



Perception and Attitude of Healthcare Providers towards Clinical Pharmacists at Near East University Hospital in Northern Cyprus

Sami Shabbir Malik¹, Nevzat Birand^{2*} and Bilgen Başgut²

¹Faculty of Pharmacy, Lahore University, Pakistan.

²Department of Clinical Pharmacy, Faculty of Pharmacy, Near East University, Northern Cyprus, Turkey.

Authors' contributions

This work was carried out in collaboration among all authors. Authors BB, SSM and NB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors BB and NB managed the analyses of the study. Authors SSM and NB managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2020/v32i2330787

Editor(s):

(1) Dr. Wenbin Zeng, Xiangya School of Pharmaceutical Sciences, Central South University, China.

Reviewers:

(1) Renata Prado Bereta Vilela, FACERES, Brazil.

(2) Ruchi Bhuyan, Institute of Medical Sciences and SUM Hospital, Siksha O. Anusandhan University, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/61130>

Original Research Article

Received 10 July 2020
Accepted 17 September 2020
Published 26 September 2020

ABSTRACT

Aims: The aim of study is to assess the perception and attitude of healthcare professionals towards clinical pharmacists in a university hospital North Cyprus.

Study Design: A cross-sectional survey study.

Place and Duration of Study: This study was conducted in the Near East University Hospital in Northern Cyprus setting from May 2017 to July 2017 for 3 months.

Methodology: A total of 256 healthcare providers (45 physicians, 80 nurses, and 131 intern medical students) from a tertiary hospital in North Cyprus participated in this study. A questionnaire was distributed to assess the perception and attitude of healthcare professionals towards clinical pharmacists. The data was analysed using the Statistical Package for Social Sciences (SPSS) 18. A p-value of less than 0.05 ($p < 0.05$) was considered as statistically significant.

Results: Eighty-seven (66.4%) of intern medical students have recognized the role of clinical pharmacists in minimising adverse drug reaction and improving therapeutic outcome of the patients

*Corresponding author: E-mail: nevzat.birand@neu.edu.tr;

through pharmaceutical care. Twenty-five (55.6%) of physicians were comfortable with the clinical pharmacist participating in the ward rounds and providing consultation to physicians regarding individual patients. Fifty-seven (71.3%) of the nurses have confirmed the clinical pharmacist as playing a role in the identification of the drug interactions. A significant difference exists between responses of the healthcare providers (physicians and nurses) and the intern medical students regarding the perception towards improvement in the field of the clinical pharmacist ($p < 0.0001$).

Conclusion: This study has been shown that physicians have a positive attitude towards clinical pharmacy services. Healthcare providers are aware of the role of clinical pharmacists in the healthcare system. A multidisciplinary workspace could be created between clinical pharmacists and healthcare providers to deliver better healthcare service to patients.

Keywords: Clinical pharmacist; perception; attitude; clinical pharmacy service; healthcare providers.

1. INTRODUCTION

The pharmacy profession has helped patients with traditional service for centuries. After industrial developments, the role of the pharmacy profession had limited to distributing medications. In 1989, Hepler and Stand have suggested new opportunities and responsibilities to the pharmacy profession with the pharmaceutical care philosophy. Thus, clinical pharmacy services have started to be provided with a pharmaceutical care approach [1-2]. Pharmaceutical care was defined as the responsible provision of pharmacotherapy for the purpose of achieving definite outcomes that improve or maintain a patient's quality of life by the International Pharmaceutical Federation (FIP) [3]. Clinical pharmacists play a major role in pharmaceutical care delivery in hospitals, improving the patient's quality of life, as well as providing patient-oriented services [4-5]. The shift from traditional pharmacy practice to patient-oriented care causes more collaboration between clinical pharmacists and other healthcare providers. As a result of this collaboration, it was determined that patient care was more effective, drug-related problems decreased, and more successful outcomes were achieved in treatment [6-8]. Therefore, the establishment and development of pharmaceutical care is of high importance in order to increase the level of collaboration between clinical pharmacists and other healthcare providers [9-10]. Extensive studies are carried out on the perceptions, attitudes and experiences of clinical pharmacy services and pharmaceutical care given by clinical pharmacists and implications of the collaboration between physicians and pharmacists all over the world [11-12]. In a study conducted in Riyadh, Saudi Arabia, It has shown that physicians and

nurses have positive perceptions of clinical pharmacy services, but that awareness should be raised by taking a more active role in the work environment [13]. In another study conducted in Northern Sweden, it has been shown that all of the physicians who had a positive perspective, were satisfied with their collaborative work with clinical pharmacists [14]. There is an enormous change in the field of clinical pharmacy in Northern Cyprus in recent years [7,15-16]. There have been necessary changes in pharmacy education to use the skills of the clinical pharmacist in the changing health care system [17]. For this reason, we conducted this study in order to determine the perceptions and attitudes of healthcare providers for the change in clinical pharmacy services.

2. MATERIALS AND METHODS

2.1 Subjects and Setting

This study was the cross-sectional study conducted in the Near East University Hospital in Northern Cyprus setting from May 2017 to July 2017 for 3 months. A cross-sectional study was conducted in the Near East University Hospital where pharmaceutical care has been provided to the patient. The aim of study was to assess the perception and attitude of healthcare providers towards clinical pharmacists in a university hospital North Cyprus. Physicians, nurses and intern medical students who were served in the Near East University Hospital, were included in our study. The questionnaire was used to assess the perception and attitude of healthcare professionals towards clinical pharmacist.

2.2 Data Collection and Study Tools

The questionnaire was designed by making minor modifications on the questionnaires previously used to evaluate the perception of

physicians in California, Kuwait and Palestine and the perception of nurses in Pakistan [18-21]. The questionnaire included closed-end questions and statements. In order to ensure the validity of the questionnaire used in this study was sent to three physicians who are experts in Cardiology, Respiratory and Infectious disease departments, and three academicians for face validation. The questionnaire was revised by their opinions and comments. The questionnaires were given in both English and Turkish language for participants. The questionnaire was translated into the Turkish language by a forward and backward method [22] and then piloted. The questionnaires were divided into three parts for the physician, nurses and intern medical student to assess for their perception and attitude towards the clinical pharmacist.

The sample size was determined using Raosoft sample size calculator online software [23]. Out of 350 Healthcare providers and intern medical students at NEU hospital, 184 were determined as the sample size representative of the study population. Therefore a total of 350 self-administered questionnaires were distributed to all Healthcare providers and intern medical students.

For physician's questionnaire; There were four sections for the physician. The first section was about demographic information. The second section was evaluated to the degree of the attitude of the physician towards the clinical pharmacist and was rated as three-point Likert scales "Comfortable", "Neutral", "UnComfortable". The third section was evaluated to the perception of the Physician towards the clinical pharmacist and was rated as five-point Likert scales "Strongly agree", "Agree", "Neutral", "Disagree", "Strongly Disagree". The fourth section was evaluated to the experience of the Physician towards the clinical pharmacist and was rated as five-point Likert scales "Strongly agree", "Agree", "Neutral", "Disagree", "Strongly disagree". Table 1A and Table 1B were filled in by all physicians. The only Table 1C were filled in by physicians receiving clinical pharmacy services.

For intern medical student's questionnaire; There were two sections for intern medical students. The first section was about demographic information. The second section was evaluated to the perception of the intern medical student towards the clinical pharmacist and was rated as

five-point Likert scales as "Strongly agree", "Agree", "Neutral", "Disagree", "Strongly disagree".

For nurse's questionnaire; There were two sections for nurses. The first section was about demographic information. The second section was evaluated to the perception of the nurse towards the clinical pharmacist and was rated as five-point Likert scales as "Strongly agree", "Agree", "Neutral", "Disagree", "Strongly disagree".

2.3 Statistical Analysis

All the participants were encoded. Sample size was determined using Raosoft sample size calculator online software [23]. The data was analysed using the Statistical Package for Social Sciences (SPSS) version 18. Descriptive analysis was used to determine the proportion of participants who answered the questions in the questionnaire, agreed or disagreed for each item. The Chi-square test was used to evaluate any statistical significance between the answers given by the participants and the items in the questionnaire. A p-value of less than 0.05 ($p < 0.05$) was analysed to statistically significant.

3. RESULTS AND DISCUSSION

3.1 Results

Three hundred and fifty questionnaires in total were distributed to all healthcare providers and intern medical students in hospital. A total of two hundred fifty-six participants were completely filled and returned (256/350, %73). The distribution of two hundred fifty-six participants were as follows; There were forty-five physicians, one hundred thirty-one intern medical students, and eighty nurses.

3.1.1 Physician's perception

Twenty-five (55.6%) of the physicians were male and twenty (44.4%) were female. The majority of twenty-seven (60%) physicians were between 31 to 40 years old. Thirteen (28.9%) physicians were between 6 to 10 years of experience. Forty (88.9%) of the physicians had never interacted with clinical pharmacists in the hospital. Thirty-five (77.8%) physicians were saying that they are aware of the fact that the hospital has clinical pharmacist working.

In relation to the physician's degree of the attitude, Twenty-eight (62.2%) of physicians were comfortable opinion with the clinical pharmacist in patient education to describe the medication use and therapy, Twenty-five(55.6%) of physicians were comfortable with the clinical pharmacist participating in the ward rounds and physicians consultation to the patients and Twenty-six (57.8%) of physicians were comfortable within view of prescribing medication which is cost-effective (Table 1A).

In relation to the physician's degree of perception, Thirty-one (68.9%) of physicians recognised the clinical pharmacist role in rational prescribing of the antibiotic medication, Twenty-five (55.6%) of physicians were recognised the clinical pharmacist as an important member of the medical team to participate in the ward rounds and Thirty-six (80%) of physicians have recognised the ability of pharmacist for the identification of drug interactions (Table 1B).

3.1.2 Nurse's perception

The Seventy-five (93.8%) of nurses were female and five (6.2%) were male. The majority of forty-nine (61.3%) nurses were between 20 to 30 years old. Thirty-three (41.3%) nurses were between 1 to 5 years of experience. Forty-two (52.5%) of the nurses were reported to have no interaction with the clinical pharmacist in the hospital setting. Sixty (75%) of nurses have confirmed the presence of the clinical pharmacist in the hospital setting. Sixty-six(82.6%) of nurses have confirmed clinical pharmacists educate patients about the safe and appropriate use of their medications. When it comes to the responsibility of a clinical pharmacist, Fifty-one (63.8%) of the nurses were reported to have the perception of the clinical pharmacist as a medication specialist. Fifty-seven (71.3%) of nurses have confirmed the clinical pharmacist as playing role in the identification of the drug interactions (Table 2).

3.1.3 Intern medical student's perception

The sixty (45.8%) of intern medical students were males and females were seventy-one(54.2%).The majority of one hundred twenty-one(92.4%) intern medical students were between 20 to 30 years old. One hundred eighteen (90.1%) of intern medical students have

confirmed about the presence of the clinical pharmacist in the hospital setting in Northern Cyprus but one hundred five (80.2%) of intern medical students have responded that they have never interacted with the clinical pharmacist in the hospital setting. Eighty-seven (66.4%) of intern medical students have believed clinical pharmacist can help to minimise the adverse drug reaction and improve the therapeutic outcome of the patient. Eighty-seven (66.4%) of intern medical students have confirmed in the clinical pharmacist role in the reduction of the medication error. Sixty-two (47.4%) of intern medical students have confirmed the clinical pharmacy is a branch of pharmacy that is patient-oriented rather than drug product-oriented services. Forty-seven (35.9%) of intern medical students have believed in the increase of the interest in clinical pharmacy as a profession in Northern Cyprus. Forty-six (35.2%) of the intern medical students have confirmed clinical pharmacists play a key role in the medical team (Table 3).

There is a significant difference between in their responses of the healthcare providers(physicians and nurses) and the intern medical students about the perception towards improvement in the field of the clinical pharmacist. The healthcare providers(physicians and nurses) are more positive about the perception of clinical pharmacists than the intern medical students($p=0.0001$).

3.2 Discussion

Our results show that physicians and nurses working in the Near East University Hospital have positive perceptions about clinical pharmacy services more than intern medical students ($p=0.0001$) (Tables 1-3). Healthcare providers have been an interest in the clinical pharmacy services provided by the clinical pharmacist and collaborative working conditions with the clinical pharmacist. In our study, Most of the physicians (64.5%) and nurses (56.3%) supported to view that clinical pharmacists are important members in the ward rounds ($p=0.0001$) (Tables 1-2).

There was a lack of a collaborative environment between intern medical students and clinical pharmacist in Near East University Hospital. Forty-seven (35.9%) of intern medical students have believed in the increase of the interest in clinical pharmacy as a profession in

Table 1A. The attitude of the physician towards the clinical pharmacist (n=45)

	1 (A)	2	3 (B)	P-value (A vs B)
The clinical pharmacist can educate the patient about medication use and treatment.	28(62.2)	13(28.9)	4(8.9)	0.0001*
The clinical pharmacist can provide medication information to healthcare providers and patients.	27(60.0)	15(33.3)	3(6.7)	0.0001*
The clinical pharmacist can treat minor illnesses under the supervision of physicians who have the right to prescribe.	5(11.1)	8(17.8)	32(71.1)	0.0001**
The clinical pharmacist can monitor antibiotic use and recommend the rational use of antibiotics.	17(37.8)	22(48.9)	6(13.3)	0.0001*
The clinical pharmacist can manage and monitor anticoagulant therapy.	10(22.2)	18(40.0)	17(37.8)	0.005**
The clinical pharmacist can detect and prevent prescription errors.	26(57.8)	9(20.0)	10(22.2)	0.0001*
The clinical pharmacist can representative in the therapeutic policy committee.	17(37.8)	17(37.8)	11(24.4)	0.02*
The clinical pharmacist can suggest the use of non-prescribing medication to patients (e.g. paracetamol).	17(37.8)	12(26.7)	16(35.6)	0.72,>0.05
The clinical pharmacist can participate in ward rounds and physician consultation to patients for medication consultation.	25(55.6)	14(31.1)	6(13.3)	0.0001*
The clinical pharmacist can help in prescribing cost-effective medications.	26(57.8)	13(28.9)	6(13.3)	0.0001*

1: Comfortable 2: Neutral 3: Uncomfortable *A is statistically more significant than B, p< 0.05 **B is statistically more significant than A, p< 0.05

Table 1B. The perception of the physician towards the clinical pharmacist (n=45)

	1 (A)	2 (B)	3	4 (C)	5 (D)	P-value (A+B vs C+D)
The clinical pharmacist 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)	0.0001*
The clinical pharmacist is an important member of the medical team to participate in the ward rounds.	4(8.9)	25(55.6)	6(13.3)	8(17.8)	2(4.4)	0.0001*
The clinical pharmacist can assist healthcare providers in designing efficient medication therapy plan for the patient.	5(11.1)	18(40.0)	13(28.9)	6(13.3)	3(6.7)	0.0001*
The clinical pharmacist can manage minor diseases treatment. (e.g. acne, sinusitis, etc.)	0	4(8.9)	7(15.6)	22(48.9)	12(26.7)	0.0001**
The clinical pharmacist can help in managing chronic disease.	2(4.4)	15(33.3)	20(44.4)	6(13.3)	2(4.4)	0.0001*
The clinical pharmacist is involved in detecting and managing drug-related problems.	16(35.6)	22(48.9)	4(8.9)	2(4.4)	1(2.2)	0.0001*
The clinical pharmacist can educate patients about the safe and appropriate use of their medications.	21(46.7)	22(48.9)	1(2.2)	0	1(2.2)	0.0000*
The clinical pharmacist can monitor anticoagulant therapy and revise the re-filling of prescriptions.	4(8.9)	11(24.4)	13(28.9)	15(33.3)	2(4.4)	0.47
The clinical pharmacist can help in the rational use of antibiotics.	12(26.7)	19(42.2)	9(20.0)	5(11.1)	0	0.0001*
The clinical pharmacist is a knowledgeable drug therapy expert.	14(31.1)	14(31.1)	11(24.4)	3(6.7)	3(6.7)	0.0001*
The clinical pharmacist can determine drug-drug interaction.	14(31.1)	22(48.9)	7(15.6)	1(2.2)	1(2.2)	0.0001*
The clinical pharmacist can enhance patient compliance.	14(31.1)	23(51.1)	7(15.6)	1(2.2)	0	0.0000*

1: Strongly agree 2: Agree 3: Neutral 4: Disagree 5: Strongly disagree *A + B is statistically more significant than C + D, p< 0.05, **C + D is statistically more significant than A + B, p< 0.05

Table 1C. The experience of the physician towards the clinical pharmacist (n=5)

	1 (A)	2 (B)	3	4 (C)	5 (D)	P-value (A+B vs C+D)
The clinical pharmacist is a reliable drug information source.	2(4.4)	1(2.2)	0	2(4.4)	0	0.36, >0.05
The clinical pharmacist can routinely advise the patients regarding safe and appropriate use of their medications.	0	3(6.7)	2(4.4)	0	0	-
The clinical pharmacist can provide cost-effective alternatives to the medications prescribed.	0	3(6.7)	1(2.2)	1(2.2)	0	0.02*
The clinical pharmacist can assist in designing drug therapy for the patient.	0	3(6.7)	1(2.2)	1(2.2)	0	0.02*
The clinical pharmacist can monitor anticoagulant medications (INR) for the patients.	1(2.2)	2(4.4)	1(2.2)	1(2.2)	0	0.02*
The clinical pharmacist can routinely inform me if they discover any clinical problems with my prescriptions or prescription refills.	1 (2.2)	4(8.9)	0	0	0	-
The clinical pharmacist can frequently ask the patients' drug-related problems and let me know about their drug-related problems.	0	5(11.1)	0	0	0	-

1:Strongly agree2:Agree3:Neutral 4:Disagree5:Strongly disagree *A + B is statistically more significant than C + D, p< 0.05, **C + D is statistically more significant than A + B, p< 0.05.

Table 2. The perception of the nurses towards the clinical pharmacist (n=80)

	1 (A)	2 (B)	3	4 (C)	5 (D)	P-value (A+B vs C+D)
The clinical pharmacist 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)	0.0001*
The clinical pharmacist is an important member of the medical team to participate in the ward rounds.	17(21.3)	28(35.0)	14(17.5)	19(23.8)	2(2.5)	0.0001*
The clinical pharmacist can 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)	0.0001*
The clinical pharmacist can manage minor diseases treatment. (e.g. acne, sinusitis, etc.)	5(6.3)	26(32.5)	17(21.3)	18(22.5)	14(17.5)	0.8, >0.05
The clinical pharmacist can help in managing chronic disease.	10(12.5)	23(28.8)	23(28.8)	20(25.0)	4(5.0)	0.01*
The clinical pharmacist is involved in detecting and managing drug-related problems.	28(35.0)	30(37.5)	14(17.5)	7(8.8)	1(1.3)	0.0001*
The clinical pharmacist can educate patients about the safe and appropriate use of their medications.	33(41.3)	33(41.3)	12(15.0)	2(2.5)	0	0.0001*
The clinical pharmacist can monitor anticoagulant therapy and revise the re-filling of prescriptions.	12(15.0)	28(35.0)	16(20.0)	22(27.5)	2(2.5)	0.0001*
The clinical pharmacist can help in the rational use of antibiotics.	15(18.8)	38(47.5)	18(22.5)	8(10.0)	1(1.3)	0.0001*
The clinical pharmacist is a knowledgeable drug therapy expert.	17(21.3)	34(42.5)	19(23.8)	8(10.0)	2(2.5)	0.0001*
The clinical pharmacist can determine drug-drug interaction.	20(25.0)	37(46.3)	16(20.0)	6(7.5)	1(1.3)	0.0001*
The clinical pharmacist can enhance patient compliance.	18(22.5)	28(35.0)	15(18.8)	19(23.8)	0	0.0001*

1:Strongly agree2:Agree3:Neutral 4:Disagree5:Strongly disagree *A + B is statistically more significant than C + D, p< 0.05, **C + D is statistically more significant than A + B, p< 0.05.

Table 3. The perception of the intern medical student towards the clinical pharmacist (n=131)

	1 (A)	2 (B)	3	4 (C)	5 (D)	P-value (A+B vs C+D)
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)	0.0001*
The 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)	0.0002*
The clinical pharmacist can help in the optimisation of patient medication therapy.	26(19.8)	44(33.6)	45(34.4)	12(9.2)	4(3.1)	0.0001*
The clinical pharmacist's intervention can help in the reduction of medication errors.	38(29.0)	49(37.4)	30(22.9)	12(9.2)	2(1.5)	0.0001*
The clinical pharmacist's intervention can help to minimise the adverse drug reaction and improve therapeutic outcomes.	30(22.9)	57(43.5)	27(20.6)	15(11.5)	2(1.5)	0.0001*
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)	0.0002*
The clinical pharmacist can play effective role in the medical team.	12(9.2)	34(26.0)	36(27.5)	46(35.1)	3(2.3)	0.53, >0.05
The physician and other healthcare providers can accept the intervention of the clinical pharmacist.	9(6.9)	25(19.1)	36(27.5)	37(28.2)	24(18.3)	0.0001**

1:Strongly agree2:Agree3:Neutral 4:Disagree5:Strongly disagree*A + B is statistically more significant than C + D, p< 0.05, **C + D is statistically more significant than A + B, p< 0.05

Northern Cyprus and Forty-six (35.2%) of the intern medical students have confirmed clinical pharmacists play a key role in the medical team. This condition has shown that intern medical students are only slightly aware of clinical pharmacy services. The most of intern medical student (61, 46.5%) has not supported the view that there is acceptability in the physician and other health care providers in the intervention of the clinical pharmacists ($p=0.0001$) (Table 3). In recent study conducted in Indiana, it has observed that intern medical students who spend more time with clinical pharmacists and establish friendships have more positive perspectives [24]. Therefore, intern medical students need to collaborate with clinical pharmacists at Near East University Hospital.

There were some studies in the Middle East regarding the perception and attitude of the healthcare providers towards the clinical pharmacist. They have shown that there is a need for the improvement of the pharmaceutical care plan and enhance collaborative working with clinical pharmacists. These studies were carried out in Kuwait, Jordan, United Arab Emirates and Egypt [25-28]. These countries could enable clinical pharmacists to play a more role in the hospital setting by training more pharmacists in the field of clinical pharmacy. Thus clinical pharmacists could provide more pharmaceutical care services to the patients.

In a study conducted in Qatar, both physicians and nurses have confirmed that they are satisfied with clinical pharmacy services. Furthermore, physicians have shown more positive thoughts than nurses [29]. In another study conducted in Sri Lanka, it has been shown that the physicians' views and attitudes were positive after the implementation of clinical pharmacists in healthcare teams. Also, It has been suggested that clinical pharmacists and nurses should enhance their relationship in hospital setting [30]. In our study, both physicians and nurses have similar positive perspectives on clinical pharmacy services (Table 1-2). Most healthcare professionals have known the importance of clinical pharmacy services, but they cannot find the opportunity to work together because clinical pharmacists are not too many in hospitals in Northern Cyprus. Therefore, multidisciplinary working environments may be created with healthcare providers by training more clinical pharmacists.

There are some limitations to this study. This study was a single-centre, which limits the generalisability of the study findings. We could recommend further multi-centre studies to evaluate the perception and attitude of healthcare providers towards clinical pharmacists. Also, This study has included the perspectives of physicians and nurses working in a private hospital. Therefore, This result of perspectives has not belonged to physicians and nurses working in state hospitals in Northern Cyprus.

The impacts of this study on the hospital setting will be as follows;

This study will improve collaboration between healthcare providers and clinical pharmacists in the hospital setting. Also, It will promote multidisciplinary work with intern medical students and clinical pharmacists. This study will encourage the provision of clinical pharmacy services in the state-hospitals in Northern Cyprus.

4. CONCLUSION

This study has been shown that physicians have a positive attitude towards clinical pharmacy services and healthcare providers are aware of the role of clinical pharmacists in the healthcare system. A multidisciplinary workspace could be created between clinical pharmacists and healthcare providers to present better healthcare service to patients.

CONSENT AND ETHICAL APPROVAL

The Ethical Approval was obtained from the Institutional Review Board (IRB) of Near East University (2017/47-412). Research was conducted in accordance with the Declaration of Helsinki. Prior to study verbal informed consent was obtained from the patients.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. American journal of hospital pharmacy. 1990;1;47(3):533-43.

2. Van Mil JW, Schulz M, Tromp TF. Pharmaceutical care, European developments in concepts, implementation, teaching, and research: a review. *Pharm World Sci.* 2004;26(6):303–11.
3. Berenguer B, La Casa C, de La Matta MJ, Martin-Calero MJ. Pharmaceutical care: past, present and future. *Current Pharmaceutical Design.* 2004;10(31):3931-46.
4. Group TL, Burns A. Medication therapy management services: a critical review. *Journal of the American Pharmacists Association.* 2005;45(5):580-7.
5. Van Mil JWF. Can the grocer provide pharmaceutical care? *Pharm World Sci.* 2003;25:183.
6. Sancar M, Okuyan B, Apikoglu-Rabus S, Izzettin F. Opinion and knowledge towards pharmaceutical care of the pharmacists participated in clinical pharmacy and pharmaceutical care continuing education program. *Turkish J Pharmaceutical Sci.* 2013;1;10(2):245-54.
7. Al-Baghdadi H, Al-Baghdadi ÇK, Abdi A, Gültekin O, Meštrović A, Demirdamar R, Özcem B, Başgut B. Introducing clinical pharmacy services to cardiovascular clinics at a university hospital in North Cyprus. *International Journal of Clinical Pharmacy.* 2017;39(6):1185-93.
8. Boşnak AS, Birand, N, Diker Ö, Abdi A, Başgut B. The role of the pharmacist in the multidisciplinary approach to the prevention and resolution of drug-related problems in cancer chemotherapy. *Journal of Oncology Pharmacy Practice.* 2019;25(6):1312-1320.
9. Van Mil JF, Schulz MA. Review of pharmaceutical care in community pharmacy in Europe. *Harvard Health Policy Review.* 2006;7(1):155-68.9.
10. Martins SF, van Mil JF, Da Costa FA. The organizational framework of community pharmacies in Europe. *International Journal of Clinical Pharmacy.* 2015;37(5):896-905.
11. Kabel AM, Bakr MM, Alshanbari AM, Alwagdani SM, Altalhi HA, Alzaidi SH, Altowairqi MH. Perceptions and Attitudes towards Clinical Pharmacy Services and Their Impact on the Management of Cancer in Taif, Saudi Arabia. *Asian Pacific Journal of Cancer Prevention.* 2020;1;21(2):531-8.
12. Al-Arifi MN, Alghamdi B, Al-Saadi M, Idris AE, Wajid S, Said R, Babelghaith SD. Attitudes and perceptions of healthcare providers towards clinical pharmacy services at a tertiary care hospital in Riyadh, Saudi Arabia. *Tropical Journal of Pharmaceutical Research.* 2015;2;14(5):913-8.
13. Alsuhebany N, Alfahaid L, Almodaimegh H, Albekairy A, Alharbi S. Attitude and Perception of Physicians and Nurses Toward the Role of Clinical Pharmacists in Riyadh, Saudi Arabia: A Qualitative Study. *SAGE Open Nursing.* 2019;5:2377960819889769.
14. Vinterflod C, Gustafsson M, Mattsson S, Gallego G. Physicians' perspectives on clinical pharmacy services in Northern Sweden: a qualitative study. *BMC health services research.* 2018;18(1):1-9.
15. Abdi AM, Meštrović A, Gelisen I, Gültekin O, Yavuz DO, Saygi Ş, Al-Baghdadi H, Demirdamar R, Başgut B. Introducing a performance-based objective clinical examination into the pharmacy curriculum for students of Northern Cyprus. *Tropical Journal of Pharmaceutical Research.* 2017;16(3):681-8.
16. Abdi AM, Rasmussen F, Demirdamar R. Impact of Introducing Clinical Pharmacy Services in A Respiratory Diseases Clinic: A Report from North Cyprus. *Journal of Pharmaceutical Research International.* 2019;12:1-5.
17. Abdi AM, Zarouri AT, Saloumi L, Başgut B. North Cyprus pharmacist's cognition and practice of pharmaceutical care. *Journal of Pharmaceutical Research International.* 2018;1-9.
18. Khdour MR, Alayasa KS, AlShahed QN, Hawwa AF. Physicians' perceptions, attitudes and expectations regarding the role of hospital based pharmacists in the West Bank, Palestine. *International Journal of Pharmacy Practice.* 2013;21(3):178-84.
19. Matowe L, Abahussain EA, Al-Saffar N, Bihzad SM, Al-Foraih A, Al-Kandery AA. Physicians' perceptions and expectations of pharmacists' professional duties in government hospitals in Kuwait. *Medical Principles and practice.* 2006;15(3):185-9.
20. Smith WE, Ray MD, Shannon DM. Physicians' expectations of pharmacists. *American journal of health-system pharmacy.* 2002;1;59(1):50-7.

21. Azhar S, Hassali MA, Mohamed Ibrahim MI, Saleem F and Siow Yen L. A survey evaluating nurses' perception and expectations towards the role of pharmacist in Pakistan's healthcare system. *Journal of advanced nursing*. 2012;68(1):199-205.
22. Maneesriwongul W, Dixon JK. Instrument translation process: a methods review. *Journal of advanced nursing*. 2004;48(2):175-86.
23. Raosoft, Inc. Raosoft Inc. Sample size calculator; 2017. Available:<http://www.raosoft.com/samplesize.html>
24. Meredith AH, Ramsey D, Schmelz A, Berglund R. Resident physicians' perceptions of ambulatory care pharmacy. *Pharmacy Practice (Granada)*. 2019;17(3).
25. Katoue MG, Awad AI, Al-Jarallah A, Al-Ozairi E, Schwinghammer TL. Medical and pharmacy students' attitudes towards physician-pharmacist collaboration in Kuwait. *Pharmacy Practice (Granada)*. 2017;15(3).
26. Tahaineh LM, Wazaify M, Albsoul-Younes A, Khader Y, Zaidan M. Perceptions, experiences, and expectations of physicians in hospital settings in Jordan regarding the role of the pharmacist. *Research in social and administrative pharmacy*. 2009;5(1):63-70.
27. Abu-Gharbieh E, Fahmy S, Rasool BA, Abduelkarem A, Basheti I. Attitudes and perceptions of healthcare providers and medical students towards clinical pharmacy services in United Arab Emirates. *Tropical Journal of Pharmaceutical Research*. 2010;9(5).
28. Sabry NA, Farid SF. The role of clinical pharmacists as perceived by Egyptian physicians. *International Journal of Pharmacy Practice*. 2014;22(5):354-9.
29. Eltorki Y, Abdallah O, Omar N, Zolezzi M. Perceptions and expectations of health care providers towards clinical pharmacy services in a mental health hospital in Qatar. *Asian journal of psychiatry*. 2019;1;42:62-6.
30. Shanika LG, Wijekoon CN, Jayamanne S, Coombes J, Coombes I, Mamunuwa N, Dawson AH, De Silva HA. 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*. 2017;1;17(1):46.

© 2020 Malik et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

*The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/61130>*