

T.R.N.C

NEAR EAST UNIVERSITY

INSTITUTE OF HEALTH SCIENCES

**Perception and Attitude of Healthcare Professionals Towards
Clinical Pharmacist Northern Cyprus.**

**A THESIS SUBMITTED TO THE GRADUATE INSTITUTE OF
HEALTH SCIENCES**

**BY:
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**In Partial Fulfillment of the Requirements for the Degree of
Master of Science in Clinical Pharmacy**

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ABSTRACT

Sami Shabbir Malik, Perception and attitude of Health care provider towards clinical pharmacist in Northern Cyprus.

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Abstract:

Background: Clinical pharmacy is the Field of the pharmacy which is more patient oriented then medication oriented. Clinical pharmacist provide the optimal patient care in the optimization of the patient's medication therapy and to achieve high patient outcome. The medical health care professionals which with the help of the other medical healthcare professionals (Doctors and nurses) in collaboration achieve the desired outcomes. The achievement of collaboration in the developed countries is higher than in the developing countries. These are the primary source of medication error identification and patient drug therapy management.

Aim: Our main objective is to emphasize on the understanding of the healthcare professionals towards the clinical pharmacy services and their attitude towards the clinical pharmacist.

Method: A total of 210 participants (Healthcare providers and medical students) from Near East University hospital were asked to fill the survey and over the period of three months From May 2017 and July 2017.

Results: Three quarter of medical students recognize the pharmacist can help to minimize the adverse drug reaction and improve the therapeutic outcome of the patients in pharmaceutical care. The percentage of 34.4% medical students perceive Clinical pharmacy as a Patient oriented care rather than medication oriented discipline of pharmacy. There about 55.6% doctors were comfortable with the pharmacist participating in the ward rounds and physicians consultation to the patients. There were about 62.2% of doctors were comfortable with the clinical pharmacist in patient education to describe the medication use and therapy. There were 46.3% of the nurses were confirming the clinical pharmacist as playing role in the identification of the drug interactions.

Conclusion: The Healthcare provider and medical students recognize the role of clinical pharmacist in the healthcare delivery system. Inspite of the fact that there are some barriers need to be abolished and positive collaborative work relationship be established between the pharmacist and other healthcare providers.

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LIST OF ABBREVIATIONS:

ACPE:	Accreditation Council for Pharmacy Education
ACPE:	American Council on Pharmaceutical Education
AHFS,	American Hospital Formulary Service
ASHP,	American Society of Health-System Pharmacists
BMT,	bone marrow transplantation
BOP,	Board of Pharmacy
BPS,	Board of Pharmaceutical Sciences
CMS:	Centers for Medicare & Medicaid Services
CP:	clinical pharmacist
CPA,	collaborative practice agreement
CPP,	clinical pharmacist practitioner
CPP:	Clinical Pharmacist Practitioner
CPS:	clinical pharmacy services
DCT,	Department of Cellular Therapy
DEA,	Drug Enforcement Agency
DTM,	drug therapy management
ECMS,	Executive Committee Medical Staff
FDA,	Food and Drug Authority
HSTC:	Hematopoietic stem cell transplant patient
ICD-9,	International Classification of Diseases
NABP:	National Association of Boards of Pharmacy
NEU:	Near East University
PGY,	Post-Graduate Year
TDM,	Therapeutic Drug Monitoring
VAMCs:	Veterans Affairs Medical Centers

VHA,
WHO:

Veteran's Health Administration
World Health Organization

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1. INTRODUCTION

Over past decades the pharmacy profession has been undergone the diversification and it is providing the society as lifesaving profession. There are different models of the social role of pharmacy. Being its primary role was to compound and dispensing the medicine to patients. The pharmacy profession entered into three major periods in the twentieth century traditional, transitional, patient oriented services which proposed a revolutionary philosophy of pharmacy practice that went far beyond the expectations of most pharmacy practitioners, going far beyond the term —clinical pharmacy to a more responsible approach of pharmaceutical care. (Hepler & Strand, 1990)

The pharmacist play vital role in the providing the pharmaceutical care to patient. Clinical pharmacy is the Health science discipline in which pharmacist provide patient care that helps in optimizing the medication therapy and promote health, wellness and disease prevention. The pharmaceutical care can be the reason for the decrease in the morbidity and mortality of the patients due to medication in the hospital settings. The pharmaceutical care is the improvement in the quality of the life of patient by having the optimum outcomes. There has been change in the function of the pharmacist to advance level and to fulfil the need to overcome the adverse drug reactions and the undesired drug action function of pharmacist is advanced. (Van et al., 2004)

The clinical pharmacist provide two main services for the patients which are pharmaceutical care and medication therapy management, which plays vital role in the improvement of patient life standard and also to the patient oriented services. The ones related to the medication provision and other is related to the patient care. The necessity for these services are for the patient care and avoidance of any medication error and adverse drug events which are caused by the increase in the complex technology in medicine design and pharmacological complexities. (Lewin, 2005; van, 2003)

In 1998, another group defined pharmaceutical care as the practice of achieving the patient outcome by the medication therapy and need to improve the outcome from it. There are studies

show that the medication therapy is needed to be controlled by the medication experts and it is needed to be carried out by the medical health professionals in agreeable environment that the main role of the pharmacist is to act in the pharmaceutical care of the patient. (Cipolle et al., 1998)

Pharmaceutical care is an idea about cooperation systems, not pharmacists, prescribe. (Pharmacists cannot provide drug therapy by themselves. Pharmacists and physicians cannot improve a patient's quality of life without the cooperation of the patient or a family caregiver.) Pharmaceutical care, by definition, assumes cooperation among people who have different sets of skills, privileges, responsibilities. When a pharmacist finds a possible drug therapy problem that he or she cannot resolve, that pharmacist is expected to refer it to a more specialized clinical pharmacist or physician. (Charles & Hepler, 2004)

This diversified healthcare system in which there is patient care oriented healthcare system need to be accessed and there is need of the collaboration between the different healthcare providers to work as a team in the environment to benefit the patient with more secure and developed healthcare system. The key to success in the new healthcare system is the assessment of the perception and the attitude towards the other members of the healthcare team and how the healthcare providers collaborate and find some difficulties for the cooperation between them especially towards the services of pharmacist.

In this study clinical pharmacy services provided by the pharmacist are being evaluated in the hospital and educational setting in the Northern Cyprus.

This is first kind of study to be undertaken for the improvement of the Pharmacy profession itself and to provide the tool for the assessment of the clinical pharmacy education and its need to improve in practical and educational means.

1.1. Pharmacy practice revolution and clinical pharmacy practice

Now a days the therapeutic medicine is considered as the cornerstone of the health care system around the globe and have been described as the ‘personal technology’ of our time (DAVIS, 1997). It help in prevention, curing and elevation of disease. Pharmaceutical industries produce a vast range of pharmaceuticals. It variation can be observed in the developed and developing world. While spending on pharmaceuticals represents less than 10% of health spending in most developed countries, it represents between 15 and 30% in transitional economies, and between 25 and 66% in developing countries (WORLD HEALTH ORGANIZATION, 2001a).

Over the last century there is transition in the role of the pharmacist from compounding to dispensing and there was Apothecaries became widely known in the United States as pharmacists thanks to Edward Parrish of the American Pharmaceutical Association, as it was called at the time. In an effort to standardize the field, Parrish successfully proposed that members of the national professional organization must consider all the varied pharmaceutical practitioners “pharmacists.” Their field formally identified, pharmacists made, as well as prescribed, medicines and remained community medical counselors until the 1950s (Sonnedecker et al., 1976)

The role of the pharmacist was restricted to dispensing and distribution of medication until the 1960s and the role of drug compounder become nearly extinct, the role of pharmacist was improvised to new level of clinical pharmacy which aimed for the optimization of the medication therapy, promoting the patient care and the cost effective treatment. The main aim was transferred from the medication centered approach to patient care which lead to expanding the role of pharmacist in the health care profession and towards the pharmaceutical care services (American College of Clinical Pharmacy, 2008; Barker & Valentino, 1972)

The drug doesn’t have dose the patient has dose, the motto was represented by the clinical pharmacist in 1970s and there was clear emphasis on the role of the pharmacist in the patient care in terms of the need of the health care system to maize the adverse drug event in the patent care

and was being understood by the pharmacist of that time to revolutionize their role from procuring, dispensing and compounding to avoid drug mis-adventuring (Manasse, 1989)

In this era there was change in the pharmacy services in USA from the traditional pharmacy practice towards the new decentralization of the pharmacy practice and to adopt to the individual patient dosing and UK adopted the new role of the pharmacist i.e visiting the wards for medication dispensing and to check for the medication order in the round. This is how the pharmacist found out their diversified function in the field of emerging pharmacy to take the information and comply with the patient for the individualized care (Hepler, 1985) This was initially described as “ward pharmacy” and was mostly a post hoc process with the emphasis on the safe and timely supply of medicines in response to medical and nursing demands. However, the service quickly evolved into something significantly more proactive, seeing pharmacists interacting with patients and other healthcare professionals and directly intervening in the patient care process (Cotter et al., 1994) There is reflection of diversity in the pharmacy practice in the UK healthcare system which is found in general in other hospitals. To some hospitals there are ward based pharmacists which plays role a key member team in the healthcare professionals. This is the revolutionary development in the health care pharmacy which was termed as “ward pharmacy” in early stages. (Cousin, 1995)

Since the change in the diversification of the function of pharmacist there is a wide change in the pharmacy practice. Efforts being made to prevent the adverse drug events and to have improved drug outcomes. This lead to the reduction in the misadventures of the medication for the improvement of the patient quality of life. Especially for the patients suffering from the chronic diseases.

The prescriber plays vital role in the precision of the medicine but the hospital introduced new system for the medication of the prescription by proposing the prescribing policy and to have hospital formulary. These formularies have shown to improve the prescribing and the reduce cost of the medication and this cause decrease in the budge of the hospital. This improve in the

provision of the pharmaceutical to the patient. This is part played by the ward pharmacy. (Swallow, 1985)

This diversified change in the pharmacy practice from the drug oriented to patient oriented study was first showed as 'Clinical pharmacy' Nuffield report in 1986. The popular motto of "patient oriented practice" is proposed under the definition of clinical pharmacy practice placed which is patient oriented; Whereas, "drug use control" advocates the product rather than person. New pharmaceutical services (e.g. clinical pharmacokinetics) evolved while transformation of pharmacy practice close to the patient centered on the drug and its delivery to the two biological system rather than to the patient.(Clucas & Chair, 1986; Brodie, 1986)

The clinical pharmacist role expanded and lead the profession towards specialization; the clinical pharmacy is the component of the pharmaceutical care that's individualized for the patients and the patients need and this reduce the cost of the medication and is solely a patient oriented services. According to the current European opinion in pharmacy field seems inclined towards pharmaceutical care which is individual oriented care around pharmaceuticals or drug therapy, and the pharmacy profession claims that care. Where the Scottish pharmacist's organization speaks of pharmaceutical care, the England pharmacist's organization rather uses the term 'medicines management' for approximately the same concept. (Anonymous, 1999; Hepler & Angaran, 1996) Since 1997, there is a set of guidelines by the American Society of Health-System Pharmacists (ASHP) on patient oriented education and counselling. The patient care is first and foremost step in the pharmaceutical care. It should be emphasized that such a relationship involves not only the technical aspects of information provision and communication, but also emotional aspects and empathy. (Anonymous, 1997)

Pharmaceutical practice was first coined by the Helper and Strand and which was continued to take it bench inside the Europe and Uk (Van et al., 2004)A very important step towards establishing pharmaceutical care was the *Minnesota Pharmaceutical Care Project*, which was designed by the Department of Pharmacy Practice of the College of Pharmacy in this University(Tomechko et al., 1995) There was meeting on 4th September 1998, as a framework for national and pharmaceutical

associations, the FIP assumed that the pharmacist has basic role in pharmaceutical care regardless of the prescription medicine or nonprescription medicine, which was the extension of the idea of the Helper and Strand. (Federation of International Pharmacy, 2004)

There is change in the clinical pharmacy services to an extent that it will take new trends are being set for the revised system of the clinical pharmacy and there is new era of clinical pharmacy like in the fields (specializations) geriatrics, infectious medicines, and oncology and TPN preparations. There is influence of pharmaceutical care in the Health care profession. This change is observed as two 'Crown Reports', the first published in 1998 and the final published in 1999, UK the practice of pharmacy in the last thirty years give life to clinical pharmacy practice for the individualized therapy for the patients and has led to the concept of the pharmaceutical care., which urge Government for the prescribing roles of healthcare professionals specially pharmacist (Department of Health, 1998) The prescribing pharmacist in UK can work in two forms as a prescribing pharmacist; prescribe the medicine and supplementary prescribing_(SP); in which there is need of the supervision of the independent prescriber (Physician and pharmacist) and the one which helps in designing patient specific clinic management plan, which was introduced in 2003 this concept was headed towards the concept of Independent prescriber in 2006, (Crown, 1999)

In the hospital setup pharmacist can do good prescribing practice, with collaboration and cooperation of the Health care team by assessing the medical record of the patient. There is no parameter of the consequences for the assessment of the pharmacist utilization as supplementary prescriber but there are some evidence of the utilization of the pharmacist in the same area and useful skills such as clinical nutrition team, HIV outpatient clinic setting and drug therapy monitoring is required (such as aminoglycosides and vancomycin) is carried out.(Bellingham, 2004)

The necessity of these services are for patient care and avoidance of any medication error and adverse drug events which are caused by the increased in the complexities of the medicine design and pharmacological aspects of medicine. The primary role of clinical pharmacist is to avoid the

adverse drug event. There are 3–5% drug related problems in USA to the patients admitted to the hospital. And 28 % were in emergency were drug related adverse effects of those 70 % were preventable.(Ernst & Grizzle, 2001; Patel & Zed, 2002)

Many studies have indicated physicians receptive to clinical services of the clinical pharmacists if these services are conducted in the collaborative environment in form of consultation. These clinical services include the medication therapy management and need collaborative tools for the bridge between the Healthcare professionals and Pharmacists.

2. Medication Therapy Management MTM

Certain national associations built up an agreement meaning of MTM as "an unmistakable service or gathering of administrations that streamline helpful results for individual patients that are autonomous of, however can happen in conjunction with, the provision of medication products (Amy et al., 2014)

It is confirmed that the each medication regime of the patient which may include the prescription, OTC, alternative, vitamins or any kind of medication that helps in the improvement of patient health and use of appropriate medication can improve the patient health. Each year there is high range of the adverse drug events and which leads to the billions of dollars of medication related issues. This is because of the patient multiple chronic conditions, high drug cost, ranging therapeutic values and side effect of the drugs on other doses.

2.1. MTM includes:

- a) Patient specific and individualized services and education of the patient.
- b) Guideline for the pharmacist and the patient for the appropriate delivery of the medication.
- c) Check for the adverse drug events and medication misuse.
- d) Strategies to provide the continuous drug counseling to have outcomes(Centers for Medicare & Medicaid Services, 2009)

2.2. MTM elements:

There are five core elements of MTM:

1. Medication therapy review (MTR).
2. Personal medication record (PMR).
3. Medication-related action plan (MAP).
4. Intervention and referral.
5. Documentation and follow-up.

2.2.1. Medication Therapy Review (MTR) :

The medication therapy review (MTR) includes methodical gathering of the patient's medication treatments data to recognize medication related problem (DRP) and inappropriate pharmaceutical usage designs. Likewise, MTR includes deciding DRPs and examples that ought to be focused for mediation together with building up a care intend to address them.

The MTR can be extensive or focused to a real or potential pharmaceutical related issue. In an extensive MTR, in a perfect world the patient shows every single current pharmaceutical to the drug specialist, including all medicine and nonprescription prescriptions. Directed MTRs are utilized to address a real or potential medicine related issue.

2.2.2. Personal Medication Record (PMR)

This is the patient-specific record of all the patient's current prescription and non-prescription drugs that is created by the MTM pharmacist through interaction effective communication with the patient.

2.2.3. Medication-Related Action Plan (MAPs)

This is a patient-specific document that identifies the series of actions that should be taken by the MTM pharmacist in order to resolve DRPs via interventions and to track the status of each DRP's resolution

2.2.4. Intervention/Referral

In this stage, the MTM pharmacist provides recommendations for enhancing therapeutic care and preventing DRPs. In practice settings where pharmacist-physician collaborative agreements are in effect, an MTM pharmacist can use his/her clinical training to directly intervene by changing a drug, adjusting the dose of a drug, removing a drug from the medication list. If the pharmacist feels that the intervention needed is beyond his/her capacities, he/she can refer the patient to other healthcare professionals for further evaluation and intervention as well.

2.2.5. Follow-up/Documentation

This represents an integral and ongoing step of MTM services where the medication action plans (MAPs) and their targeted outcomes are consistently documented for regular follow-up visits with the patient.

Experts who can help manage these medication regimens contribute to both the well-being and safety of the patient. Employers who offer MTM services benefit both in productivity and in savings. They also create a work environment that encourages wellness for all. Advantages include:

- It reduces clinical risks
- Increased percentage of patients meeting their treatment goals.
- Reduced drug duplication, harmful side effects, or interactions between medications, vitamins, and supplements.
- Decrease drug cost(Amy et al., 2014; Centers for Medicare & Medicaid Services, 2009; CY, 2018)

There is need for the establishment of the Physicians – pharmacist collaborative environment for the achieving the optimum patient outcome. Clinical pharmacist need skills and technical

3. Collaboration:

Definition

Modern pharmacy practice has grown professionally to unprecedented levels—from traditional dispensing functions to sophisticated clinical roles. Initially the American college of clinical pharmacy (ACCP) pointed out the statement of the Collaborative drug therapy management. (American Pharmacists Association and National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice, 2005)

There was a tremendous change in the drug therapy and new drugs were being approved by FDA. These rise in complexities of the therapy and its management for the effective and rational use of medication for the benefit of the patient and to prevent errors and modification in the health care systems (Carmichael et al., 1997)

The use of a collaborative practice agreement (CPA) is the formal partnership between a pharmacist(s) and physician(s) is responsible for the pharmacists to take part in the patient's medication therapy & is a pathway for the clinical pharmacy practice to be the medical team. A CPA is formal partnership between a pharmacist(s) and physician(s) that permits a pharmacist(s) to manage a patients' medication therapy(Kohn et al., 1999; Punekar, 2003; Dinardo, 2012)

Drug therapy management protocol: Designated pharmacists are allowed to a written prescription in the designated circumstances it serves to guide their conduct, direct the course of action, and delineate the functions, procedures, and decision criteria to be followed. One of the example for the collaboration between the physicians and pharmacists, in which both agree upon to have consent, under the supervision of the appropriate body for management of the quality with in practical environment(Hammond et al., 2003)

Pharmacists in agreement with CPA can do: patient counselling; start, individualize, or stop medication; order, interpret, and monitor laboratory tests; formulate clinical assessments and develop therapeutic plans; provide care coordination for wellness and prevention of disease; and

conduct essential patient education. Pharmacists can also be researcher if their role is present in the CPA as supervising researcher facilitate research if they are listed as an investigator on the protocol by utilizing a CPA to order study-related medications and laboratory tests. According to the National Association of Boards of Pharmacy (NABP), (1) executing, modifying, and supervision of drug therapy in accordance with CPA, (2) Assessing patient history, (3) obtaining and checking vital signs, (4) ordering and evaluating the results of laboratory tests, and (5) such other patient care services allowed by law. (Hammond et al., 2003)

3.1. Early stages of the Collaborative practice agreement

After the amendments of the Federal Food, Drug and Cosmetic (FDC) Act of 1938 and the Durham-Humphrey amendment in 1951 the role of pharmacist was restricted and the practice of the prescription was restricted to physicians only and the pharmacist were bound to the refilling, dispensing and compounding of the drugs. There was clear separation of the legend drugs, over the counter drugs and pharmacists were restricted not to refill the legend drugs without the authorization of the physician. Which was in itself a drastic change in the role of pharmacist. (Dinardo, 2012)

The formal base of the description of collaborative practice between physicians and pharmacists was within the Indian Health Service in the early 1970s. There was first collaborative program for the specially trained pharmacist program with physicians in IHS in 1973 (Marks, 1995; Swann, 1994). There were some guideline for the treatment of the thirty one diseases and the treatment of seven chronic disease by the action of the pharmacist and the physicians. The pharmacist was also trained to perform many routine laboratory tests. Further, the action of the pharmacist was studied in several studies and the pharmacist was acting on the general acute diseases in which were contributed to be forty percent which were acute in conditions and forty percent were for the chronic disease and were contributed to pharmacy visit. (Short et al., 1973; Copeland & Apgar, 1980)

There was study under the THE LAW: CALIFORNIA ASSEMBLY BILL 717 in 1981 Clinical pharmacist under the supervision of the physicians were able to collaborate patient care and there was increase in the cost effectiveness of the medication of the patient care and this was documented in the studies which lead pharmacist to provide drug therapy management(Erickson, 1977)

The Centers for Medicare & Medicaid Services (CMS) recognized pharmacists for the first time as members of the medical staff in the hospital setting on May 16, 2012(Health Manpower Pilot Projects, 1982)

Site of protocol for the pharmacist was expanded to the clinical and system licensed health care plans (e.g. managed care organizations) there was transition in the function from the nutritional support by the pharmacist from inpatient setting to antihypertensive drugs to outpatient setting. In different states of America legislation or authorization is provided to the pharmacist to collaborate with the healthcare professionals. By the end of 2002, 38 states allowed for various types of CDTM authority in various scope of the practice of pharmacist. The Patient safety task force was developed by the Health department for the response to reduce the medication error up to 50 % since 2004. (Agency for Healthcare Research and Quality, 2001)

Collaborative Practice Drug Management is the tool for the involvement of the pharmacist to the patient care and the increase in the activities in the local health care development to national level can lead to enhance safety, efficacy and rational use of drug and overall health care of the patient. There was role of the pharmacist in the HSTC patient observed in the studies showing that the new modern therapies have complexities and these complexities compiled by the medication error and need to be understood like as the HSTC recipient patients. When doctor diagnose the illness and give the treatment guild line pharmacist act on the treatment and give the patient need care by searching on the medication and avoid the adverse drug event of the patients. And to work in collaborative way there is need for developing Collaborative framework for the pharmacist and the physicians so they can have good patient care. In USA 2001 and 2003 there was remarkable

change in the function of the pharmacist to gain the position as important part of Health care provider team.

3.2. Collaboration steps and types of Collaborative Practice Agreement (CPA)

Some state laws allow practitioners to establish CPAs in all practice environments, whereas others restrict CPA utilization within an institution.

ACP–ASIM supports physician-directed pharmacist–physician

Collaborative practice agreements

- 1. The pharmacist role must be expanded but not only to cost-effectiveness of the medication therapy.*
 - 2. There must be compensation on the responsibilities that pharmacist and the physicians spent time on the collaborative services.*
 - 3. The power of collaborative practice design must be given to the physicians and they determine the relationship between the physicians and the pharmacist.*
 - 4. The decision for the patient to refer must be under the diction of the physicians and will of the physicians.*
 - 5. The physicians are the practitioners that diagnosis the patients.*
- Condition prior to any referral.*

- The current ACP–ASIM policy of therapeutic substitution

States the following (Erickson, 1977)

Position 1. Therapeutic substitution is appropriate only in hospitals with an effectively functioning formulary system and Pharmacy and Therapeutics Committee.

Position 2. When there is no immediate consent of the authorized prescriber there must be observation the patient medication and need for the patient medication to be observed when no proper documentation is applied.

Position 3. The standard of the institutional setting be kept in mind in order to practice therapeutic substitution and need to observe.

Position 4. For the efficacy of the medication the physicians must be well educated for the patients for giving instruction for the proper use and giving the medication results and outcome.

Guideline for physicians and pharmacists are working together by American College of Clinical Pharmacy Pharmacotherapy (Therapeutic substitution and formulary systems, 1990)

- Guideline 1. Therapeutic interchange is appropriate in institutional and ambulatory settings that have a functioning formulary system and Pharmacy and Therapeutics Committee or equivalent advisory committee.
- Guideline 2. A continuous drug use evaluation process must be in place for regular review of endorsed therapeutic interchange policies and procedures.
- Guideline 3. Therapeutic interchange, as defined herein, may be executed by pharmacists if the authorized prescriber is notified either verbally or in writing within a reasonable time frame, and if the pharmacists have access to medical records and appropriate laboratory or other test results as required by the therapeutic interchange policy. Exceptions to this procedure must be stated clearly in the policy.
- Guideline 4. The Pharmacy and Therapeutics Committee or its equivalent should ensure that professional staff are educated regarding the rationale, policies, and procedures for therapeutic interchange.
- Guideline 5. The therapeutic interchange policies should define a mechanism that enables authorized prescribers to disallow therapeutic interchange.

Quality and efficacy of the services of the physician and pharmacist is maintained by the management of the responsibilities of the patient care. Both the physicians as patient care And pharmacist as medication experts ensure the safe, effective and cost effective management of the treatment.

3.3. Types, Impacts and outcomes of collaboration

3.3.1. Oncology

There are oncology setting outcomes and outlines.

Pharmacists with clinical privileges working for the Veterans Affairs Medical Centers (VMACs) are designated as Clinical Pharmacists Specialists (CPSs), and they are practitioner who awarded the title of Master or Doctor of Pharmacy with residency accredited by the American Society of Health-System Pharmacists (ASHP), and are certified by the Board of Pharmaceutical Specialties (BPS) or with equivalent knowledge. Those pharmacists are considered as models and have been leading the innovation and progress of the role of the pharmacists with clinical authority within their scope of practice.

Some of the most unique CPA models are those in New Mexico and North Carolina. New Mexico passed the Pharmacist Prescriptive Authority Act in 1993, allowing qualified pharmacists, designated as “pharmacist clinicians” by the board, to enter into a CPA with physicians (Burzynski et al., 2009) In North Carolina, the Clinical Pharmacist Practitioner (CPP) Act became effective in 2000, allowing qualified pharmacists to enter into CPAs with a supervising physician(s)(New Mexico Administrative Code,)

The nominated CPSs at a VAMC have their scope of practice delimited and approved by the medical executive committee or equivalent, chief of staff or chief of pharmacy. They are under supervision of a designated physician that gives the CPS authority to prescribe and monitor drug therapies to some parts of the disease including like HSTC (Hematopoietic Stem Transplant Cell) to monitor and manage the misadventures of the modern therapies, diabetes, hypertension, infectious diseases and oncology, and others.

It is also role of CPSs to manage drug interactions and adjust doses to avoid adverse drug event in these patients.

Their daily duties include responding to formal written consultations for pharmacotherapy and pharmacokinetics, taking medication histories, ordering and interpreting laboratory tests and writing prescription for patients with chronic illnesses or act in the supportive care of the patient.

3.3.2. Immunization

There is a collaborative practice between physicians and pharmacists on certain public health campaigns to fight with the situations like epidemic and endemic situations. Pharmacists have the necessary knowledge to check the patient's status and administer vaccination for immunization (like seasonal influenza) under the collaborative practice agreement can be administrated to patients without need of prescription from another practitioner (Physicians).

3.3.3. CPAs for naloxone therapy:

In the US some states allow pharmacists to provide some other services like testing for tuberculosis, support for smoking cessation, and now the dispensing of naloxone (Narcan), a life-saving medication that reverses opiate overdose.

In 2013 a pilot project that allow pharmacists to identify patients eligible for naloxone and start the therapy, with guided and written protocols, was conducted by Josiah Rich, a physician from Rhode Island Hospital who entered into a CPA along with Walgreens. In this process, it is required the pharmacists to contact the prescriber when naloxone is dispensed, and the patient must sign a form giving rights to the pharmacist practitioners for accessing the patient's medical records.

In 2014 the US Department of Health released regulations regarding to naloxone, which allows dispensing through "standing orders". (Krystalyn, 2017)

3.3.4. Other opportunities: Functions that can be delegate to Clinical Pharmacists

A clinical pharmacist could also extend the authorized prescription in some cases, in collaboration with the physician prescribing the therapy

For example, a CPA has been created by a pharmacists to allow patients that would need to extend the treatment with chronic medications, to have prescription extended up to three months beyond after the prescription is expired.

In that case the pharmacist would be in contact with the physician to discuss and select the most suitable medication for the case, giving the patient extra time after the prescription is expired, giving the patient to be seen by the physician meanwhile.

Another opportunity that could be delegate to the clinical pharmacist would be in the case that the pharmacist would extend the original prescription from 1 month up to 3 months in the case the physician is not available or cannot be reached for some reason. With the point-of-care INR test results the pharmacist would be able to interpret the results against the previous tests and give a follow up regarding to the adjustment of the doses, adherence of the patient to the treatment. This would be communicated to the responsible physician by taking all information to the patient's records. In this way the patient would have the medication needed until the next appointment. (Traynor,2017; Singhal et al., 1999)s

Any prescriptions written by the CPP are in accordance with CPP regulations and are provided for review by the supervising physician(s). CPPs are also permitted to order laboratory tests needed to appropriately manage a patient's drug therapy.

Due to increase in complexities of therapy in the medication of the patient increase the misadventures to the patients which lead to a clear emphasis for the diversified role of pharmacist various studies have shown the increase in the demand of the Collaborative Drug Therapy Management(CDTM). According to the review of 95 studies the research methods of each study was analyzed to develop recommendations for future endeavors. All three types of outcomes, as well as combined outcomes.

Have been addressed in the pharmacy literature; however, no single report has addressed all three areas. The research methods included surveys, retrospective reviews, prospective open-label trials, and randomized, controlled studies. Despite efforts to control for confounders and Biases, methodologic flaws were appreciated. Most of the studies reported positive outcomes resulting from pharmacist interventions (Infectious Diseases Society of America, 1997) In 1997, there was a collaboration between clinical pharmacist and the infectious disease specialist (Physicians) which was published by the Infectious Diseases Society of America (IDSA) to notify the support of the physician support for CDTM. (Alliance for Pharmaceutical Care, 2003)

There were similar studies in 2003 which carry 85% of the studies showing positive impact on the Median cost-benefit analysis data remained consistent (4.09:1 vs. 4.68:1 for previous and 2003 analyses, respectively) mean values changed dramatically (16.7:1 vs. 5.54:1, respectively), There was a document involved in the collaboration of 10 pharmacy organizations joined in 1999 to make Alliance for pharmaceutical care and published “Evidence of the Value of the Pharmacist,” which support the efforts of the pharmacist in collaborative care.(Hitchcock et al., 2000; Puneekar et al., 2003)

4. Teaching Collaboration

Showing Collaboration: For drug specialists to take an interest in CDTM, the accompanying conditions should exist: a communitarian hone condition; access to patients; access to medical records; an excellent level of instruction, preparing, information, aptitudes, and capacities; documentation of clinical exercises; and payment for drug pharmacists’ exercises.

4.1. Collaborative Practice Environment:

Collective Practice Environment: To advance the improvement of CDTM concurrences with suppliers, the pharmacist needs to repair the misperception among a few groups of onlookers that clinical pharmacists have constrained clinical preparing and experience. The professional must teach and persuade general society, officials, and health care services specialists regarding the clinical pharmacist's capabilities and ability. Without help from the mentioned groups, the backing for practical contribution will be restricted. When creating CDTM, the pharmacist’s extent of

training ought to be characterized unmistakably, portraying professional routine and incumbencies. Other health care suppliers, for example, nursing experts and assistant doctors, might be engaged with CDTM understandings. Clear and predictable correspondence between each of these professionals can help lighten disagreements and advance a community oriented condition. Better comprehension of the different ranges of abilities and information of various experts is basic with the goal that parts and duties are caught on. For instance, pharmacists are appropriate for tranquilize treatment administration obligations, particularly as for chronic illnesses states.

Nurses and assistant doctors may better serve patients through exercises in screening, triage, and treatment of intense sicknesses. The part of these physicians' extenders can't be downplayed. Association and common help between health care providers and pharmacists are vital, as is steady and dynamic correspondence with doctors.

4.2. Access to Patients and Medical Records:

The patient oriented services provided by the pharmacist is the key role in the management of the pharmaceutical care. CDMT has basic function in which the pharmacist and the patient relationship plays key element in the function of the model and need to be observed. There no alternative of the physicians and the patient relation in the model which is need of the patient to be understood but there are some element in the patients and the pharmacist relationship like the patient permits the pharmacist to perform their role in the medication and need to be educated and there are some liabilities of the pharmacist to show their skills in the patient oriented and more competitive approach. The pharmacist play role in the patient care by assessing the medication history of the patient and there is the main role of the pharmacist in assessing the queries of the patient, need to check the vital signs, either the patient was son the previous medication and need to change the medication and there is any need in the medication therapy change and also the laboratory records. The use of technology in assessing the electronic access for the patient medical records and also for concealing of the patient confidentiality.

4.3. Education, Training, Knowledge, Skills, and Ability

Pharmacists are extraordinarily prepared for the assignment of CDTM. The American Council on Pharmaceutical Education (ACPE) executed modified accreditation benchmarks for proficient degree programs in pharmacy in 1998. Pharmacy instruction now comprises of no less than two years of school pre-pharmacy educational programs, trailed by a four years proficient program with broad preparing in pharmacology and pharmaceutical Pharmacists may seek after extra willful Pharmacists may seek after extra deliberate qualifications that can feature their capacity to give CDTM and other patient care administrations.

The Board of Pharmaceutical Specialties offers board confirmation for the following branches: nuclear pharmacy, nutrition support, oncology, pharmacotherapy, and psychiatric pharmacy. The American Society of Consultant Pharmacists offers accreditation in geriatric pharmacy. In the late 1990s, the National Association of Boards of Pharmacy, as a component of the National Institute for Standards in Pharmacist Credentialing, created illness state administration accreditation examinations for anticoagulation, asthma, diabetes mellitus, and hyperlipidemia. This procedure was fortified because of the foundation of a Mississippi Medicaid extend, which was started quite a while before to assess the conveyance of focused infection and medication treatment administration administrations to Medicaid beneficiaries. Also, pharmacists can get confirmation as diabetes or asthma counselors in programs built up for an extensive variety of wellbeing experts inspired by cutting edge abilities. These certifications can recognize those pharmacists who have ability on CDTM. Eventually, obviously, the qualifications or particular instruction and preparing prerequisites for an individual community oriented practice understanding ought to be dictated by the teaming up experts at the training site.

4.4. Understanding attitudes and barrier to collaboration

The physicians are the primary health care provider and which are involved in the patient diagnosis. Patient outcomes are increased by the pharmacist involvement in patient care activities but it will also consume physicians' time. For pharmacist there is restriction to the pharmacist physician collaboration in the hospital setting due to the diversions of the responsibilities of physicians. There is limitation of the time due to overload of the patients on round.

Compensation is made between the physicians and physicians extenders for the effective use of the health care system. For instance for the nurse practitioners and the physicians assistants. There must be system developed for the compensation of the services of the physicians and the pharmacists. There must be flow of the funds from one provider to the others.

There must be collective influence between the physicians and the pharmacist for the better education of the physicians for improvement on the effective use of drugs. Consequently will reduce the medication errors and there will be effective medication therapy outcomes for the patients.

For pharmacists, the first step toward establishing Collaborative practice agreement is to build strong working relationship with physicians.

One proposed method to increase capacity is utilization of pharmacists to manage drug therapy via collaborative practice agreements (CPAs). There number of HSTC to be done in United states, there are very low number of the HSTC centers in the united states that let perform the functions of the pharmacist and need to be develop a collaborative practice agreement. Pharmacists are performing their function in CPA in the oncology a long time ago for the patient's services, so need for their work to be employed by providing the centers for working environment. There are some responsibilities of the pharmacies for the patient to manage the mediation therapy may lead the pharmacist for the improvement of the patient and also effect the cost-effectiveness of the therapy. There is increase in the HSCT procedure to issuance of the safety provided by the modern healthcare system by the influence of the pharmacist performing their role in the collaborative environment with the physicians and healthcare providers. The role of the pharmacist is to educate, manage and also retain the medication efficacy in the regime in collaborative practice and

supportive care, compliance with Risk Evaluation and Mitigation Strategies programs, and medication requests from patient assistance programs. There could be error to patient for more than 1.5 million of the patients and lead to billions of dollars of the in medication cost which could be reduced by the pharmacist in collaborative way by reducing medication error

Barriers were lack of time and compensation and the need to deal with multiple pharmacists/physicians.

Pharmacists and physicians generally agreed regarding barriers to collaborative practice (Figure 1) When there is lack of compensation and there is need for the collaborative with multiple physicians and there is the time that is factor which is time because physicians do not have time for the pharmacist due to the intense setting. There is less interaction with the physicians may be due to hesitation

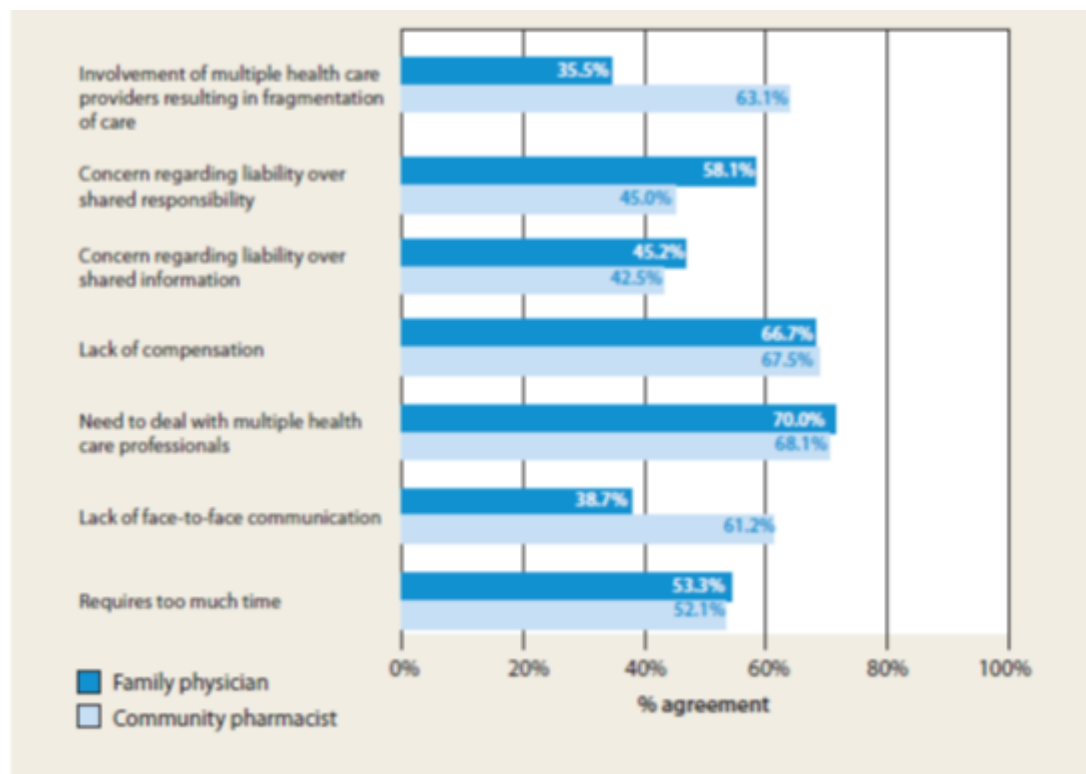


Figure 1: Barriers in the physicians and pharmacist collaborative practice.

4.5. Limitation to the collaborative Practice agreement:

Required levels of review of approval also vary from the physician, to the board of pharmacy, to the board of medical examiners, the facility itself, or various combinations. While most states allow CDTM in all practice settings, some limit it to the institutional setting. Some states have additional educational requirements, such as the Pharm.D. Degree, specialty certification, disease state management credentialing, accredited residency credentialing, or minimum clinical of experience; some states have no additional requirements.

With other countries

Since 2008, French healthcare reform encourages community pharmacists (CP) to develop collaborative care with other health care providers through new cognitive pharmacy services. (Valgus et al., 2011)

5. Perceptions and attitude

Perception can be characterized as a procedure by which people sort out and translate their tangible impressions to offer importance to their condition. Or, then again in basic words the route in which something is respected, comprehended, or deciphered, which impact the practices of individuals and along these lines their basic leadership and choices.(Coon et al., 2008)

Extensive studies are carried all over the world currently on Implications of the interactions between physicians and pharmacists, i.e. physician's perceptions toward the newly introduced practice of pharmacy, pharmaceutical care and their attitude and experience with clinical pharmacy services.

6. Studies Done on Physician's Perception toward Pharmacists

In United States where pharmaceutical care is best rehearsed and instructed, however Limited look into still has assessed doctor demeanors toward the new propelled pharmaceutical care routine with regards to drug specialist gave MTM administrations, Studies directed indicated doctor observation and states of mind toward the new propelled pharmaceutical care routine with regards to drug specialist gave MTM administrations, is seen as a significant asset to streamline understanding mind. An examination done in The University of Illinois Outpatient Care Center to decide medicinal services experts, including doctors, attendants, and drug specialists recognition and use of the MTM center has reasoned that by giving patients top to bottom instruction as it identifies with their recommended medicines and infection states MTM facility was seen as a significant asset and These recognized advantages of MTM center prompt regular quiet referrals particularly for help with medicine adherence and sickness state management.(Fadi et al., 2009)

An audit improved the situation 19 contemplates on clinical drug store benefits being taken care of by strong organ transplant patients announced Positive impression of patients and human services experts with a high rate of acknowledgment of drug specialist's intercessions (95%), and energy about the administrations given . Administrations gave included close to understanding training and directing, distinguishing, settling and averting drug-related issues, and helpful medication observing. (Smith et al., 2013)

While in Jordan an examination exploring doctors' observations, desires, and their genuine encounters with drug specialists in healing center settings in Jordan in 2008 preceding the expansion of clinical drug store hone in Jordanian healing centers, the examination was covering more than 200 doctors and inferred that Physicians in doctor's facilities in Jordan will probably acknowledge or perceive customary drug store administrations than more up to date clinical administrations. The examination prescribed that expanding doctor familiarity with these clinical drug store abilities will be an imperative stride in building up a communitarian working relationship. (Wilbur et al., 2012)

7. Materials and Methods

7.1. Respondents and settings:

This study was carried out in the Near East hospital setting from 1st May 2017 to 17 July 2017. Near East University Hospital officially opened its doors to public on 20 July 2010 with a grand opening party that hosted Turkish Minister of Justice, Cemil Cicek, and Turkish Republic of Northern Cyprus President Dervis Eroglu.

The NEU Hospital has a 55,000 square-meter closed area with 209 private single patient rooms, 8 operating theatres, 30-bed Intensive Care Unit, 17-bed Neonatal Intensive Care Unit, laboratories and a cutting-edge diagnostic imaging center. To fulfil the diverse needs of the international patients an "International Patient Coordination Center" has been created. This facility arranges and coordinates the transfer of international patients and their companions to and from North Cyprus.

Table 3: departments of NEU

Internal Medical Sciences	Surgical Medical Sciences	Other Department
Department of Cardiology	Anesthesiology and Reanimation	Algology
Department of Physical Medicine and Rehabilitation	Brain and Neurosurgery	Blood Bank
Dermatology and Venereology	Cardio Vascular Surgery	Check-Up Center

Emergency Medicine	Ear, Nose and Throat	Intensive Care Units
Forensic Medicine	General Surgery	Laboratories
Internal Medicine	Obstetrics and Gynecology	Nutrition and Dietetics
Medical Genetics	Ophthalmology	Oral Diseases and Dentistry
Medical Pathology	Orthopedics and Traumatology	Radiology
Neurology	Pediatric Surgery	
Pediatrics	Plastic, Reconstructive and Anesthetic Surgery	
Psychiatry Department	Thoracic Surgery	
Radiation Oncology	Urology	
Sports Medicine		
Thoracic Diseases		

- Near East University Faculty of Medicine accepted to World Health Organization Avicenna Directories.
- Business Initiative Directions 2013 International Arch of Europe Award

The medical student from the near East University, Physicians and nurse from hospital settings were approached by the translated questionnaire. All the wards and the intensive care units and two campus of Lefkosia and girnie was covered in the survey. The in charge of the clinics, doctors and interneers students were included in the survey.

7.2. Study Design:

This was the cross-sectional study conducted in the hospital setting where the pharmaceutical care was provided to the patients. The respondents (Healthcare Professionals) were randomly selected by the Clinical pharmacist from the list provided by their faculty administrators. The questionnaire of the 210 in total were distributed to the Healthcare professionals and the medical students. All the respondents were directly approached for the questionnaire to be filled. The questioner was prepared by the participants under the supervision of the researchers in order to improve clearly of the work and limit response bias.

The questions included were closed end questions and the statements and series of questions were prepared by the researcher with one with final version targeted at HCPs and the other at students. To ensure face validity, the questionnaire was sent to three academic and three physicians with a wide range of professional experience their views and comments were considered and then manipulated where the final version of the questionnaire came to being.

The questionnaires were divided into three parts One for medical students to fit the needs of the medical student environment, second into the Nurses section and third to Physicians. All the questionnaires were set for the s Healthcare provider need mostly the basics contaminating the same needs for the each type of respondents.

7.3. Data collection:

The questionnaire was given to the physicians, nurses and Medical students to ask for the perception and attitude of the Health care providers towards the clinical pharmacist. The respondents were answered to the questions having division into three parts

Medical Students, Two sections were distributed, first being the section showing the demographic data collection of the respondents, second being the questions in which the likered scale was assessed as ‘‘Strongly agree’’, ‘‘Agree’’, ‘‘Normal’’, ‘‘Strongly Disagree’’, ‘‘Disagree’’.

Physicians: there was division of three sections, First being Demographic data collection, second assessing the level of collaboration comfort ability with duties of the pharmacist ‘‘Comfortable’’, ‘‘Normal’’, ‘‘Uncomfortable’’, second section was for the Health care provider to assess the expectation of the physicians from the pharmacist to assess the ‘‘Strongly agree’’, ‘‘Agree’’, ‘‘Normal’’, ‘‘Strongly Disagree’’, ‘‘Disagree’’. Fourth being the Experience with pharmacist and was graded as liker scale ‘‘strongly agree’’, ‘‘Agree’’, ‘‘Normal’’, ‘‘Strongly Disagree’’, ‘‘Disagree’’.

Nurses: There was division of two sections, First being Demographic data collection, and second was the Healthcare provider expectations which was scaled as the ‘‘strongly agree’’, ‘‘Agree’’, ‘‘Normal’’, ‘‘Strongly Disagree’’, ‘‘Disagree’’.

8. Data analysis and validation:

All the respondents were encoded and the data was were analyzed using the Statistical Package for Social Sciences(SPSS) 18, Three categories were used in the spss software and all the 95% confidence interval was used could be calculated . Descriptive analysis were used to calculate the proportion of each group of the respondents who agreed / disagreed with each statement in the questionnaire Chi square test was used for the evaluating any significant difference among the participants Responses regarding certain statements in the questionnaire with a significant level of p value to <0.05.

8.1. Ethical Considerations:

Confidentiality was assured during the study, Letter of ethical Clearance was obtained from the Institutional Review Board (IRB) of Near East University Hospital. Only Initials were used during the study and other information of address and Occupation were recorded during the study.

9. Results:

There were total 210 questionnaires were distributed to the respondent and both to Medical students and Health Care professionals. A total of the 131 Medical students, 45 physicians and 80 Nurses participated in the survey.

9.1. Student's perception:

Table 1 summarizes the data obtained from the medical students who gave their opinion for the questionnaire and all the statements included in the survey. The responded were 60(45.8%) Males & 71 (54.2%) Females.

The majority of the responded believed that the 57 (43.5%) the pharmacist can help to minimize the adverse drug reaction and improve the therapeutic outcome of the patient. The students 38(29.0%) Strongly agree in the clinical pharmacist role in reduction of the medication error. The majority of the medical students 45(34.4%) perceive Clinical pharmacy as a Patient oriented care rather than medication oriented discipline of pharmacy.

Of all the respondents, Only 33(25.2 %) one third of the respondent believe in the increase of the interest towards clinical pharmacy as a profession in Northern Cyprus. The 34 (26.0%) of the medical student perceive clinical pharmacist play key role in the medical team.

There 118(90.1%) of the medical students who responded about the presence of the clinical pharmacist in the hospital setting in Northern Cyprus Near East hospital(Lefkosia and Girnie) but they were 105(80.2%) responded that they have never interacted with pharmacist in the hospital setting.

Most of the medical Students from the Turkey 99(75.6%) and Most students were young 121(92.4%) aged between 20-30 year old.

Table No. 4: Data obtained in respect of the medical students who provided their perception regarding the Clinical pharmacist in a survey. (n= 131)

Perception of medical students

Student perception	Strongly agree	Agree	Normal	Disagree	Strongly disagree
The clinical pharmacy is branch of Pharmacy that is patient oriented rather than drug product oriented services.	17(13)	45(34.4)	51(38.9)	13(9.9)	5(3.8)
Clinical pharmacist is responsible for the dose adjustment of patient	13(9.9)	46(35.1)	31 (23.7)	32 (24.4)	9 (6.9)
Clinical pharmacist helps in the optimization of patient medication therapy	26(19.8)	44(33.6)	45(34.4)	12(9.2)	4(3.1)
Clinical pharmacist intervention helps in the reduction of medication error	38(29.0)	49(37.4)	30(22.9)	12(9.2)	2(1.5)
Clinical pharmacist intervention helps to minimize the Adverse Drug reaction and improve therapeutic outcomes	30(22.9)	57(43.5)	27(20.6)	15(11.5)	2(1.5)
There is high increase in the interest of the Clinical pharmacy as profession	14(10.7)	33(25.2)	53(40.5)	28(21.4)	3(2.3)
Clinical pharmacist play key role in the medical team	12(9.2)	34(26.0)	36(27.5)	46(35.1)	3(2.3)
There is acceptability in the Doctors and other health care providers in the intervention of the clinical pharmacist	9(6.9)	25(19.1)	36(27.5)	37(28.2)	24(18.3)

9.2. Physicians perception:

There were nearly half of the doctors working in the hospital setting were from Cyprus 24(53.3%) in number and in percentage respectively. The number of doctors were 25(55.6%) were male and 20(44.4%) were female respectively. The majority of 27(60%) doctors were in the age limit between 31-40 years old. The 13(28.9%) respondents were having 6-10 years of experience.

The half 24(53.3%) of the doctor were Cypriot nationals of (Northern Cyprus) and Being 18(40%) of the doctors from turkey while minority of doctors were form Europe. The qualification of the doctors were previously 36(80.0%) graduated.

The 27(60.0%) of the doctors had never interacted with pharmacists in the hospital settings and 35(77.8%) were saying that they are aware of the fact that Near East university hospital has clinical pharmacist working. The 28(62.2%) of doctors were comfortable with the clinical pharmacist in patient education to describe the medication use and therapy. There were 27(60.0%) of the doctors which were recognize the duty of pharmacist as drug information provider as reliable source to other health care providers.

The 25(55.6%) doctors were comfortable with the pharmacist participating in the ward rounds and physicians consultation to the patients. They were 26(57.8%) comfortable In view of prescribing medication which are cost effective.

Half of the doctors 19(42.2%) recognize the clinical pharmacist role in rationale prescribing of the antibiotic medication.

More than half of the doctors 25(55.6%) recognize the pharmacist as important member of medical team to participate in the ward rounds. The doctors 22(48.9%) recognize the ability of pharmacist for the identification of drug interactions.

Table 5 a: Comfortability of doctors with clinical pharmacist

<u>Physician's degree of comfort with Clinical pharmacist</u>			
Clinical Pharmacist Duty	Comfortable	Moderately comfortable	Uncomfortable
Educating patient on medication use and therapy	28(62.2)	13(28.9)	4(8.9)
Providing Drug information to Healthcare providers and patients	27(60.0)	15(33.3)	3(6.7)

Treating minor illness under the supervision of physicians with rights of prescribing	5(11.1)	8(17.8)	32(71.1)
Participation in the suggestions for the use of antibiotics and monitoring rational use of antibiotics	17(37.8)	22(48.9)	6(13.3)
Manage and monitor the Anticoagulant therapy	10(22.2)	18(40.0)	17(37.8)
Detecting and preventing prescription errors	26(57.8)	9(20.0)	10(22.2)
Clinical pharmacist representation in the therapeutic policy committee	17(37.8)	17(37.8)	11(24.4)
Suggesting use of nonprescribing medication to patients e.g. paracetamol	17(37.8)	12(26.7)	16(35.6)
Participating in ward rounds and physician consultation to patients for drug consultation	25(55.6)	14(31.1)	6(13.3)
Aids in prescribing cost effective medications	26(57.8)	13(28.9)	6(13.3)

Take 5b: The perception of the doctors towards the clinical pharmacist.

<u>Perception of HealthCare (Doctors, Nurses, Pharmacist & Others)</u>					
HealthCare Professionals	Strongly agree	Agree	Normal	Disagree	Strongly disagree
1. Clinical pharmacists can enhance the quality of patient oriented care in hospital	19(42.2)	20(44.4)	1(2.2)	4(8.9)	1(2.2)
2. Clinical pharmacist is an important member of medical team to participate in the ward rounds	4(8.9)	25(55.6)	6(13.3)	8(17.8)	2(4.4)
3. Clinical pharmacists assist healthcare providers in designing efficient	5(11.1)	18(40.0)	13(28.9)	6(13.3)	3(6.7)

medication therapy plan for the patient					
4. Clinical pharmacists can manage minor diseases(e.g. acne, Sinusitis, Athletes foot etc.) treatment	0	4(8.9)	7(15.6)	22(48.9)	12(26.7)
5. Clinical pharmacists can help in managing chronic disease	2(4.4)	15(33.3)	20(44.4)	6(13.3)	2(4.4)
6. Clinical pharmacists are involved in detecting and managing drug related problems	16(35.6)	22(48.9)	4(8.9)	2(4.4)	1(2.2)
7. Clinical pharmacists educate patients about the safe and appropriate use of their medications	21(46.7)	22(48.9)	1(2.2)	0	1(2.2)
8. Clinical pharmacist monitor the anticoagulant therapy and revise the re-filling of prescriptions	4(8.9)	8.9(24.4)	13(28.9)	15(33.3)	2(4.4)
9. Clinical pharmacist helps in the rationale use of antibiotics	12(26.7)	19(42.2)	9(20.0)	5(11.1)	
10. Clinical pharmacist is a knowledgeable drug therapy expert	14(31.1)	14(31.1)	11(24.4)	3(6.7)	3(6.7)
11. Clinical pharmacists can identification of the Drug interaction	14(31.1)	22(48.9)	7(15.6)	1(2.2)	1(2.2)
12. `Clinical pharmacists can enhance the patient Compliance	14(31.1)	23(51.1)	7(15.6)	1(2.2)	

Table 5c: Experience of the doctor with clinical pharmacist.

<u>Physicians experience with Clinical pharmacist</u>					
Physicians experience	Strongly Agree	Agree	Normal	Disagree	Strongly disagree
1. In my experience, Clinical pharmacist is a reliable drug information source(Specific facts about the drug, which can be found in the standard references)	2(4.4)	1(2.2)	0	2(4.4)	0
2. Clinical pharmacist routinely counsel patients regarding safe and appropriate use of their medications	0	3(6.7)	2(4.4)	0	0
3. In my experience, clinical pharmacist provide cost-effective alternatives to the drugs I prescribe	0	3(6.7)	1(2.2)	1(2.2)	0
4. Clinical pharmacists assist in the designing drug therapy for individual		3(6.7)	1(2.2)	1(2.2)	0
5. Clinical pharmacists monitor Anticoagulant (INR) for the patients	1(2.2)	2(4.4)	1(2.2)	1(2.2)	0
6. Clinical pharmacist routinely inform me if they discover any clinical problems with my prescriptions or prescription refills	1 (2.2)	4(8.9)		0	0
7. Clinical pharmacist frequently ask patient for the drug related problem and let me know about their medication problem	0	5(11.1)		0	0

9.3. Nurses perception:

Seventy five (93.8%) of the nurses were female and the male being 5(6.3%) of the total population of the nurses. The majority were young range between 20-30(61.3%). The years of experience of were between 1-5(41.3%). The most of the nationality holders were from Cyprus which in frequency 56(70.0%). Their qualification was bacchulrate generally newly qualified from the Nursing school which was in frequency 64(80.0%). They were qualified from generally Cyprus 54(67.5%).

Forty two 52.5% of the nurses respondents were reported to have no any interaction with qualified pharmacist in the hospital setting. There were 60 (72%) respondents confirmed the presence of clinical pharmacist in the hospital setting.

The willingness of the nurses to work with pharmacist collaboration was reported but 38 (47.5%) of the nurses pointed out the role of pharmacist in rationale role in antibiotic medication. According to the table the data shows that 37(46.3%) of the nurses were confirming the clinical pharmacist as playing role in the identification of the drug interactions. The 33(41.3%) respondents consider clinical pharmacist to educate the patient for safe and appropriate use of their medications. When it comes to the function of clinical pharmacist there was 34(42.5%) of the respondents reported to have perception of clinical pharmacist as drug specialist. The nurse 46.3% nurses were confirming the clinical pharmacist as playing role in the identification of the drug interactions

Table 6: Data collected from the nurses of assessing the perception of the clinical pharmacist (n=80)

<u>Perception of HealthCare (Doctors, Nurses, Pharmacist & Others)</u>					
HealthCare Professionals	Strongly agree	Agree	Normal	Disagree	Strongly disagree
1. Clinical pharmacists can enhance the quality of patient oriented care in hospital	26(32.5)	33(41.3)	17(21.3)	2(2.5)	2(2.5)
2. Clinical pharmacist is an important member of medical team to participate in the ward rounds	17(21.3)	28(35.0)	14(17.5)	19(23.8)	2(2.5)
3. Clinical pharmacists assist healthcare providers in designing efficient medication therapy plan for the patient	18(22.5)	31(38.8)	22(27.5)	7(8.8)	2(2.5)
4. Clinical pharmacists can manage minor diseases(e.g. acne, Sinusitis, Athletes foot etc.) treatment	5(6.3)	26(32.5)	17(21.3)	18(22.5)	14(17.5)
5. Clinical pharmacists can help in managing chronic disease	10(12.5)	23(28.8)	23(28.8)	20(25.0)	4(5.0)
6. Clinical pharmacists are involved in detecting and managing drug related problems	28(35.0)	30(37.5)	14(17.5)	7(8.8)	1(1.3)
7. Clinical pharmacists educate patients about the safe and appropriate use of their medications	33(41.3)	33(41.3)	12(15.0)	2(2.5)	0

8. Clinical pharmacist monitor the anticoagulant therapy and revise the re-filling of prescriptions	12(15.0)	28(35.0)	16(20.0)	22(27.5)	2(2.5)
9. Clinical pharmacist helps in the rationale use of antibiotics	15(18.8)	38(47.5)	18(22.5)	8(10.0)	1(1.3)
10. Clinical pharmacist is a knowledgeable drug therapy expert	17(21.3)	34(42.5)	19(23.8)	8(10.0)	2(2.5)
11. Clinical pharmacists can identification of the Drug interaction	20(25.0)	37(46.3)	16(20.0)	6(7.5)	1(1.3)
12. Clinical pharmacists can enhance the patient Compliance	18(22.5)	28(35.0)	15(18.8)	19(23.8)	

The Table 2 and 3 shows the data in respect of the doctors and Nurse respectively who provided their statement towards the clinical pharmacist to put the statement in the survey. With regard to the perception of the Healthcare provider and Perception of medical students towards clinical pharmacist, there significant difference in their responses on the issue of the clinical pharmacist bringing improvement in the field of clinical pharmacist.

10. Discussion:

There is a tremendous change in field of the Pharmacy in Turkey and Northern Cyprus, from decades. There is inevitable changes needed in the training and the clinical round setup to use the skills of pharmacist in the modified health care system. By this, the skills and abilities of the clinical pharmacist will be used according to the needs of the healthcare system. There is a need to bring the clinical pharmacist from the background, to the clinical setting to be involve in the prescribing and dispensing of medication to the patients. The Healthcare providers have interest towards the clinical services of the clinical pharmacist, to perform procedures require and according to them require training to improve clinical services for the patients in Turkey and Northern Cyprus. Physicians and the nurses had limited clinical expertise with Clinical pharmacist. However Both the Healthcare provider and the pharmacist had interest in collaborative working environment.

Interestingly there was a willingness of the medical student of Near east university to indulge in the collaborative environment with the Clinical pharmacist in terms of reduction of medication errors 43.5% and the dispensing of the medication to the patients, and was increasing interest in the clinical pharmacist role in the clinical services in the hospital settings. There was lack of collaborative environment between medical students and clinical pharmacist, most medical students were not aware of role of the clinical pharmacist in the healthcare setting. This may be due to less patient oriented role of the Pharmacy education in Northern Cyprus, That need to be improvement and need change in the collaboration of the medical students and pharmacy student. They want collaborative environment for the working with the clinical pharmacist to enhance the clinical outcomes of the patients and there was an increase in the interest of the clinical pharmacist to be part of the medical team as to assess the medication therapy. The medical student need to understand the abilities and skills which are being taught in the pharmacy school of the Northern Cyprus for the more patient oriented approach. There is shortage of the clinical pharmacist in the hospital settings, there is need for more improvement in the clinical tools and clinical approach of the clinical pharmacist. There must be some inter-professional collaborative programs between the medical students and pharmacy student, which is necessary to identify the area of the work of both professions. This will increase in collaborative environment to meet the changes in the modified, more enhanced and complex drug technologies which are being introduced. This causes in the reduction of drug related adverse effects and optimization of the patient medication therapy. Due to less exposure of the pharmacy student and medical students, there were no clear understanding of the role of clinical pharmacist in the hospital settings. There is 35.1% unacceptability of the medical student towards the clinical pharmacist as the drug specialist. These uncertainties are due to the fact decrease of the medical students and pharmacist interaction in the patient care oriented programs.

In china, there are studies regarding the perception and attitude of the clinical pharmacy services in the urban general hospitals. In china there were 646 respondents and the 81 % of the respondents were in favor of the role of the clinical pharmacy services provided by the clinical pharmacist, in the hospital settings high confidence in the clinical role of the pharmacist is observed. There was

less acceptability of physicians toward the prescribing skill of the clinical pharmacist in the urban areas of the general hospitals. Only 27% of the pharmacist provide the pharmaceutical care optimization of the patient medication therapy on physician's request.

There are some studies in the middle east regarding the perception and attitude of the Healthcare professional towards clinical pharmacist and is described as the there is need of the development of the pharmaceutical care plan for the pharmacist and increase collaborative working relationship in their of the clinical pharmacy and there is need in the training of the clinical pharmacist for the improvement of the skills in the different field of pharmacy. These studies carried out in the Sweden, Kuwait, Jordan, Egypt and Pakistan. (Bootman et al., 2012; Valgus et al., 2011; Coon et al., 2008)

In Netherlands there were studies which showed there was acceptance of the clinical pharmacist in the medical healthcare settings of the hospital and there was increase in the pharmaceutical care assessment of the clinical pharmacist, it was observed a positive attitude towards the services of pharmacist (Fadi et al., 2009)

The Healthcare providers were receptive towards the role of the clinical pharmacist to work in the collaborative way, there was acceptance by physicians and expectations were high for the clinical pharmacist to work in collaborative environment, to have the ward rounds and the help in the consultation of the physicians in the patient improvement. The healthcare provider also assume the role of the clinical pharmacist the direct patient oriented and there was significant increase in the interest and urge of the interaction with pharmacist to identify the medication related problems. There was some interprofessional interactions but was limited to the some area of the medical working environment the area of the respiratory wards, neurology and some psychology wards some physicians were aware of the role of clinical pharmacist. Due to the reason that one of them was working in the Japan where the interaction of the clinical pharmacist and physician is high and the other was from Denmark and there was increase collaboration in the acceptance of the

physicians and clinical pharmacist in healthcare system. Findings also showed role of clinical This may be due to two reasons; firstly, there would be a lack of confidence of clinical pharmacist and the physicians on the competence of the clinical pharmacist to rely on the clinical pharmacist in the patient care. Secondly been the reason that pharmacist as thread to prescribing competence towards the physicians cause reluctance to identify the role of clinical pharmacist in clinical setting by the physicians and healthcare providers. Such discomfort been the reason of the lack of the interaction between the pharmacist and physicians in the hospital settings.

These finding leads the role of the clinical pharmacist to be widened and there is some role in specialization to be performed, and it is fact, that there is some resistance in the performance of the role of the clinical pharmacist.

11.Limitation of the study:

-Duration of study: there was three month study carried out which is not the representation of the true population.

- Study settings and population: There are some limitation to the studies that the study was conducted in the Near East Hospital for assessing the perception and attitude of Healthcare professional towards clinical pharmacist in northern Cyprus, Firstly the response rate of the physicians and nurses towards the clinical pharmacist services was 75 % and some rejected to participate in the survey due to the reason that they were not aware of the clinical services of the clinical pharmacist, or maybe think thread for the medical profession towards some role of clinical pharmacist which they do not agree. There was limitation of the clinical setup in Near east university, no randomized control study to be conducted due to less arability if the sample size. There is less convince in the physicians on the capabilities if the clinical pharmacist and their skills.

12. CONCLUSION:

The study conducted in the Near East University Hospital shows the Healthcare provider to accept the pharmaceutical care role of the clinical pharmacist and there are some more acceptance of healthcare provider towards the clinical pharmacist(s) to perform their function(s). There was comfort ability of physicians and health care provider in the acceptance in the role of pharmacist to in reduction of medication error and reduction of the prescription errors. And also optimization of the medication therapy.

Pharmacists and physicians agree that the greatest barriers to collaborative practice include lack of compensation, insufficient time and the need to collaborate with multiple physicians/pharmacists. There is a need in the collaborative framework towards the Healthcare provider and the pharmacist. There is positive feedback in acceptance of the clinical pharmacist and Healthcare provider to work in a collaborative framework. Only need to develop the collaborative structure to enhance the patient oriented care and to reduce other misadventure event.

The medical student's perception indicate wellness to accept the role of clinical pharmacist in their area to perform work. But there was less interaction between the medical students and pharmacy students may be due the less patient oriented services that pharmacy school need to provide, and to enhance this, there must be collaborative programs introduced in common like interprofessional attitude to identify the role of other healthcare providers in this aspect. There was an increased interest in the clinical pharmacist as the part of the medical team.

The physician's comfortability toward clinical pharmacist was significant and there was increase in interest regarding the clinical pharmacist role towards the optimization of the medication error and reduction in the adverse drug events. The healthcare providers considers the pharmacist as the knowledgeable source of the medication and they are considered as the source of the drug therapy expert. Close and more elaborative communication being required by the pharmacist and the physicians for the better patient care, and to reduce the medication related problems.

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Appendix I: Questionnaire for the evaluation of the

A. Physician's perception, expectation & Experience.

Section I: Demographic Data

1. **Gender**
a. Male b. Female
2. **Age**
a. 20-30 b. 31-40 c. 41 and above
3. **Years of experience**
a. 1-5 b. 6-10 c. 11-15 d. 16-20 e. 21 and above
4. **Nationality**
a. Cyprus b. Turkey c. Other countries (Specify).....
5. **Country of education**
a. Turkey b. Cyprus c. Europe d. USA e. Others (Specify)
.....
6. **Current Academic Qualification**
a. Bachelor Degree b. Master's Degree c. PhD d. Others (Specify).....
7. **Area of practice**
a. Cardiology b. Internal medicine c. ENT d. Oncology e. Others
(Specify).....
8. **Interaction with Clinical pharmacist**
a. Never b. 1-2 times a month c. 3-6 times a month d. more than 6 times
9. **Is there any clinical pharmacist in hospital**
a. Yes b. No
c. If "NO" would you prefer to have a Clinical pharmacist in hospital.....

Section II: Physician's degree of comfort with Clinical pharmacist

Clinical Pharmacist Duty	Comfortable	Moderately comfortable	Uncomfortable
1. Educating patient on medication use and therapy			
2. Providing Drug information to Healthcare providers and patients			
3. Treating minor illness under the supervision of physicians with rights of prescribing			
4. Participation in the suggestions for the use of antibiotics and monitoring rational use of antibiotics			
5. Manage and monitor the Anticoagulant therapy			
6. Detecting and preventing prescription errors			

7. Clinical pharmacist representation in the therapeutic policy committee			
8. Suggesting use of nonprescribing medication to patients e.g. paracetamol			
9. Participating in ward rounds and physician consultation to patients for drug consultation			
10. Aids in prescribing cost effective medications			

Section III: Perception of HealthCare (Doctors, Nurses, Pharmacist & Others)

HealthCare Professionals	Strongly agree	Agree	Normal	Disagree	Strongly disagree
1. Clinical pharmacists can enhance the quality of patient oriented care in hospital					
2. Clinical pharmacist is an important member of medical team to participate in the ward rounds					
3. Clinical pharmacists assist healthcare providers in designing efficient medication therapy plan for the patient					
4. Clinical pharmacists can manage minor diseases(e.g. acne, Sinusitis, Athletes foot etc.) treatment					
5. Clinical pharmacists can help in managing chronic disease					
6. Clinical pharmacists are involved in detecting and managing drug related problems					
7. Clinical pharmacists educate patients about the safe and appropriate use of their medications					
8. Clinical pharmacist monitor the anticoagulant therapy and revise the re-filling of prescriptions					
9. Clinical pharmacist helps in the rationale use of antibiotics					
10. Clinical pharmacist is a knowledgeable drug therapy expert					
11. Clinical pharmacists can identification of the Drug interaction					
12. Clinical pharmacists can enhance the patient Compliance					

Section III: Physicians experience with Clinical pharmacist

Physicians experience	Strongly Agree	Agree	Normal	Disagree	Strongly disagree
1. In my experience, Clinical pharmacist is a reliable drug information source(Specific facts about the drug, which can be found in the standard references)					
2. Clinical pharmacist routinely counsel patients regarding safe and appropriate use of their medications					
3. In my experience, clinical pharmacist provide cost-effective alternatives to the drugs I prescribe					
4. Clinical pharmacists assist in the designing drug therapy for individual					
5. Clinical pharmacists monitor Anticoagulant (INR) for the patients					
6. Clinical pharmacist routinely inform me if they discover any clinical problems with my prescriptions or prescription refills					
7. Clinical pharmacist frequently ask patient for the drug related problem and let me know about their medication problem					

B. Perception of HealthCare (Nurses).

Section I: Demographic Data

10. **Gender**
a. Male b. Female
11. **Age**
a. 20-30 b. 31-40 c. 41 and above
12. **Years of experience**
a. 1-5 b. 6-10 c. 11-15 d. 16-20 e. 21 and above
13. **Nationality**
a. Cyprus b. Turkey c. Other countries (Specify).....
14. **Country of education**
a. Turkey b. Cyprus c. Europe d. USA e. Others (Specify)
.....
15. **Current Academic Qualification**
a. Bachelor Degree b. Master's Degree c. PhD d. Others (Specify).....
16. **Area of practice**
a. Cardiology b. Internal medicine c. ENT d. Oncology e. Others
(Specify).....
17. **Interaction with Clinical pharmacist**
a. Never b. 1-2 times a month c. 3-6 times a month d. more than 6 times
18. **Is there any clinical pharmacist in hospital**
a. Yes b. No
d. If "NO" would you prefer to have a Clinical pharmacist in hospital.....

Section II: Perception of HealthCare (Doctors, Nurses, Pharmacist & Others)

HealthCare Professionals	Strongly agree	Agree	Normal	Disagree	Strongly disagree
1. Clinical pharmacists can enhance the quality of patient oriented care in hospital					
2. Clinical pharmacist is an important member of medical team to participate in the ward rounds					
3. Clinical pharmacists assist healthcare providers in designing efficient medication therapy plan for the patient					
4. Clinical pharmacists can manage minor diseases(e.g. acne, Sinusitis, Athletes foot etc.) treatment					
5. Clinical pharmacists can help in managing chronic disease					

6. Clinical pharmacists are involved in detecting and managing drug related problems					
7. Clinical pharmacists educate patients about the safe and appropriate use of their medications					
8. Clinical pharmacist monitor the anticoagulant therapy and revise the re-filling of prescriptions					
9. Clinical pharmacist helps in the rationale use of antibiotics					
10. Clinical pharmacist is a knowledgeable drug therapy expert					
11. Clinical pharmacists can identification of the Drug interaction					
12. `Clinical pharmacists can enhance the patient Compliance					

C. Perception of medical students


Section I: Demographic Data

1. **Gender**
 - a. Male b. Female
2. **Age**
 - a. 20-30 b. 31-40 c. 41 and above
3. **Interaction with Clinical pharmacist**
 - a. Never b. 1-2 times a month c. 3-6 times a month d. more than 6 times
4. **Is there any clinical pharmacist in hospital**
 - a. Yes b. No
5. If "NO" would you prefer to have a Clinical pharmacist in hospital.....

Student perception	Strongly agree	Agree	Normal	Disagree	Strongly disagree
1. The clinical pharmacy is branch of Pharmacy that is patient oriented rather than drug product oriented services.					
2. Clinical pharmacist is responsible for the dose adjustment of patient					
3. Clinical pharmacist helps in the optimization of patient medication therapy					
4. Clinical pharmacist intervention helps in the reduction of medication error					
5. Clinical pharmacist intervention helps to minimize the Adverse Drug reaction and improve therapeutic outcomes					
6. There is high increase in the interest of the Clinical pharmacy as profession					
7. Clinical pharmacist play key role in the medical team					
8. There is acceptability in the Doctors and other health care providers in the intervention of the clinical pharmacist					

Appendix III: Institutional Review Board (IRB) Ethical Approval Letter.

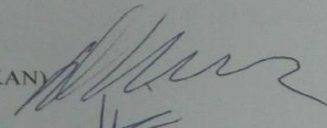
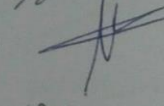
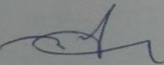
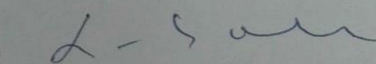
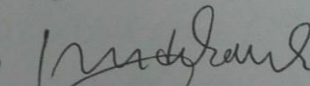

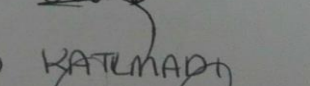
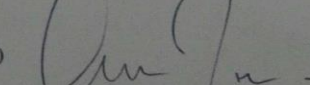
EK: 511-2017


YAKIN DOĞU ÜNİVERSİTESİ
BİLİMSEL ARAŞTIRMALAR DEĞERLENDİRME ETİK KURULU

ARAŞTIRMA PROJESİ DEĞERLENDİRME RAPORU

Toplantı Tarihi : 25.05.2017
Toplantı No : 2017/47
Proje No : 412

Yakın Doğu Üniversitesi Eczacılık Fakültesi öğretim üyelerinden Doç. Dr. Bilgen Başgut'un sorumlu araştırmacısı olduğu, YDU/2017/47-412 proje numaralı ve **"Perception and Attitude of Healthcare Professionals Towards the Clinical Pharmacist in Turkey and Northern Cyprus"** başlıklı proje önerisi kurulumuzca değerlendirilmiş olup, etik olarak uygun bulunmuştur.

1. Prof. Dr. Rüştü Onur	(BAŞKAN) 
2. Prof. Dr. Nerin Bahçeciler Önder	(ÜYE) 
3. Prof. Dr. Tamer Yılmaz	(ÜYE) KATILMADI
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6. Prof. Dr. Nedim Çakır	(ÜYE) 
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