

Perception of Healthcare Professionals toward Clinical Pharmacy Services

Ahmed Mohamed AlDehemi^{*1}, Dr. Ahmed Sayed Khashaba MD²

¹ Pharmacist- Master postgraduate student at Riyadh Colleges of Dentistry and Pharmacy

² Associate Professor of Medical Physiology at Riyadh Colleges of Dentistry and Pharmacy



Citation - "Ahmed Mohamed AlDehemi*, Dr. Ahmed Sayed Khashaba" "Perception of Healthcare Professionals toward Clinical Pharmacy Services" *International Journal of Innovative Research in Medical Science (IJIRMS)*, <http://ijirms.in/index.php>, Volume 2 Issue 11, November 2017, p. No. 1529-1535

Introduction

Based on American College of clinical pharmacy (ACCP), Clinical pharmacy is defined as that area of pharmacy concerned with the science and practice of rational medication use (**The Definition of Clinical Pharmacy, 2008**).

The European Society of Clinical Pharmacy (ESCP) defines clinical pharmacist as "A health specialty, which describes the activities and services of the clinical pharmacist to develop and promote the rational and appropriate use of medicinal products and devices". The clinical pharmacist has a variety of responsibilities which include the performance of patient assessment, ordering drug therapy related laboratory tests, administering drugs, selecting, initiating, monitoring, continuing and adjusting drug regimens (**Clinical Pharmacy et al., 2003**).

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

The clinical pharmacists are responsible for doing activities including interacting with the health care team in patient rounds, interviewing patients and taking medication histories, providing recommendations on drug selection, and follow-up of results to improve patient outcomes (**Barber, 1996**) and (**Kaboli et al., 2006**).

This field of pharmacy practice focuses on patient oriented rather than drug product-oriented service (**Al-Arifi et al., 2015**).

The typical role of clinical pharmacists includes ensuring appropriate prescription and administration of the correct medicine to the right patient in the appropriate dose through the proper route of administration (**Al-Arifi et al., 2015**).

Clinical pharmacist control patient adherence to therapy, provide drug information, monitor patient responses and laboratory values, and provide patient and provider

education. Other responsibilities carried out by clinical pharmacists may include but are not limited to: prevention of medication errors, improvement of therapeutic outcomes, performing patient counseling, and optimization of cost-effectiveness of drug therapy. However, in order to perform these tasks effectively an advanced level of collaboration must exist between clinical pharmacists and other healthcare providers which will not only improve the patients' pharmacotherapeutic outcomes but also will improve the efficiency of the healthcare system as a whole (**Hammond et al., 2003**).

There is a body of evidence in the literature reporting that physicians are receptive to several clinical services provided by pharmacists and had a positive attitudes if these services were provided in the form of consultations or in a supportive manner (**Alkhateeb et al., 2013**) and (**Li et al., 2014**).

The clinical pharmacist's existence was resisted by the physicians who do not expose to pharmacist participation in clinical activities (**Abduelkarem et al., 2008**) and (**Mekonnen et al., 2013**).

A lot of countries have lack of experience about pharmacists role and the causes for that were not only limited resource, but also by the changing role of pharmacists towards pharmaceutical care (**Shah, 2015**) and (**Kobayashi et al., 2002**).

Maintenance and spreading of the pharmacy service through implementation of recruitment and retention mechanisms is important (**Arenas-Lopez et al., 2002**).

The low score in the new roles of clinical pharmacists might be due to shortage of inter-professional and communication skills as well as shortage of pharmacists assigned in the respective wards, as the impact of communication (**Arenas-Lopez et al., 2002**).

In Libya and UAE, doctors and community pharmacists have little interaction. Almost 70 and 60 % of doctors in Libya and UAE, respectively, either 'rarely' or 'never' discussed patients' drug therapy with a clinical pharmacist (**Abdulkareem and Sharif, 2008**).

There is a shortage of the clinical pharmacy role in Ethiopia more than other African countries, owing to the fact that Ethiopia has a low pharmacist density (2.38 per 100,000) compared to even the African average (8 per 100, 000) (**Beedemariam and Gedif , 2013**).

Clinical pharmacy service is a patient oriented service developed to promote the rational use of medicines. More specifically, it is developed to maximize therapeutic effect, minimize risk, minimize cost and respect patients' choice. the clinical pharmacists can perform main activities such as interacting with the health care team in patient rounds, interviewing patients and formulating medication histories, providing recommendations on drug selection, and follow-up of results to improve patient outcomes. Implementation of clinical pharmacy services and integration of pharmacists into core health care teams is instrumental in achieving better patient care, better team decision making and financial savings through cost-effective use of medicines and improved use of pharmaceutical expertise (**Bilal et al., 2016**).

Application of clinical pharmacy services and interaction of clinical pharmacists with health care team members is important for achieving better patient care, better team decision making and financial savings through cost-effective use of medicines and improved use of pharmaceutical expertise (**Makowsky et al., 2009**).

Physicians' interaction with a clinical pharmacist was studied in many other countries the attitudes and views of doctors ranging from specialist physicians, senior registrars and registrars to intern medical officers about the interaction of clinical pharmacy service and its benefits were positive. A great majority (91.7%) of doctors agreed that adding a pharmacist to the team would be cost effective and is important for improving the healthcare service (**Gillespie et al., 2012**) and (**Dey et al., 2011**).

Documentation of pharmacy activities is an important component of clinical pharmacy services. The documentation of clinical pharmacy activities and the ability to identify pharmacists' interventions are essential for assessing their effect on patient outcomes (**Ho et al., 2013**).

Clinical pharmacists are a basic source of evidence-based drug information for improved safe and appropriate use of medications (**American College of Clinical Pharmacy, 2008**).

Physicians can receive clinical pharmacists services and with a positive attitudes if they received services in the form of consultations or in a supportive manner. However, other studies reported the existence of physicians' resistance to the role of clinical pharmacists, which might have been attributed to lack of physicians' exposure to pharmacist participation in clinical activities. It is thus prudent to take note that proper implementation of clinical pharmacy

service needs collaboration and communication between patients, pharmacists, physicians and other health care professionals (**Bilal et al., 2016**).

Wide proportion of doctors acknowledged the importance of clinical pharmacy service, the response received from the nursing staff was negative. Lack of awareness and knowledge about the importance of clinical pharmacy service in improving QUM and potential benefits to patient care could be the main causes for this negative response (**Mamunuwa et al., 2014**).

Approximately half of the physicians agreed that pharmacists were always a reliable source of drug information (**Al-Arifi et al., 2015**).

In Saudi Arabia, Clinical Pharmacy has received great attention by the colleges of pharmacy in Saudi Arabia, and its implementation started as early as 1983. However, Clinical Pharmacy education started earlier in 1976 and it became part of the college of pharmacy curriculum. Several programs were developed to qualify pharmacist to provide clinical pharmacy services. Despite the proved benefits of clinical pharmacy services, there is a need for assessing the perception and satisfaction of healthcare professionals toward these services.

Review of literature

Consists of:

1. **Definition of clinical pharmacy.**
2. **History of clinical pharmacy.**
3. **Importance of clinical pharmacy as anew field.**
4. **Clinical pharmacist responsibilities.**
5. **Vital factors needed for success of clinical pharmacist.**
6. **Causes of shortage and lack of clinical pharmacy service.**
7. **How to overcome challenges of clinical pharmacy.**
8. **Reasons for satisfaction of healthcare providers to clinical pharmacy.**
9. **Positive attitudes toward clinical pharmacist.**
10. **Negative attitude from healthcare team toward clinical pharmacist.**

1. Definition of clinical pharmacy.

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

The vision of the pharmacy profession is to improve public health by ensuring safe, effective, and appropriate use of medications (**Barber, 1996**).

Increasing the presence of clinical pharmacists is important to improve the patient health care service (Bilal et al., 2017).

2. History of clinical pharmacy.

The clinical pharmacy service was initiated in various countries. There is a shift towards a patient-focused practice following development and implementation of a 5-year Bachelor of Pharmacy (B.Pharm) curriculum (which includes a one-year clerkship program) (Alkhateeb et al., 2013) and

(Mekonnen et al., 2009).

This area of practice started in Ethiopia. Ethiopia has been known for its long track record of product-oriented pharmacy practice (Alkhateeb et al., 2013) and (Mekonnen et al., 2009).

Even though few masters' graduates in clinical pharmacy and in-service trained pharmacists started clinical pharmacy service in few public hospitals in the country, the service was officially launched in most of the public hospitals in September 2013, when the first 426 graduates of the new curriculum came out in July 2013 (Alkhateeb et al., 2013) (Azhar et al., 2010).

There are few clinical pharmacists working in the public section in UAE and virtually none in the private section. So, clinical pharmacy is in its early stage of development in the UAE and, also, requires greater attention to achieve the objective of pharmaceutical care (Awad et al., 2007).

Medication use is one of the most common interventions in healthcare service. Many years ago, most Western and European countries identified the positive impact of a clinical pharmacy service in improving quality use of medicines (QUM) which in turn improves the overall patient health care service (Stacey et al., 2013).

3. Importance of clinical pharmacy as anew field.

Studies the benefits of a clinical pharmacy service in terms of reducing negative outcomes of DRPs and improving patient safety (Scullin et al., 2007) and (Kaboli et al., 2006) improving appropriateness of prescriptions (Hellström et al., 2011) and (Spinewine et al., 2007) reducing the impact of healthcare expenditure (Gillespie et al., 2009).

A systematic review analyzing 126 studies in United States showed a cost benefit on health outcomes in pharmacist controlled pharmaceutical care services (Chisholm-Burns et al., 2010)

Implementation, impact, and acceptability of the introduction of clinical pharmacy is a gold method for improving the health care service in Sri Lanka (Shanika et al., 2014).

4. Clinical pharmacist responsibilities.

Pharmaceutical service is the base of the health care system as patients do not usually visit health facilities where there are no medicines. Thus, availability of medicines and a competent pharmacy workforce is therefore crucial for the well-functioning of the pharmaceutical service (Kaboli et al., 2006)

Clinical pharmacy services can be included in managing patients with heart failure to reduce mortality and morbidity (McAlister et al., 2004)

Documentation of clinical pharmacy activities and the ability to identify pharmacists' interventions are very important for assessing their impact on patient outcomes (Girma et al., 2011).

5. Vital factors needed for success of clinical pharmacist.

The proper application of clinical pharmacy services need communication between patients, pharmacists, physicians and other health care professionals (Bilal et al., 2017).

There is a strong body of evidence shows that effective communication plays an important role in improving the health care services (Wallman et al., 2013).

Interaction and continuous discussion between different professions should be done during the implementation actions of the clinical pharmacists to meet their goals (Bilal et al., 2017).

The level of interaction between physicians and clinical pharmacists in the developed world is high, resulting in safer, more effective, and less costly drug therapy (Abu-Gharbieh et al., 2010).

Many studies have shown that physicians are receptive to several clinical services provided by pharmacists if these services were provided in the form of consultation or in a supportive role. Still, however, the relationship between the physician and community pharmacist has been described as a 'complex one', and some studies have reported the existence of communication gap between pharmacists and medical doctors (Abu-Gharbieh et al., 2010).

It has been shown that interaction between various healthcare professionals with their respective expertise can lead to significant improvement in patient care (Alan et al., 2006).

Studies have been conducted in some Arab countries to assess physicians' acceptance of the clinical pharmacists' role. In Kuwait, patient care, involves interaction with and observation of the patient, is still exclusively delivered by physicians and nurses, with the pharmacists' input in managing drug therapy dependent on the physician's willingness to accept that role (Ranelli and June, 2000).

6. Causes of shortage and lack of clinical pharmacy service.

The main roles involving direct patient care coupled to shortage of pharmacists is increasing pressure on pharmacist services, improving patient outcomes (Matthews et al., 2005).

The shortage of clinical pharmacists role presence in some units may be due to the implementation of new systems (e.g., Auditable Pharmaceutical Transactions and Services, APTS). APTS is a service delivery arrangement enabling to establish a transparent and accountable medicines transaction and service provision system at health facilities that can be audited at any time (FMOH et al., 2015).

African countries have a low density of pharmacists as well as pharmacies, indicating limited medicines provision and skilled human resources for their management. The survey ranked Ethiopia as the 9th country among countries with the least number of pharmacists. Despite this shortage, there is a clear view of moving towards pharmaceutical care over the past four decades, which enables pharmacists to have a necessary role for the practice of clinical pharmacy (Makowsky et al., 2009).

The most common reasons for lack of clinical pharmacy service to spread are Shortage of staff, lack of awareness, and lack of support from management, hospital setup, incentives, and gaps in the curriculum. The way for spreading of clinical pharmacy service is to Control these challenges (Bilal et al., 2017).

Many countries including Ethiopia experience shortage of pharmacists and the shortage is not only due to limited resource but also due to the changing role of pharmacists towards pharmaceutical care (Abu-Gharbieh et al., 2010) and (Tahaineh et al., 2009).

7. How to overcome challenges of clinical pharmacy.

The foundation for building an efficient team is to encourage learning as a team. Training students on team care at undergraduate and postgraduate levels is likely to improve the awareness of skills and strengths of each category of professionals and help to overcome the barriers for implementation of the clinical pharmacy service (McPherson et al., 2001) and (Hughes et al., 2003).

Hospitals should work more in the aspect of collaboration. It is clear that without sufficient support from the management side, the program will not move forward to achieve its aims. professionals and management should provide the necessary assistance so as the clinical pharmacy service could have a significant effect on patient outcomes (Bilal et al., 2017).

8. Reasons for satisfaction of healthcare providers to clinical pharmacy.

Looking at assessment of satisfaction of the health care providers on performance of the new graduates, one could see that good performance was achieved in areas that are considered as traditional functions of pharmacists. Clinical pharmacists have roles such as counseling of patients during discharge, ward presence and active participation, and assisting nurses in drug preparation and administration; the rating was quite low (Arenas-Lopez et al., 2002).

9. Positive attitudes toward clinical pharmacist.

A greater proportion of the physicians had a positive attitude towards the extended role, in contrast to a study done in West Virginia, where physicians' attitude towards pharmacists' role in collaborative drug therapy management and pharmacists providing medication therapy management was not that favorable (Alkhateeb et al., 2013).

Good satisfaction score was reported in most of the items in Emergency and outpatient Departments increasing the clinical pharmacist's presence in such departments is necessary to increase patient outcomes (Clark, 2014) and (Alkhateeb et al., 2013).

Gillespie, et al. reported that 95% of physicians were satisfied with the interaction of a clinical pharmacy service to the university hospital in Uppsala in Sweden, which was a new introduction to that setting at that time (Gillespie et al., 2012).

Several studies have been conducted in some Arab countries to assess physicians' acceptance of the clinical pharmacists' role in the healthcare system. In Jordan, 63 % of physicians expect the pharmacist to educate their patients with regard to the safe and appropriate use of drugs (Al-Arifi et al., 2015).

Majority of the respondents had a positive attitude towards the changing role of pharmacist's health care service, which agree with a report from China (Li et al., 2014), but disagree with that of Palestine (Khdour et al., 2013).

Large proportion of the health care providers had positive attitude towards clinical pharmacy service (Alkhateeb et al., 2013), the clinical pharmacists showed that they did not have adequate support from health care professionals. It has been shown that wide interaction with various healthcare professionals could lead to significant improvement in patient care (Mekonnen et al., 2013).

Though majority of the health care providers had a positive attitude towards clinical pharmacy service initiation in the Ethiopian health care system and believed that the service would improve overall patient outcomes, the professionals confessed that they did not extend the necessary support. The main reason for this problem is the lack of support from the management side. The above-mentioned problems was reported elsewhere in Nigeria (Nnaemeka and Funmi, 2012), Pakistan (Ghani, 1993) and Belgium (Willems et al., 2005).

There is sufficient agreement among health care professionals to make the changes and accept the new roles assumed by the clinical pharmacists. The level of will in general appeared to be a function of the professionals' year of experience, which is in line with a report that came out from West Virginia (Alkhateeb et al., 2013).

10. Negative attitude from healthcare team toward clinical pharmacist.

In a similar study conducted in Sudan, physicians were found to be 'uncomfortable' with pharmacists suggesting or recommending medications to their patients, especially as communication between the physician and pharmacist has been described as a 'difficult one' (Ables and Baughman, 2002).

The current health system in the Middle East still falls short of expectations, as some studies have reported that although physicians are comfortable with the role of pharmacist in patient counseling, they are, however, uncomfortable with pharmacists participating in direct patient care and clinical rounds (Tahaine et al., 2009) and (Matowe et al., 2006).

Most nurses had negative response; only 10% appreciated the usefulness of clinical pharmacy service (Mamunuwa et al., 2014).

The pharmacist-nurse interaction on team-based patient management is not explained clearly (Gillespie et al., 2012).

A study from Pakistan published in 2012, showed a negative perception from nurses towards the role of pharmacist in Pakistan's healthcare setting (Azhar et al., 2012).

Nurses appeared to disagree more in some of the attitude items (for e.g., presence in the ward and taking medication history at admission) compared to Physicians and Health Officers. The reason behind this disagreement might be role conflict, which could possibly be sorted out with issuance of clear job description. Pharmacists should interact more positively and more frequently with the healthcare professionals in order to enhance their role (Khdour et al., 2013).

Low acceptance by physicians of the role of the pharmacist in direct patient care is due to poor communication between physicians and clinical pharmacists (Bryant et al., 2009).

Physicians in Palestine are more likely to accept traditional pharmacy services than newer clinical services (Bilal et al., 2017).

Nurse's disagreement on some issues is due to the existence of little or no interaction between the nursing and pharmacy staff (Khdour et al., 2013).

A survey results showed that none of participated nurses had been worked with a clinical pharmacist. Another survey conducted in Sri Lanka to evaluate the perception of healthcare staff towards the addition of clinical pharmacy

service had showed similar findings. According to the results of that survey, 60% of medical staff believed that the incorporation of clinical pharmacists would improve the medications prescription (Mamunuwa et al., 2014).

Wide interaction between medical staff and clinical pharmacists in providing patient care services has a necessary role in Sri Lanka. pharmacists are not a part of the multidisciplinary healthcare team and their role is limited to drug dispensing, providing limited medicine information and compounding within the hospital (Shanika et al., 2017).

Conclusion

There seems to be a dilemma towards the role of clinical pharmacists in the healthcare services.

References:

- [1] Abduelkarem A, Sharif S. Current Levels of Interaction between the Physician and Pharmacist: A Comparative Study in Libya and UAE. *Jordan J Pharm Sci* 2008; 1: 146-155.
- [2] Ables AZ and Baughman OL. The clinical pharmacist as a preceptor in a family practice residency training program. *Fam Med* 2002; 34: 658-662.
- [3] Abu-Gharbieh E, Fahmy S, Abdul Rasool B, Abduelkarem A and Basheti I. Attitudes and Perceptions of Healthcare Providers and Medical Students Towards Clinical Pharmacy Services in United Arab Emirates. *Tropical Journal of Pharmaceutical Research* October 2010; 9 (5): 421-430.
- [4] Alan JZ, Jessica LM and Barry LC. Utility of a questionnaire to measure physician pharmacist collaborative relationship. *J Am Pharm Assoc.* 2006;46(4):453-8.
- [5] Al-Arifi M N, Alghamdi B, Al-Saadi M, Idris AE, Syed Wajid, Ragab Said and S D Babelghaith :Attitudes and Perceptions of Healthcare Providers towards Clinical Pharmacy Services at a Tertiary Care Hospital in Riyadh, Saudi Arabia *Tropical Journal of Pharmaceutical Research* May 2015; 14(5): 913-918
- [6] Alkhateeb FM, Unni E, Latif D, Shawaqfeh MS, Al-Rousan RM. Physician attitudes toward collaborative agreements with pharmacists and their expectations of community pharmacists' responsibilities in West Virginia. *J Am Pharm Assoc.* 2013; 49:797-800.
- [7] American College of Clinical Pharmacy. The definition of clinical pharmacy. *Pharmacotherapy*2008; 28: 816-817.
- [8] Arenas-Lopez S, Simoyi T, Tisocki K, Wilson E. The challenge of developing paediatric pharmacy services in Zimbabwe. *Pharm J.* 2002;268: 501-3.

- [9] Awad A, Matowe L, Capps P. Medical doctors' perceptions and expectations of the role of hospital pharmacists in Sudan. *Pharm World Sci* 2007; 29: 557-564.
- [10] Azhar S, Hassali MA, Ibrahim M. Doctors' perception and expectations of the role of the pharmacist in Punjab, Pakistan. *Trop J Pharm Res*. 2010; 9(3):205–22.
- [11] Barber N. Towards a philosophy of clinical pharmacy. *Pharm J*. 1996; 257:289–91.
- [12] Beedemariam G and Gedif T. Assessment of pharmacist workforce in Ethiopia. *Ethiop J Health Dev*. 2013; 27:124–33.
- [13] Bilal A I, Tilahun Z, Beedemariam G, Ayalneh B, Hailemeskel B, and Engidawork E: Attitude and satisfaction of health care providers towards clinical pharmacy services in Ethiopia: A post-deployment survey *J Pharm Policy Pract*. 2016; 9: 7.
- [14] Bilal A, Tilahun Z, Gebretekle GB, Ayalneh B, Hailemeskel B, and Engidawork E: Current status, challenges and the way forward for clinical pharmacy service in Ethiopian public hospitals. *BMC Health Serv Res*. 2017; 17: 359.
- [15] Bryant LJ, Coster G, Gamble GD, McCormick RN. General practitioners' and pharmacists' perceptions of the role of community pharmacists in delivering clinical services. *Res Social Adm Pharm* 2009; 5(4): 347-362.
- [16] Chisholm-Burns MA, Zivin JSG, Lee JK, Spivey CA, Slack M, Herrier RN, et al. Economic effects of pharmacists on health outcomes in the United States: a systematic review. *AJHP*. 2010; 67(19):1624–1634.
- [17] Clark C. Clinical Pharmacy Services in Northern Ireland. 2001. opengrey.eu/item/display/10068/542954. Accessed 15 Aug 2014.
- [18] Clinical Pharmacy, A., Hammond, R., Schwartz, A., Campbell, M., Remington, T., Chuck, S., Blair, M., Vassey, A., Rospond, R., Herner, S. and Webb, C. (2003). Collaborative Drug Therapy Management by Pharmacists–2003. *Pharmacotherapy*, 23(9), pp.1210-1225.
- [19] Dey RM, de Vries MJ, Bosnic-Anticevich S. Collaboration in chronic care: unpacking the relationship of pharmacists and general medical practitioners in primary care. *Int J Pharm Pract*. 2011; 19(1):21–29.
- [20] FMOH. Auditable Pharmaceutical Transaction and Service (APTS) Scaling up and making it functional, status ways forward. Federal Ministry of Health 16th National Annual 2014. Review Meeting Group Discussion; Service (APTS). Accessed on Dec 2015.
- [21] Ghani S. The role of the pharmacist in primary health care in Pakistan. *Int Pharm J*. 1993; 7:235–41.
- [22] Gillespie U, Alassaad A, Henrohn D, Garmo H, Hammarlund-Udenaes M, Toss H, et al. A comprehensive pharmacist intervention to reduce morbidity in patients 80 years or older - a randomized controlled trial. *Arch Intern Med*. 2009; 169(9):894–900.
- [23] Gillespie U, Mörlin C, Hammarlund-Udenaes M, Hedström M. Perceived value of ward-based pharmacists from the perspective of physicians and nurses. *Int J Clin Pharm*. 2012; 34(1):127–135.
- [24] Girma B, Mussie GH, Abrham WD, Yohannes AM. The Metamorphosis of Pharmacy Education in Ethiopia: The Case of Mekelle University. *International Journal of Pharmacy Teaching & Practices*. 2011;3: 120–8.
- [25] Hammond RW, Schwartz AH, Campbell MJ, Remington TL, Chuck S, Blair MM, Vassey AM, Rospond RM, Herner SJ, Webb CE. Collaborative drug therapy management by pharmacists. *Pharmacotherapy* 2003; 23(9):1210-1225.
- [26] Hellström LM, Bondesson Å, Höglund P, Midlöv P, Holmdahl L, Rickhag E, et al. Impact of the Lund integrated medicines management (LIMM) model on medication appropriateness and drug-related hospital revisits. *Eur J Clin Pharmacol*. 2011; 67(7):741–752.
- [27] Ho CK, Mabasa VH, Leung VW, Malyuk DL, Perrott JL. Assessment of clinical pharmacy interventions in the intensive care unit. *Can J Hosp Pharm*. 2013; 66(4):212–8.
- [28] Hughes CM, McCann S. Perceived interprofessional barriers between community pharmacists and general practitioners: a qualitative assessment. *Br J Gen Pract*. 2003; 53:600–606.
- [29] Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical pharmacists and inpatient medical care: a systematic review. *Arch Intern Med*. 2006; 166(9): 955–64.
- [30] 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. *Int J Pharm Pract*. 2013; 21:178–84.
- [31] Kobayashi S, Onda M, Kuroda K. Research of clinical pharmacy practice in Japan (abstract). Atlanta: ASHP Midyear Clinical Meeting; 2002.
- [32] Li X, Huo H, Kong W, Li F, Wang J. Physicians' perceptions and attitudes toward clinical pharmacy services in urban general hospitals in China. *Int J Clin Pharm*. 2014; 36(2):443–50.
- [33] Makowsky M, Schindel T, Rosenthal M, Campbell K, Tsuyuki RT, MadiL H. Collaboration between

- pharmacists, physicians and nurse practitioners: A qualitative investigation of working relationships in the inpatient medical setting. *J Interprof Care*. 2009; 23(2):169–84.
- [34] Mamunuwa AMVGN, Dorabawila SSKBM. The Need for Clinical Pharmacy Services in Sri Lanka; a Study Based on the Prevalence of Drug Related Problems in Two Hospitals. *IJSRP*. 2014; 4(9).
- [35] 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. *Med Princ Pract* 2006; 15: 185-189.
- [36] Matthews J, Pingle M, Sullivan R, Ferguson P, Rogers JE, Buxton IL. Economic justification for a public school of pharmacy: lessons for Nevada. *Proc West Pharmacol Soc*. 2005; 48:1–12.
- [37] McAlister FA, Stewart S, Ferrua S, McMurray JV. Multidisciplinary strategies for the management of heart failure patients at high risk for admission: a systematic review of randomized trials. *J Am Coll Cardiol*. 2004; 44(4):810–819.
- [38] McPherson K, Headrick L, Moss F. *Qual Health Care*. 2001;10(Suppl II):46–53.
- [39] Mekonnen AB, Yesuf EA, Odegard PS, Wega SS. Implementing ward based clinical pharmacy services in an Ethiopian University Hospital. *Pharm Practice*. 2009; 11(1):51–57 .
- [40] Mekonnen AB, Yesuf EA, Odegard PS, Wega SS. Physicians' expectation of clinical pharmacists' roles in Jimma University Specialized Hospital, South west Ethiopia. *Int J Pharm Teach Practice*. 2013;4(2):571–4.
- [41] Nnaemeka OR and Funmi IB. Hospital pharmacists' awareness of pharmacists' participation in clinical ward rounds and its anticipated barriers in Maiduguri, North East Nigeria. *Int J Pharm Sci*. 2012; 1:537–42.
- [42] Ranelli PL and June Biss J. Physicians' perceptions of communication with and responsibilities of pharmacists. *Am Pharm Assoc* 2000; 40: 625-630.
- [43] Scullin C, Scott MG, Hogg A, McElnay JC. An innovative approach to integrated medicines management. *J Eval Clin Pract*. 2007; 13(5):781–788.
- [44] Shah A. Pharmacy Intervention in the Medication Use Process: The Role of Pharmacists in Improving Patient Safety. 2010. *PatientSafetyAvidShah.pdf*. Accessed 20 Dec 2015.
- [45] Shanika LGT, Jayamanne S, Wijekoon N, Coombes J, Coombes I, Perera D, Mohamed F, Lynch C, Peters N, Dawson A, De Silva H A. Impact of a ward based clinical pharmacist intervention on improving the quality use of medicines in patients with chronic non-communicable diseases in a tertiary hospital. Presented at 74th FIP World Congress of Pharmacy and Pharmaceutical Sciences 2014, Bangkok, Thailand, August 2014 SHPA Standards of practice for clinical pharmacy. *JPPR*. 2005; 35:122–146.
- [46] Spinewine A, Swine C, Dhillon S, Lambert P, Nachega JB, Wilmotte L, et al. Effect of a collaborative approach on the quality of prescribing for geriatric inpatients: a randomized, controlled trial. *J Am Geriatr Soc*. 2007;55(5):658–65.
- [47] Stacey SR, Turner SC, Coulthard KP, Miller H. Paediatric pharmacy in Australia: where have we come from and where do we need to go? *JPPR*. 2013; 43(1):45–48.
- [48] 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. *Res Social Admn Pharm*. 2009; 5: 63-70.
- [49] The Definition of Clinical Pharmacy. (2008). *Pharmacotherapy*, 28(6), pp.816-817.
- [50] Willems L, Raymakers A, Sermeus W, Velugels A, Laekeman G. Survey of hospital pharmacy practice in Flemish-speaking Belgium. *Am J Health Syst Pharm*. 2005; 62:321-4.

LIST OF ABBREVIATIONS

ACCP	American College of clinical pharmacy.
ESCP	European Society of Clinical Pharmacy
NCCDs	Non-communicable chronic diseases
DRPs	drug-related problems
APTS	Auditable Pharmaceutical Transactions and Services
QUM	quality use of medicines