pharmacy related professions attitudes may have been influenced by their profession and therefore could have reported more positive attitudes and expectations with clinical pharmacy practice. However, the findings of pharmacy related participants do not differ much from managerial related participants especially ward supervisors.

4.8.3 Conclusion

Study participants had high positive attitudes and expectations regarding clinical pharmacy profession, Inter-professional differences existed where hospital managers had the relatively lower attitudes and expectations compared to other study subgroups.
Less than 10 years' experience was significantly associated with attitudes and expectations. This might suggest the need for engaging more experienced HCPs with clinical pharmacists in hospital practice.
HCPs working in ICU department appeared to have high attitudes and expectations toward clinical pharmacy services due to the nature of this department where critically-ill patients are present and usually they are poly-pharmacy with multiple medical conditions. Thus, they need close monitoring regarding medications and medication dosing protocols with possible significant drug interactions is higher.

Participants working in south region appeared to have attitudes that are more positive and expectations than other participants did, even though clinical pharmacy services are not fully implemented in these hospitals. This difference might be hard to explain due to having similar health system in governmental hospitals all over Jordan. However, further studies could explore factors related to these differences.

Regarding clinical pharmacy workshops or meetings, participants reported attending at least once had more positive attitudes and expectations which suggest that more scientific meetings should be arranged by clinical pharmacy department for HCPs about latest updates in therapeutic protocols. More attention should be considered for highly reported barriers including: unawareness of HCPs about the benefits of having a clinical pharmacist, lack of support from administration and inadequate hospital setup , overcoming these barriers helps in application process of clinical pharmacy services.

4.8.4 Recommendations and implications for future policy and research

In light of the above discussions, multiple recommendations could be derived. First, it is important to emphasize the role and practice pf clinical pharmacists in Jordanian hospitals setting:

It noteworthy to mention that clinical pharmacy directorate was established in ministry of health in (2008) according to official site for ministry of health (MOH), however implementation of clinical pharmacy services is considered weak, part of this is due to absence of interest and willingness from all levels of management to support and give assistance to clinical pharmacists.

Therefore, policy makers need to informed about the issue of clinical pharmacy and implementing clinical pharmacists roles pushed on the national agenda as one of the Jordanian's health system priorities.

This could be done by making a comprehensive assessment about clinical pharmacy's current situation, and ways to assess in implementation process reflected in a practical step. In light of the findings regarding barriers,

This study recommends investing more in infrastructure: This includes presence of technical support (like computers with full access to patients health records and personal access to provide written recommendations) and physical environment (like private section for clinical pharmacists). Regarding future research, Further research on clinical, economic and humanistic benefits of clinical pharmacy services in Jordanian hospital setting can be done.

Follow -up issues:

Some trials were done to apply clinical pharmacy services in Jordanian hospitals in the past but absence of active documentations and follow up led to deliver unrealistic thoughts to hospital mangers about clinical pharmacy profession. Which may suggest that more efforts should be done in raising

awareness of policy makers at managerial level about the importance and benefits of CPSs.

As lacking in Jordan, future research can focus on investigating cost-effectiveness of clinical pharmacy services or prevention of medication errors of implementation of CP in governmental hospitals. Nevertheless, this might be challenging due to the fact that there are no policies of documentation of CP work.

References

Abdel-Latif, M. M. M. (2017). Hospital doctors' views of, collaborations with and expectations of clinical pharmacists. **European Journal of Hospital Pharmacy** , 24(6), 343–348. https://doi.org/10.1136/ejhpharm-2016-001075

Abdel-Qader, D. H., Saadi Ismael, N., Al Meslamani, A. Z., Albassam, A., El-Shara', A. A., Lewis, P. J., Hamadi, S., & Al Mazrouei, N. (2021). The Role of Clinical Pharmacy in Preventing Prescribing Errors in the Emergency Department of a Governmental Hospital in Jordan: A Pre-Post Study. **Hospital Pharmacy,** 56(6), 681–689. https://doi.org/10.1177/0018578720942231

Abdulrhim, S., Sankaralingam, S., Izham, M., Ibrahim, M., & Awaisu, A. (2019). The impact of pharmacist care on diabetes outcomes in primary care settings: An umbrella review of published systematic reviews. **Primary Care Diabetes.** https://doi.org/10.1016/j.pcd.2019.12.007

Abstracts, I. P., & Abstracts, D. (2008). Pharmacist Care of Patients With Heart Failure. 168(7), 687–694.

Abu-Gharbieh, E., Fahmy, S., Rasool, B. A., Abduelkarem, A., & Basheti, I. (2010). Attitudes and perceptions of healthcare providers and medical students towards clinical pharmacy services in United Arab Emirates. **Tropical Journal of Pharmaceutical Research,** 9(5), 421–430. https://doi.org/10.4314/tjpr.v9i5.61050

Alefan, Q., & Halboup, A. (2016). Pharmacy Practice in Jordan. In **Pharmacy Practice in Developing Countries: Achievements and Challenges** (Issue February). https://doi.org/10.1016/B978-0-12-801714-2.00011-3

Alsuhebany, N., Alfehaid, L., Almodaimegh, H., Albekairy, A., & Alharbi, S. (2019). Attitude and Perception of Physicians and Nurses Toward the Role of Clinical Pharmacists in Riyadh, Saudi Arabia: A Qualitative Study. **SAGE Open Nursing,** 5. https://doi.org/10.1177/2377960819889769

Babiker, A., Husseini, M. El, Nemri, A. Al, Frayh, A. Al, Juryyan, N. Al, Faki, M. O., Assiri, A., Saadi, M. Al, Shaikh, F., & Zamil, F. Al. (2014). Current Opinion Health care professional development : Working as a team to improve patient care. 14(2), 9–16.

Béchet, C., Pichon, R., Giordan, A., & Bonnabry, P. (2016). Hospital pharmacists seen through the eyes of physicians: qualitative semi-structured interviews. **International Journal of Clinical Pharmacy,** 38(6), 1483–1496. https://doi.org/10.1007/s11096-016-0395-1

Bond, C. A., & Raehl, C. L. (2006). Clinical pharmacy services, pharmacy staffing, and adverse drug reactions in United States hospitals. **Pharmacotherapy,** 26(6 I), 735–747.

https://doi.org/10.1592/phco.26.6.735

Brazinha, I., & Fernandez-Llimos, F. (2014). Barriers to the implementation of advanced clinical pharmacy services at Portuguese hospitals. **International Journal of Clinical Pharmacy,** 36(5), 1031–1038. https://doi.org/10.1007/s11096-014-9991-0

Calvert, R. T. (1999). Clinical pharmacy - A hospital perspective. **British Journal of Clinical Pharmacology**, 47(3), 231–238. https://doi.org/10.1046/j.1365-2125.1999.00845.x

Correa, V. C., Lugo-agudelo, L. H., Aguirre-acevedo, D. C., Alberto, J., Contreras, P., María, A., Borrero, P., Patiño-lugo, D. F., Andrea, D., & Valencia, C. (2020). Individual , health system , and contextual barriers and facilitators for the implementation of clinical practice guidelines : a systematic metareview. 8, 1–11.

Definition, T. (2008). The definition of clinical pharmacy. **Pharmacotherapy,** 28(6), 816–817. https://doi.org/10.1592/phco.28.6.816

Dos Santos Júnior, G. A., Ramos, S. F., Pereira, A., Dosea, A. S., Araújo, E. M., Onozato, T., Pimentel, D. M. M., & De Lyra, D. P. (2018). Perceived barriers to the implementation of clinical pharmacy services in a metropolis in Northeast Brazil. In **PLoS ONE** (Vol. 13, Issue 10). https://doi.org/10.1371/journal.pone.0206115

Fekadu, G., Gamachu, B., Mengie, T., & Maqbool, M. (2019). Knowledge and attitude of health care professional's towards clinical pharmacy services in Nedjo General Hospital, Western Ethiopia. **International Journal of Scientific Reports**, 5(7), 172. https://doi.org/10.18203/issn.2454-2156.intjscirep20192798

Fleming, A. (n.d.). Implementation of clinical pharmacy services at a university hospital in Jordan. https://doi.org/10.1111/ijpp.12009

Folli, H. L., Poole, R. L., Benitz, W. E., & Russo, J. C. (1987). Medication Error Prevention by Clinical Pharmacists in Two Children's Hospitals. **Pediatrics**, 79(5), 718–722. https://doi.org/10.1542/peds.79.5.718

Gallagher, J., Mccarthy, S., & Byrne, S. (2014). Economic evaluations of clinical pharmacist interventions on hospital inpatients : a systematic review of recent literature. 1101–1114. https://doi.org/10.1007/s11096-014-0008-9

Gelaw, B. K., Tegegne, G. T., & Defersha, A. D. (2017). Knowledge, Attitudes and Practice of Physicians towards Clinical Pharmacy Services in Ten Public Hospitals in Oromia Regional State, Ethiopia. **Epidemiology: Open Access,** 07(05). https://doi.org/10.4172/2161-1165.1000323

History of Pharmacy Profession - Pharmapproach.com. (n.d.). Retrieved December 8, 2021, from https://www.pharmapproach.com/history-of-pharmacy/

Holmdahl, L., Midlo, P., & Eriksson, T. (2012). Acceptance and importance of clinical pharmacists ' LIMM-based recommendations. 272–276. https://doi.org/10.1007/s11096-012-9609-3

Ibrahim, O. M., & Ibrahim, R. (2014). Perception of Physicians to the Role of Clinical Pharmacists in United Arab Emirates (UAE). **Pharmacology & Pharmacy,** 05(09), 895–902. https://doi.org/10.4236/pp.2014.59100

Jain, V. (2014). 3D Model of Attitude ISSN : 2278-6236 3D MODEL OF ATTITUDE. October.

June, E. (2014). KNOWLEDGE , ATTITUDES , AND PRACTICES (KAP) SURVEYS DURING CHOLERA VACCINATION CAMPAIGNS : Guidance for Oral Cholera Vaccine Stockpile Campaigns " WORKING COPY ." June, 1–41.

Khalili, H., Farsaei, S., & Rezaee, H. (2011). Role of clinical pharmacists ' interventions in detection and prevention of medication errors in a medical ward. 281–284. https://doi.org/10.1007/s11096-011-9494-1

Khan, N., Mcgarry, K., Abbas, A., & Keith, N. (2020). Doctors ' perceptions , expectations and experience regarding the role of pharmacist in hospital settings of Pakistan. **International Journal of Clinical Pharmacy**, 0123456789. https://doi.org/10.1007/s11096-020-00991-9

LeBlanc, J. M., & Dasta, J. F. (2005). Scope of international hospital pharmacy practice. **Annals of Pharmacotherapy,** 39(1), 183–191. https://doi.org/10.1345/aph.1E317

Lemay, J., Waheedi, M., Al-Taweel, D., Bayoud, T., & Moreau, P. (2018). Clinical pharmacy in Kuwait: Services provided, perceptions and barriers. **Saudi Pharmaceutical Journal,** 26(4), 481–486. https://doi.org/10.1016/j.jsps.2018.02.011

Li, X., Huo, H., Kong, W., Li, F., & Wang, J. (2014). Physicians' perceptions and attitudes toward clinical pharmacy services in urban general hospitals in China. **International Journal of Clinical Pharmacy,** 36(2), 443–450. https://doi.org/10.1007/s11096-014-9919-8

Malik, S. S., Birand, N., & Başgut, B. (2020). Perception and Attitude of Healthcare Providers towards Clinical Pharmacists at Near East University Hospital in Northern Cyprus. **Journal of Pharmaceutical Research International**, 32(23), 42–51. https://doi.org/10.9734/jpri/2020/v32i2330787

Management, M., Health, Q., Standards, S., Aged, N., Residential, C., Chart, M., Chart, P. M., Hospitals, A., & Services, O. P. (2013). Overview : **Standards of Practice for Clinical Pharmacy Services.** 43(2), 6–9.

Matowe, L., Abahussain, E. A., Al-Saffar, N., Bihzad, S. M., Al-Foraih, A., & Al-Kandery, A. A. (2006). Physicians' perceptions and expectations of pharmacists' professional duties in government hospitals in Kuwait. **Medical Principles and Practice,** 15(3), 185–189.

https://doi.org/10.1159/000092179
Miller, R., Pharm, D., & Burkholder, D. (1981). Historyof ClinicalPharmacy and ClinicalPharmacology. **J Clin Pharmacol,** 21, 195–197.
Naseef, H., Amria, A., Asrawi, A., Al-Shami, N. M., & Dreidi, M. (2020). The acceptance and awareness of healthcare providers towards doctor of pharmacy (Phram D) in the Palestinian health care system. **Saudi Pharmaceutical Journal,** 28(9), 1068–1074. https://doi.org/10.1016/j.jsps.2020.07.007
Omar, N. E., Elazzazy, S., Abdallah, O., Nashwan, A. J., Eltorki, Y., Afifi, H. M., Kassem, N., Yassin, M., & Hamad, A. (2020). Perceptions and expectations of health care providers towards clinical pharmacy services at a tertiary cancer centre in Qatar. **Journal of Oncology Pharmacy Practice**, 26(5), 1086–1096. https://doi.org/10.1177/1078155219882076
OpenEpi Menu. (n.d.). Retrieved March 15, 2022, from https://www.openepi.com/Menu/OE_Menu.htm
Penm, J., Moles, R., Wang, H., Li, Y., & Chaar, B. (2014). Factors affecting the implementation of clinical pharmacy services in china. In **Qualitative Health Research** (Vol. 24, Issue 3, pp. 345–356). https://doi.org/10.1177/1049732314523680
pharmacy | Britannica. (n.d.). Retrieved December 8, 2021, from https://www.britannica.com/science/pharmacy
Pickard, A. S., & Hung, S. (2006). Quality of Life An Update on Evidence of Clinical Pharmacy Services ' Impact on Health-Related Quality of Life DATA SOURCES : 40, 1623–1634. https://doi.org/10.1345/aph.1G653
Pousinho, S., Morgado, M., Alves, G., & Plácido, A. I. (2020). Clinical pharmacists ´ interventions in the management of type 2 diabetes mellitus : a systematic review. 18(September 2017), 1–9.
Preslaski, C. R., & Lat, I. (2013). Recent Advances in Chest Medicine Pharmacist Contributions as Members of. **CHEST,** 144(5), 1687–1695. https://doi.org/10.1378/chest.12-1615
Reynolds, A. (2009). Patient-centered Care. **Radiologic Technology,** 81(2), 133–147.
Rotta, I., Salgado, T. M., Silva, M. L., Correr, C. J., & Fernandez-Llimos, F. (2015). Effectiveness of clinical pharmacy services: an overview of systematic reviews (2000–2010). **International Journal of Clinical Pharmacy**, 37(5), 687–697. https://doi.org/10.1007/s11096-015-0137-9
Sabry, N. A., & Farid, S. F. (2014). The role of clinical pharmacists as perceived by Egyptian physicians. **International Journal of Pharmacy Practice**, 22(5), 354–359. https://doi.org/10.1111/ijpp.12087
Shanika, L. G. T., Wijekoon, C. N., Jayamanne, S., Coombes, J., Coombes, I.,

Mamunuwa, N., Dawson, A. H., & De Silva, H. A. (2017). Acceptance and attitudes of healthcare staff towards the introduction of clinical pharmacy service: A descriptive cross-sectional study from a tertiary care hospital in Sri Lanka. **BMC Health Services Research**, 17(1), 1–8. https://doi.org/10.1186/s12913-017-2001-1

States, U. (2001). Implementation and pharmacoeconomic analysis of a clinical staff pharmacist practice model. 58.

Tahaineh, L. M., Wazaify, M., Albsoul-Younes, A., Khader, Y., & Zaidan, M. (2009). Perceptions, experiences, and expectations of physicians in hospital settings in Jordan regarding the role of the pharmacist. **Research in Social and Administrative Pharmacy,** 5(1), 63–70. https://doi.org/10.1016/j.sapharm.2008.05.003

Tosti, A., Hay, R., & Haneke, E. (2005). Pharmacoeconomics – an aid to better decision-making. 19, 34–39. https://doi.org/10.1111/j.1468-3083.2005.01285.x

Touchette, D. R., Doloresco, F., Suda, K. J., Perez, A., Turner, S., Jalundhwala, Y., Tangonan, M. C., & Hoffman, J. M. (2014). Economic evaluations of clinical pharmacy services: 2006-2010. **Pharmacotherapy**, 34(8), 771–793. https://doi.org/10.1002/phar.1414

Vinterflod, C., Gustafsson, M., Mattsson, S., & Gallego, G. (2018). Physicians ' perspectives on clinical pharmacy services in Northern Sweden : a qualitative study. 1–10. https://doi.org/10.1186/s12913-018-2841-3

Wilhelm, S. M., & Petrovitch, E. A. (2011). Implementation of an inpatient anticoagulation teaching service: Expanding the role of pharmacy students and residents in patient education. **American Journal of Health-System Pharmacy,** 68(21), 2086–2093. https://doi.org/10.2146/ajhp100658

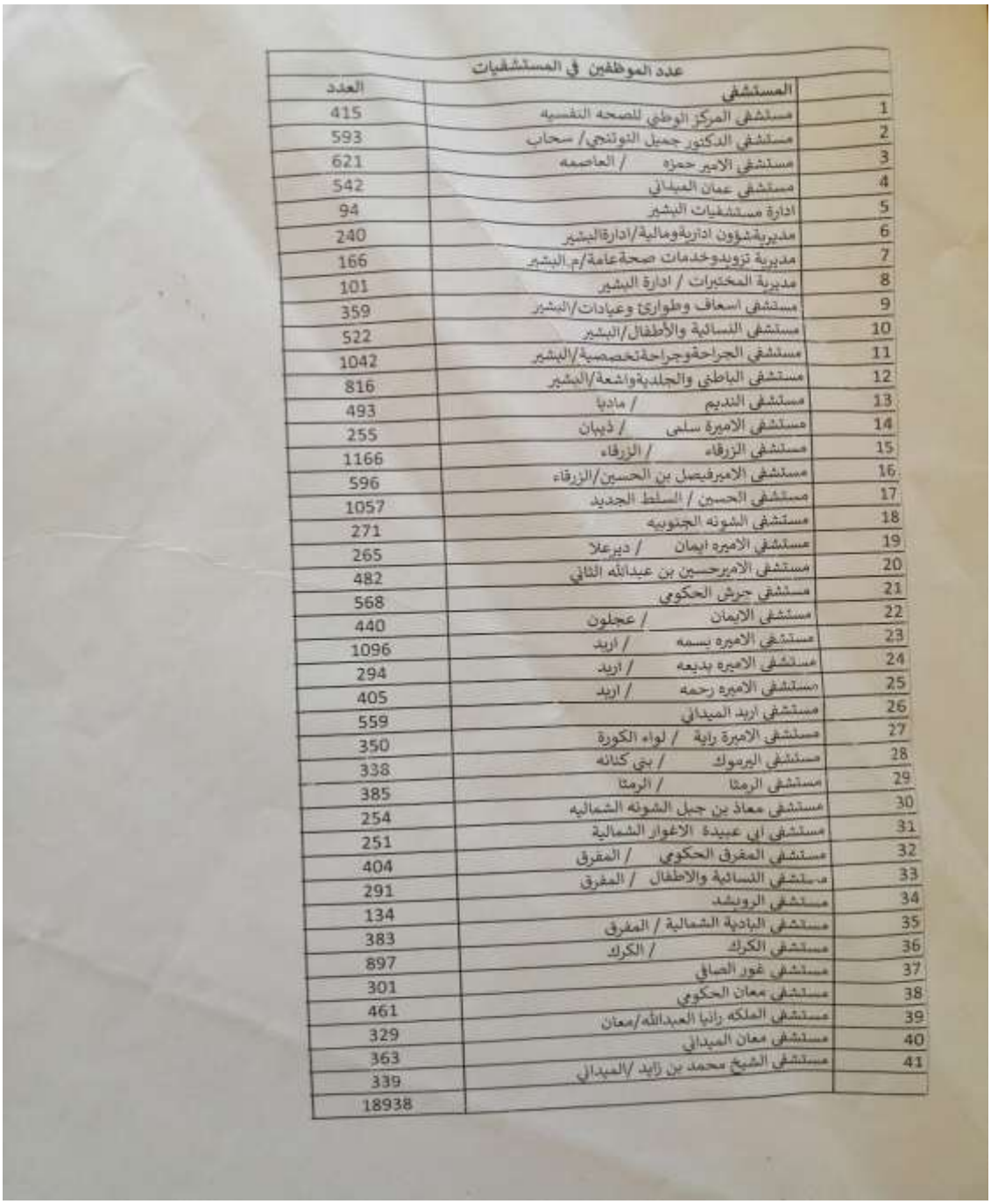
Wright, D. J., Roebuck, N., Sunter, W., & Chrystyn, H. (2002). The value of inpatient pharmaceutical counselling to elderly patients prior to discharge. May, 657–664.

Zerrin, H., & Hussain, A. (2013). The changing face of pharmacy practice and the need for a new model of pharmacy education. **Journal of Young Pharmacists,** 5(2), 38–40. https://doi.org/10.1016/j.jyp.2012.09.001

Appendix

Appendix I

Distribution of governmental hospitals according to ministry of health 2021



عدد الموظفين في المستشفيات

	المستشفى	العدد
1	مستشفى المركز الوطني للصحه النفسيه	415
2	مستشفى الدكتور جميل التوتنجي/ سحاب	593
3	مستشفى الامير حمزه / العاصمه	621
4	مستشفى عمان الميداني	542
5	ادارة مستشفيات البشير	94
6	مديريةشؤون ادارية ومالية/ادارةالبشير	240
7	مديرية تزويدوخدمات صحةعامة/م.البشير	166
8	مديرية المختبرات / ادارة البشير	101
9	مستشفى اسعاف وطوارئ وعيادات/البشير	359
10	مستشفى النسائية والأطفال/البشير	522
11	مستشفى الجراحةوجراحةتخصصية/البشير	1042
12	مستشفى الباطني والجلديةواشعة/البشير	816
13	مستشفى النديم / مادبا	493
14	مستشفى الاميرة سلمى / ذيبان	255
15	مستشفى الزرقاء / الزرقاء	1166
16	مستشفى الاميرفيصل بن الحسين/الزرقاء	596
17	مستشفى الحسين / السلط الجديد	1057
18	مستشفى الشونه الجنوبيه	271
19	مستشفى الاميره ايمان / ديرعلا	265
20	مستشفى الاميرحسين بن عبدالله الثاني	482
21	مستشفى جرش الحكومي	568
22	مستشفى الايمان / عجلون	440
23	مستشفى الاميره بسمه / اربد	1096
24	مستشفى الاميره بديعه / اربد	294
25	مستشفى الاميره رحمه / اربد	405
26	مستشفى اربد الميداني	559
27	مستشفى الاميرة راية / لواء الكورة	350
28	مستشفى اليرموك / بني كنانه	338
29	مستشفى الرمثا / الرمثا	385
30	مستشفى معاذ بن جبل الشونه الشماليه	254
31	مستشفى ابي عبيدة الاغوار الشمالية	251
32	مستشفى المفرق الحكومي / المفرق	404
33	مستشفى النسائية والاطفال / المفرق	291
34	مستشفى الرويشد	134
35	مستشفى البادية الشمالية / المفرق	383
36	مستشفى الكرك / الكرك	897
37	مستشفى غور الصافي	301
38	مستشفى معان الحكومي	461
39	مستشفى الملكه رانيا العبدالله/معان	329
40	مستشفى معان الميداني	363
41	مستشفى الشيخ محمد بن زايد /الميداني	339
		18938

Appendix II
English version of the questionnaire

Clinical pharmacy services questionnaire

this questionnaire is directed to pharmacists, clinical pharmacists and health care managers to discover their attitudes toward clinical pharmacy roles and practices in Jordan . in addition to identify barriers that may prevent it's applications.

Consists of four parts:

- Respondent's sociodemographic section
- attitudes toward clinical pharmacy practice section
- attitudes toward clinical pharmacy role section
- barriers that may prevent the application of CPs section ..

Part one : sociodemographic information

- Question 1 :
  what is your gender ?
  - Male
  - Female

- Question 2 :
  what is your age ?
  - …….. year

- Question 3 :
  what is your profession ?
  - Hospital manager
  - health care manager
  - pharmacist
  - clinical pharmacist

question 4 :
your working area located in ?
north region
central region
south region

- Question 5:
  what is your Current area of practice?
  - Internal medicine
  - ICU
  - Paediatrics
  - Outpatient clinic
  - Surgery
  - Obstetrics/Gynaecology
  - Emergency Medicine
  - outpatient pharmacy
  - ward pharmacy

- Question 6
  what is your total years of work experience in the healthcare system?
  - < 5 years
  - 5 – 10 years
  - 11 – 15 years
  - 16 – 20 years
  - > 20 years

- Question 7:
  Have you been involved in a workshop/meeting done by clinical pharmacy department?
  - yes
  - no

part two: attitudes toward clinical pharmacy practice in Jordan :

Question	Strongly agree	agree	neutral	disagree	Strongly disagree
Clinical pharmacists' involvement in ward round is desirable					
Clinical pharmacist can play important role in patient education and counseling?					
Clinical pharmacist can monitor patient response to drug therapy from toxicity/side effects perspective					
Clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective					
The clinical pharmacist in a clinical ward team is a requirement for hospital accreditation					
clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors					
Clinical pharmacist can provide relevant drug information to health care professionals					
Clinical pharmacist can detect and prevent medication use Errors					
Clinical pharmacy services enhance patient's satisfaction					
I think that Clinical pharmacists can improve overall patient outcome/ quality of patient care?					
Do you appreciate the presence of clinical pharmacists in the wards all the times important for patient care?					

Part three: expectations of health care providers and managers about the role of clinical pharmacists in hospital setting

Question	Strongly agree	agree	neutral	disagree	Strongly disagree
Clinical pharmacist provides evidence-based drug therapy recommendations when requested					
Clinical pharmacist provides information about medication efficacy and safety					
Clinical pharmacist selects appropriate general dosing regimens					
Clinical pharmacist provides information about drug interactions					
Clinical pharmacist monitors outcomes of drug therapy and treatment plans					
Clinical pharmacist monitors adverse drug reactions in hospitalized patients					
Clinical pharmacists assess patient adherence to drug therapy					
Clinical pharmacist provides information about medication availability and shortages					
Clinical pharmacist makes medication decisions based on medication pricing					
Clinical pharmacist provides manage the dosing of total parenteral nutrition (TPN)					
Clinical pharmacists perform medication reconciliation for hospitalized patients					

Part four : barriers that may limit the current clinical pharmacy services

Question	Strongly agree	agree	neutral	disagree	Strongly disagree
Lack of active communication skills					
The specific responsibilities of a clinical pharmacist are not clearly defined					
Lack of confidence to interact with the health care team					
Lack of clinical knowledge on disease management					
Lack of support from hospital administration					
Physicians and other healthcare members are unaware of the benefits of having a clinical pharmacist on their team					
Inconvenient hospital setup for the provision of clinical pharmacy services					
Healthcare professionals have no prior experience of working with a clinical pharmacist					
shortage of staff					

Appendix III
النسخة العربية من الاستبيان

استبيان لتقييم الخدمات المقدمة من خلال قسم الصيدلة السريرية

يرجى التكرم بمشاركة آرائك معنا فيما يتعلق بهذا الاستبيان ..
يهدف هذا الاستبيان الى تقييم الخدمات المقدمة من خلال قسم الصيدلة السريرية في الأردن.
هدا الاستبيان موجه للصيادلة والصيادلة السريريين ومدراء الأقسام في مستشفيات وزارة الصحة الأردنية لمعرفة مواقفهم اتجاه الخدمات المقدمة من قبل قسم الصيدلة السريرية في الأردن، بالإضافة لمعرفة العوائق التي تحد من تطبيق هده الخدمات
ليس هناك جواب صحيح أو خاطئ. يجب ألا يستغرق ملء الاستبيان أكثر من 10 دقائق
إن مساهمتك موضع تقدير كبير لأنها ستساعد في تحسين الرعاية الصحية للمرضى.
الاستبيان مجهول تمامًا ولن يتمكن (الباحثون) من التعرف عليك من الردود
لن يُطلب منك اسمك في أي مكان في الاستبيان
سوف نستخدم المعلومات التي تم جمعها لأغراض البحث فقط
إذا كانت لديك أي أسئلة حول هذا الاستبيان
فيرجى عدم التردد في الاتصال بي على عنوان البريد الإلكتروني
com.gmail@Drmohammad841

شكرا لتعاونكم.

اسماء فريق البحث

د.اسراء الرواشدة

محمد سليمان

ملاحظة :

*يعتبر إكمال الاستبيان وإعادته بمثابة موافقة خطية وموافقة على المشاركة

** المشاركة اختيارية ولك الحرية في الانسحاب من البحث في أي وقت دون إبداء أي سبب.

القسم الأول: المعلومات الديموغرافية\ الاجتماعية

- السؤال الأول :
ما هو جنسك ؟
ذكر
انثى
- ما هو عمرك ؟
..... سنة
- ما هي وظيفتك ؟
مدير مستشفى
رئيس قسم
صيدلاني
دكتور صيدلاني
- أين يقع مكان عملك ؟
إقليم الشمال
إقليم الوسط
إقليم الجنوب
- مكان عملك الحالي يتبع ل ...؟
مستشفيات وزارة الصحة
مديريات وزارة الصحة
- ادا كنت تعمل في مستشفيات وزارة الصحة ، ففي أي الأقسام تعمل؟
الباطني
الجراحة
النسائية والتوليد
الأطفال
العناية الحثيثة
العيادات الخارجية
الإسعاف و الطوارئ
صيدلية الأقسام
الصيدلية الرئيسية
غير ذلك
- كم عدد سنوات خبرتك في المجال الصحي ؟
اقل من 5 سنوات
من 5 الى 10 سنوات
من 10 الى5 1 سنة
من 5 1 الى 20 سنة
اكثر من 20 سنة
- هل سبق وان شاركت بورشة عمل من اعداد قسم الصيدلة السريرية ؟
نعم
لا

القسم الثاني : التصورات حول مهنة الصيدلة السريرية في الأردن

السؤال	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
تواجد الصيدلاني السريري خلال الراوند الصباحي هو امر مرغوب به					
للصيدلاني السريري دور مهم في تقديم المشورة والمعرفة للمريض					
الصيدلاني السريري يراقب استجابة المريض للعلاج من ناحية حدوث اثار جانبية / سمية					
الصيدلاني السريري يراقب استجابة المريض للعلاج من ناحية فعالية العلاج					
تواجد الصيدلاني السريري ضمن الفريق الطبي هو امر مهم لتحقيق الاعتمادية للمستشفى					
يمكن للصيدلاني السريري اختيار الخطة العلاجية المثلى اعتمادا على العوامل الخاصة بالمريض والأدوية					
يقدم الصيدلاني السريري المعلومات الدوائية لمقدمي الرعاية الصحية					
يمكن للصيدلاني السريري الكشف عن الأخطاء الدوائية ومنع حصولها					
خدمات الصيدلة السريرية تزيد من رضا المريض عن الخدمة العلاجية المقدمة له					
وجود الصيدلاني السريري يحسن النتائج النهائية للخطة العلاجية ويحسن جودة الرعاية الصحية المقدمة للمرضى					
وجود صيدلاني سريري في كل قسم بالمستشفى وفي كل الأوقات ضروري ومهم					

القسم الثالث : توقعات مدراء و مقدمي الرعاية الصحية حول الدور الذي يقوم به الصيادلة السريريين في المستشفيات

السؤال	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
يقدم الصيدلاني السريري توصيات العلاج الدوائي المسندة بالبيّنات عند الطلب					
يقدم الصيدلاني السريري معلومات حول فعالية الدواء ومأمونيته					
يختار الصيدلاني السريري أنظمة الجرعات المناسبة للمرضى					
يقدم الصيدلاني السريري معلومات عن التداخلات الدوائية					
يراقب ويتابع الصيدلاني السريري نتائج العلاج الدوائي للمرضى					
يراقب ويتابع الصيدلاني السريري التفاعلات الدوائية الضارة للمرضى داخل المستشفى					
يقيّم الصيدلاني السريري مدى التزام المريض بالعلاج الدوائي					
يقدم الصيدلاني السريري معلومات حول توافر الأدوية					
يأخذ الصيدلاني السريري سعر الدواء بالحسبان عند اقتراحه للخطط العلاجية المثلى					
للصيدلاني السريري دور في إدارة و حساب جرعات التغذية الوريدية(TPN					
يتأكد الصيدلاني السريري من توافق جميع الادوية التي يتناولها المريض					

القسم الرابع : العوائق التي قد تحد من اجراء خدمات الصيدلة السريرية

السؤال	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
غياب مهارات التواصل الفعالة عند الصيادلة السريريين					
المسؤوليات المناطة بالصيدلاني السريري غير واضحة					
غياب الثقة بالنفس للتواصل والتعامل مع فريق الرعاية الصحية					
نقص المعرفة السريرية في معالجة المرض					
غياب الدعم من إدارة المستشفى					
عدم ادراك فريق الرعاية الصحية لأهمية وفوائد وجود صيدلاني سريري بينهم					
عدم وجود بنية تحتية ملائمة لتوفير خدمة الصيدلة السريرية					
عدم وجود خبرات سابقة لدى مقدمي الرعاية الصحية في العمل مع الصيدلاني السريري					
نقص الكادر في قسم الصيدلة السريرية					

Appendix IV
Reviewers in translation process

- Dr. jibrel alsaudi

Director of language center at the world Islamic science and education university (WISE).
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- Dr. qais alefan

Associate Professor , Department of Clinical Pharmacy, Jordan university of science and technology (JUST), Jordan
E-MAIL : qaa380@mail.usask.ca

Appendix V
Content validity process

- Dr. qais alefan

Associate Professor , Department of Clinical Pharmacy, Jordan university of science and technology (JUST), Jordan

E-MAIL : qaa380@mail.usask.ca

Item	Linked		Essential to job performance				Quality of Item			
	yes	No	not	Useful, not essential	maybe	Definitely	poor	fair	good	Excellent
Sociodemographic questions										
what is your gender	√					√				√
what is your age ?	√					√				√
what is your profession	√					√				√
What is your working place	?				√					√
What is your working site	?					√				√
what is your Current area of practice?	√				√					√
what is your total years of work experience in the healthcare system?	√					√				√
Have you been involved in a workshop/meeting done by clinical pharmacy department?	√									√
Attitudes of HCPs towards clinical pharmacy practice in Jordan										
Clinical pharmacists' involvement in ward round is desirable	√					√				√
Clinical pharmacist can play important role in patient education and counseling?	√					√				√
Clinical pharmacist can monitor patient response to drug	√					√				√

therapy from toxicity/side effects perspective										
Clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective	√					√				√
The clinical pharmacist in a clinical ward team is a requirement for hospital accreditation	√					√				√
clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors	√					√				√
Clinical pharmacist can provide relevant drug information to health care professionals	√					√				√
Clinical pharmacist can detect and prevent medication use Errors	√					√				√
Clinical pharmacy services enhance patient's satisfaction	√					√				√
I think that Clinical pharmacists can improve over all patient outcome/ quality of patient care?	√					√				√
i think that clinical pharmacy services should be available in hospital's wards on a full time schedule	√					√				√
Expectations of HCPs about the role of clinical pharmacists at hospital setting										
Providing evidence-based	√					√				√

drug therapy recommendations when requested										
Providing information about medication efficacy and safety	√					√				√
Selecting appropriate general dosing regimens	√					√				√
Providing information about drug interactions	√					√				√
Monitoring outcomes of drug therapy and treatment plans	√					√				√
Monitoring adverse drug reactions in hospitalized patients	√					√				√
Assessing patient adherence to drug therapy	√					√				√
Providing information about medication availability and shortages	√					√				√
Making medication decisions based on medication pricing	√					√				√
Managing the dosing of total parenteral nutrition (TPN)	√					√				√
Performing medication reconciliation for hospitalized patients	√					√				√
Barriers that may prevent implementation of CPSs										
Lack of active communication skill	√					√				√
The specific responsibilities of a clinical pharmacist are not clearly defined.	√					√				√
Lack of confidence to interact with the health care team	√					√				√

Lack of clinical knowledge on disease management	√					√				√
Lack of support from administration	√					√				√
Physicians and other healthcare members are unaware of the benefits of having a clinical pharmacist on their team	√					√				√
Inconvenient hospital setup for provision of clinical pharmacy service	√					√				√
Healthcare professionals have no prior experience of working with a clinical pharmacist	√					√				√
shortage of staff	√					√				√

- Afaf Khasawneh

Teaching assisstant at Clinical Pharmacy and Pharmacy Practice Department, Faculty of pharmacy, Yarmouk University.
Email: a.khasaweneh@yu.edu.jo

Item	**Linked**			**Essential to job performance**			**Quality of Item**			
	yes	**No**	**not**	**Useful, not essential**	**maybe**	**Definitely**	**poor**	**fair**	**good**	**Excellent**
Sociodemographic questions										
what is your gender	√				√				√	
what is your age ?	√					√			√	
what is your profession	√					√				√
What is your working place	√					√				√
What is your working site	√					√				√
what is your Current area of practice?	√					√			√	
what is your total years of work experience in the healthcare system?	√				√				√	

Have you been involved in a workshop/meeting done by clinical pharmacy department?	√					√				√
Attitudes of HCPs towards clinical pharmacy practice in Jordan										
Clinical pharmacists' involvement in ward round is desirable	√					√				√
Clinical pharmacist can play important role in patient education and counseling?	√					√				√
Clinical pharmacist can monitor patient response to drug therapy from toxicity/side effects perspective	√					√				√
Clinical pharmacist can monitor patient response to drug therapy from effectiveness perspective	√					√				√
The clinical pharmacist in a clinical ward team is a requirement for hospital accreditation	√					√				√
clinical pharmacist can involve in drug selection (drug, dosage form) based on patient and drug factors	√					√				√
Clinical pharmacist can provide relevant drug information to health care professionals	√					√				√
Clinical pharmacist can detect and prevent medication use Errors	√					√				√
Clinical pharmacy services enhance patient's satisfaction	√				√			√		
I think that Clinical pharmacists can improve over all patient outcome/ quality of patient care?	√					√				√
i think that clinical pharmacy services should be available in hospital's wards on a full time schedule	√				√				√	

Expectations of HCPs about the role of clinical pharmacists at hospital setting										
Providing evidence-based drug therapy recommendations when requested	√					√				√
Providing information about medication efficacy and safety	√					√				√
Selecting appropriate general dosing regimens	√					√				√
Providing information about drug interactions	√					√				√
Monitoring outcomes of drug therapy and treatment plans	√					√				√
Monitoring adverse drug reactions in hospitalized patients	√					√				√
Assessing patient adherence to drug therapy	√					√				√
Providing information about medication availability and shortages		√		√				√		
Making medication decisions based on medication pricing	√					√				√
Managing the dosing of total parenteral nutrition (TPN)		√		√				√		
Performing medication reconciliation for hospitalized patients	√					√				√
Barriers that may prevent implementation of CPSs										
Lack of active communication skill	√					√				√
The specific responsibilities of a clinical pharmacist are not clearly defined.	√					√				√
Lack of confidence to interact with the health care team	√				√				√	
Lack of clinical knowledge on disease management	√					√				√

Lack of support from administration	√				√				√	
Physicians and other healthcare members are unaware of the benefits of having a clinical pharmacist on their team	√					√				√
Inconvenient hospital setup for provision of clinical pharmacy service	√				√				√	
Healthcare professionals have no prior experience of working with a clinical pharmacist	√					√				√
shortage of staff	√					√				√

Appendix VI
Ethical approval

وزارة الصحة

الرقم تطوير/معلومات/١١٦٥٠

التاريخ الموافق ١٤/١٠/٢٠٢١

مدير مديرية تخطيط الموارد البشرية وشؤون الموظفين

مدير مستشفى.....

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتاب مدير ادارة مستشفيات البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات /١٤٩٦٧ تاريخ ٢٠٢١/١٠/١١ بخصوص الموافقة لطالب ماجستيرادارة الصحة العامة **محمد سليمان كايد المسعيدين** من جامعة مؤتة اجراء بحث بعنوان :

(توجهات مقدمي الرعاية الصحية لدورالصيادلة السريريين في مستشفيات الأردن)

(Attitudes of Healthcare Providers towards the Role of Clinical Pharmacists in Jordanian hospital setting)

وذلك عن طريق جمع معلومات عن أعداد الموظفين في المستشفيات من مديرية تخطيط الموارد البشرية وشؤون الموظفين وكذلك توزيع الاستبيان المرفق صورة عنه على مقدمي الرعاية الصحية في المستشفيات الحكومية التابعة لوزارة الصحة .

أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث أعلاه ، على أن يتم موافاة لجنة أخلاقيات البحث العلمي بنتائج الدراسة العائدة للبحث المذكور.

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية

الدكتورة رهام الحمود

م س

وزارة الصحة

وتستمر المسيرة

م ب أ/ لجنة أخلاقيات /

مدير مديرية التعليم وتطوير الموارد البشرية

تحية طيبة وبعد،

اشارة لكتابكم رقم تطوير/معلومات/ ١١٢٧٦تاريخ ٢٠٢١/١٠/٣ بخصوص البحث العلمي المقدم من قبل طالب الماجستير / محمد سليمان كايد المسعيدين.

أرفق بطية قرار لجنة أخلاقيات البحث العلمي والمتضمن الموافقة على اجراء البحث العائد للمذكور أعلاه على أن يتم موافاتنا بنتائج الدراسة العائدة للبحث .

للاطلاع واجراءاتكم لطفا.

واقبلو فائق الاحترام ،،،،،

مدير ادارة مستشفيات البشير

الدكتورعلي عزات العبداللات

مديرية التعليم وتطوير الموارد البشرية

١٦٥٤٨٩١

ا ع

وزارة الصحة

رقم MOH/REC/٢٠٢١/٢٠١

التاريخ

الموافق

قرار لجنة أخلاقيات البحث العلمي

اجتمعت لجنة أخلاقيات البحث العلمي بتاريخ ٢٠٢١/١٠/٦ لمناقشة ودراسة البحث العلمي المقدم من قبل طالب الماجستير/ محمد سليمان كايد المسعيدين.

بعنوان:-

"توجهات مقدمي الرعاية الصحية لدور الصيادلة السريريين في مستشفيات الاردن "

وبناءً عليه قررت اللجنة الموافقة على اجراء البحث العائد للمذكور اعلاه مع الالتزام بأخلاقيات البحث العلمي ، وتم التوقيع من قبل أعضاء اللجنة حسب الأصول.

مقرر اللجنة
وحدة تنمية الموارد البشرية
السيد/ اكرم العناتي

عضو
مدير التمريض
د. هاني القضاة

عضو
الصيدلاني
حنان سرطاوي

عضو
اخصائي جراحه عامه
د. فاروق حمدان

عضو
رئيس قسم الباطني
د. يوسف القديمات

عضو
مدير مديرية المختبرات
د. معاذ بدوي

عضو
اخصائي الاطفال
د عصام الخواجا

عضو
مدير الشؤون الإدارية والمالية
غالب القواسمي

عضو
المدير الطبي
د. حسن الطيروع

رئيس اللجنة

مدير ادارة مستشفيات البشير

الدكتور علي عزات العبداللات

المعلومات الشخصية

الاسم: محمد سليمان كايد المسيعدين

الكلية : الطب

التخصص : ادارة الصحة العامة

السنه : 2022