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Attitude and Perceptions of Healthcare Professionals towards Clinical Pharmacy Services in Lahad Datu Hospital (APHP-CPS)

Alvin Chok Leong JONG[1], Norfazlin Binti ABDUL MUIN[2]

[1] *Department of Pharmacy, Sarawak General Hospital*

[2] *Department of Pharmacy, Lahad Datu Hospital*

Corresponding author name and email: Alvin Jong Chok Leong (alvinjong@moh.gov.my)

ABSTRACT

Introduction: Clinical pharmacy is a health science discipline whereby pharmacists provide patient care that optimises medication therapy and promotes health, wellness, and prevention of diseases. The perceptions of healthcare professionals (HCPs) towards the clinical pharmacy services (CPS) in Lahad Datu Hospital (LDH) remained unclear despite the establishment of CPS in 2009.

Objectives: To assess HCPs' attitudes and perceptions towards CPS provided in LDH and to identify the obstacles that hinder the integration of clinical pharmacists into the primary healthcare team (PHT).

Methods: A cross-sectional survey was conducted via a validated structured questionnaire in LDH. A total of 210 questionnaires were distributed to all HCPs in LDH by using a universal sampling method over three months. The data collected were analysed using SPSS and presented using descriptive statistics.

Results: A total of 206 HCPs (49 doctors and 157 nurses) completed the questionnaires; giving a response rate of 98.1%. The majority of HCPs perceived that clinical pharmacist is an important integral part of the clinical ward team (n=178, 86.4%) and believed that clinical pharmacists can improve the quality of patient care (n=181, 87.9%) in LDH. A majority of them (n=184, 89.3%) agreed that clinical pharmacists can minimise medication errors and improve patient therapy outcomes. Although most of the HCPs (n=182, 88.3%) stated their willingness to cooperate with clinical pharmacists, only about two-thirds of the respondents (n=144, 69.9%) agreed that there was an increasing interest in CPS provided in LDH. Poor communication skills were perceived by the HCPs (n=58, 28.2%) as the main problem that obstructed the integration of clinical pharmacists into the PHT.

Conclusion: Overall, HCPs in LDH have positive attitudes and perceptions towards clinical pharmacy practices. However, there is a need to improve communication skills among clinical pharmacists for better integration into the PHT.

Keywords: Clinical Pharmacy Services, Healthcare Professionals, Perceptions, Clinical Pharmacists

INTRODUCTION

Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimises medication therapy and promotes health, wellness, and prevention of diseases (1). The introduction of the clinical pharmacy concept and the philosophy of pharmaceutical care have transformed the pharmacists' role to focus more on patient-oriented services rather than drug product-oriented services (2-3). Clinical pharmacists are recognised as the primary sources of scientifically valid information and advice on the safe, appropriate and cost-effective use of medications (3-5). Moreover, a vast majority of practising pharmacists would agree that they have a heavier responsibility in ensuring that they apply pharmaceutical expertise to help maximise drug efficacy and minimise drug toxicity (6). The perceptions of healthcare providers on the roles of a clinical pharmacist are very significant in achieving the concept of pharmaceutical care as different perceptions by doctors and pharmacists on the clinical pharmacist's roles might reduce their level of collaboration (7). Several studies had stated the existence of a communication gap between pharmacists and doctors (8-9). However, doctors were reported to be receptive to several clinical services which were provided by pharmacists in the form of consultation or in a supportive role (10).

On the other hand, healthcare systems are moving towards a more interprofessional approach to primary care. Clinical pharmacists in North America and the United Kingdom had been integrated into primary healthcare teams (PHT) in the past decade and these practice settings remained new to developing countries like Malaysia (11-12). Clinical pharmacists provide their services to the teams by improving the appropriate use of drugs, providing education and counselling to patients and giving drug information to other team members (12). Nevertheless, clinical pharmacists struggled to integrate themselves into the PHT as several barriers hindered them from being part of the team members (13). For instance, the lack in familiarity with the roles and responsibilities of clinical pharmacists by other team members and poor understanding of patients on the roles of pharmacists in this setting created difficulties in collaborating successfully (14-15). Other frequently reported obstacles include physician resistance, lack of confidence, inadequate pharmacist support and lack of clinical pharmacy training (14,16-17). Hence, understanding the barriers that can hinder doctors and pharmacists from collaborating will provide clinical pharmacists with the essential skills to overcome these barriers.

The establishment of clinical pharmacy services (CPS) in Lahad Datu Hospital (LDH) was in the year of 2009. To date, the perceptions of other healthcare professionals, especially doctors and nurses towards CPS that have been provided in LDH remained unclear. Therefore, this study was intended to investigate and explore the missing impression that might help to enhance CPS in LDH. This study also aimed to assess healthcare professionals' (HCPs) attitudes and perceptions towards CPS provided in LDH and identify the obstacles that hinder the integration of clinical pharmacists into the PHT.

METHODS

This was a cross-sectional survey. A total of 210 questionnaires were distributed using a universal sampling method over a period of three months (August to October 2013). The questionnaire was divided into three sections: demographic information, HCPs' perceptions, and identification of the obstacles that hinder the integration of clinical pharmacists into the PHT. This questionnaire was adapted from a study entitled "Attitudes and Perceptions of Healthcare Providers and Medical Students towards Clinical Pharmacy Services in United Arab Emirates (UAE)" conducted by Abu Gharbiah, *et. al.* (18). The validity and reliability of the questionnaire were tested earlier among the HCPs in UAE by using Spearman's correlation coefficient (r) with the rho-value of 0.82 (18). *Post–hoc* reliability test of the 10 items in the questionnaire was tested and the overall scale of Cronbach's Alpha was 0.791 which indicated high internal consistency.

The questionnaire under the perceptions section included a set of statements in which the respondents were asked to indicate their level of agreement, on a 3-point Likert scale, where 1 = agree; 2 = neutral; and 3 = disagree. There was a section that required the respondents to select obstacles that hinder the integration of clinical pharmacists into the PHT. The participants were approached directly and they were required to complete the questionnaire under direct observation of the researchers in order to improve clarity and limit response bias.

All the doctors (specialists and medical officers) and nurses who worked in LDH and were exposed to CPS previously were included in the survey. However, any visiting or temporary-contract healthcare providers who worked in LDH, medical assistants, and community nurses were excluded.

The data collected were analysed using Statistical Package for Social Sciences (SPSS, version 18) and presented using descriptive statistics and Chi-square analysis. Descriptive analysis was used to calculate the proportion of each group of respondents who agreed or disagreed with each statement in the questionnaire. The Chi-square test was used to test any significant differences between the participants' responses to the questionnaire. A statistically significant difference was set at p-value < 0.05.

The research was registered with the National Medical Research Register with the registration number NMRR-13-546-16814 and ethical approval was obtained from the Medical Research Ethics Committee (MREC), Ministry of Health Malaysia. [KKM/NIHSEC/800-2/2/2 Jld.3.P13-630 dated 10 September 2013]

RESULTS

Of the 210 questionnaires distributed, 206 questionnaires were completed and returned; giving a response rate of 98.1%. More than half (n=118, 57.3%) of the respondents were from the age group of 20-30 years while senior HCPs (50 years and more) amount to a small minority (n=7, 3.4%). Female respondents were 78.6% (n=162) whereas male respondents were only 21.4% (n=44). With regards to respondents' professions, 49 (23.8%) were doctors and 157 (76.2%) were nurses. The majority of the respondents were Malaysians (n=201, 97.6%) and most of them obtained their first professional qualification from local universities (n=185, 89.8%) instead of foreign universities (n=21, 10.2%). Almost three-quarters (n=149, 72.3%) of HCPs were from the category of 1–10 years of practice while only 6.3% (n=13) of respondents were from the category of 21 – 30 years of practice. The demographic information of the respondents is summarised in Table 1.

Table 1: Healthcare professional's demographic information (n=206)

Demographic information	n (%)
Age	
20-30	118 (57.3)
31-40	62 (30.1)
41-50	19 (9.2)
>50	7 (3.4)
Gender	
Male	44 (21.4)
Female	162 (78.6)
Nationality	
Malaysian	201 (97.6)
Non-Malaysian	5 (2.4)
Profession	
Doctor	49 (23.8)
Nurse	157 (76.2)
First professional qualification	
Local	185 (89.8)
Oversea	21 (10.2)
Year of practice	
1-10	149 (72.3)
11-20	44 (21.4)
21-30	13 (6.3)

The majority of participants (n=178, 86.4%) perceived that clinical pharmacist is an important integral part of the clinical ward team. However, there was a significant difference between doctors and nurses in terms of perceiving whether clinical pharmacists can improve the quality of patient care (p=0.013). A majority of the respondents (n=184, 89.3%) agreed that clinical pharmacists can minimise medication errors and improve patient therapy outcomes.

The majority of participants admitted that clinical pharmacy representation in therapeutic committees and clinical ward rounds was necessary (n=117, 85.9%) and reported that the incorporation of clinical pharmacists in a clinical ward team was a requirement for hospital accreditation (n=172, 83.5%).

The majority of the respondents also agreed that the clinical pharmacist has a role in patient medication education (87.9%, n=181) and this finding was found to be significantly different

between doctors and nurses (p=0.003). Most of the respondents (n=185, 89.8%) reported that clinical pharmacists can acquire training in certain medical areas to perform patient counselling.

Although most of the respondents (n=182, 88.3%) stated their willingness to cooperate with the clinical pharmacists, only about two-thirds of them (n=144, 69.9%) agreed that there was an increasing interest in CPS provided in LDH. On the other hand, around three-quarters (n=156, 75.7%) of them agreed that clinical pharmacists had fulfilled his/her role in LDH. Table 2 summarised the perceptions of HCPs on the statements in the questionnaire.

There were no significant differences found in terms of nationality, first professional qualification, and year of practice with HCPs' perceptions on clinical pharmacists' roles as shown in Table 3 to Table 5.

Table 2: HCP respondents' responses to the statements in the questionnaire (n = 206)

Statement	HCP	Agree n (%)	Neutral n (%)	Disagree n (%)	*p*-value
Healthcare professional's willingness to cooperate with the clinical pharmacist	Doctors	45 (91.8)	4 (8.2)	0	0.383
	Nurses	137 (87.3)	20 (12.7)	0	
	Total	**182 (88.3)**	24 (11.7)	0	
The clinical pharmacist is an important integral part of the clinical ward team	Doctors	46 (93.9)	3 (6.1)	0	0.210
	Nurses	132 (84.1)	24 (15.3)	1 (0.6)	
	Total	**178 (86.4)**	27 (13.1)	1 (0.5)	
The clinical pharmacist can improve the quality of patient care in a hospital setting	Doctors	48 (98.0)	1 (2.0)	0	**0.013**
	Nurses	133 (84.7)	24 (15.3)	0	
	Total	**181 (87.9)**	25 (12.1)	0	
The clinical pharmacist can acquire training in certain medical areas to perform patient counseling	Doctors	48 (98.0)	1 (2.0)	0	0.096
	Nurses	137 (87.3)	19 (12.1)	1 (0.6)	
	Total	**185 (89.8)**	20 (9.7)	1 (0.5)	
The clinical pharmacist in a clinical ward team is a requirement for hospital accreditation	Doctors	43 (87.8)	6 (12.2)	0	0.358
	Nurses	129 (82.2)	28 (17.8)	0	
	Total	**172 (83.5)**	34 (16.5)	0	

The clinical pharmacist is able to minimise medication errors, maximise cost-effectiveness and improve patient therapy outcomes	Doctors Nurses **Total**	45 (91.8) 139 (88.5) **184 (89.3)**	4 (8.2) 18 (11.5) 22 (10.7)	0 0 0	0.514
There is increased interest in clinical pharmacy services in Lahad Datu Hospital	Doctors Nurses **Total**	31 (63.3) 113 (72.0) **144 (69.9)**	17 (34.7) 43 (27.4) 60 (29.1)	1 (2.0) 1 (0.6) 2 (1.0)	0.397
Clinical pharmacy representation in therapeutic policy committee and clinical ward rounds is desirable	Doctors Nurses **Total**	46 (93.9) 131 (83.4) **177 (85.9)**	3 (6.1) 26 (16.6) 29 (14.1)	0 0 0	0.067
The clinical pharmacist has a role in patient medication education	Doctors Nurses **Total**	49 (100.0) 132 (84.1) **181 (87.9)**	0 (0.0) 25 (15.9) 25 (12.1)	0 0 0	**0.003**
The clinical pharmacist has fulfilled his/her role in Lahad Datu Hospital	Doctors Nurses **Total**	38 (77.6) 118 (75.2) **156 (75.7)**	11 (22.4) 38 (24.2) 49 (23.8)	0 1 (0.6) 1 (0.5)	0.823

Chi-square test, p <0.05; (n = 49 and 157 for doctors and nurses, respectively)

Table 3: HCP respondents' responses (based on nationality) on some roles of the clinical pharmacist (n = 206)

Statement	Nationality	Agree n (%)	Neutral n (%)	Disagree n (%)	*p*-value
The clinical pharmacist can improve the quality of patient care in a hospital setting	Malaysian Non-Malaysian **Total**	176 (87.6) 5 (100.0) **181 (87.9)**	25 (12.4) 0 (0.0) 25 (12.1)	0 0 0	0.999
The clinical pharmacist is able to minimise medication error, maximise cost-effectiveness and improve patient therapy outcomes	Malaysian Non-Malaysian **Total**	179 (89.1) 5 (100.0) **184 (89.3)**	22 (10.9) 0 (0.0) 22 (10.7)	0 0 0	0.999

Chi-square test, p <0.05; (n = 201 and 5 for Malaysian and Non-Malaysian, respectively)

Table 4: HCP respondents' responses (based on qualification) on some roles of the clinical pharmacist (n = 206)

Statement	Qualification	Agree n (%)	Neutral n (%)	Disagree n (%)	*p*-value
The clinical pharmacist can improve the quality of patient care in a hospital setting	Local	161 (87)	24 (13)	0	0.275
	Oversea	20 (95.2)	1 (4.8)	0	
	Total	**181 (87.9)**	25 (12.1)	0	
The clinical pharmacist is able to minimise medication error, maximise cost-effectiveness and improve patient therapy outcomes	Local	163 (88.1)	22 (11.9)	0	0.095
	Oversea	21 (11.4)	0 (0.0)	0	
	Total	**184 (89.3)**	22 (10.7)	0	

Chi-square test, p <0.05; (n = 185 and 21 for local university and foreign university, respectively)

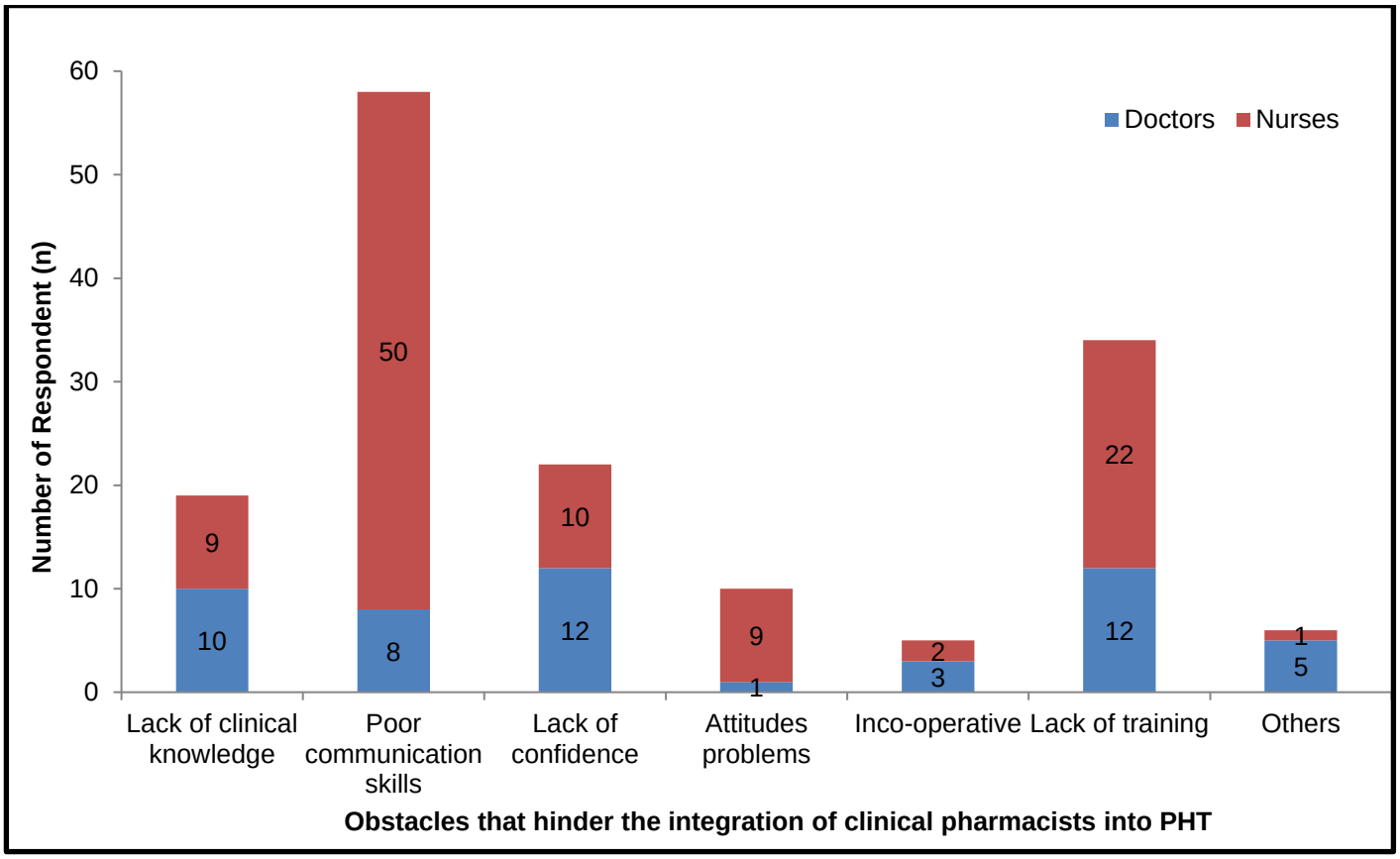
Table 5: HCP respondents' responses (based on year of practice) on some roles of the clinical pharmacist (n = 206)

Statement	Year of Practice	Agree n (%)	Neutral n (%)	Disagree n (%)	*p*-value
The clinical pharmacist can improve the quality of patient care in a hospital setting	1-10	126 (84.6)	23 (15.4)	0	0.056
	11-20	43 (97.7)	1 (2.3)	0	
	21-30	12 (92.3)	1 (2.3)	0	
	Total	**181 (87.9)**	25 (12.1)	0	
The clinical pharmacist is able to minimise medication error, maximise cost-effectiveness and improve patient therapy outcomes	1-10	131 (87.9)	18 (12.1)	0	0.372
	11-20	40 (90.9)	4 (9.1)	0	
	21-30	13 (100)	0 (0.0)	0	
	Total	**184 (89.3)**	22 (10.7)	0	

Chi-square test, p <0.05; (n = 149, 44 and 13 for 1-10 years, 11-20 years and 21-30 years, respectively)

Poor communication skills were perceived by the participants (n=58, 28.2%) as the main problem that obstructed the integration of clinical pharmacists into the PHT, followed by lack of training (n=34, 16.5%) and lack of confidence (n=22, 10.7%) as shown in Figure 1. Some respondents (n=6. 2.9%) selected other obstacles such as low self-esteem, insufficiency of clinical pharmacists in LDH, and lack of clinical pharmacy services such as clinical pharmacokinetic service and total parenteral nutrition (TPN) service in LDH as the problems that hindered the integration of clinical pharmacists into the PHT.

Figure 1: Obstacles identified by HCP respondents which hinder the integration of clinical pharmacists into the PHT (n = 206)



DISCUSSION

The practice of pharmacy has changed tremendously in the past decades. The transformation of pharmacy practice from drug product-oriented service to patient-oriented service in recent years has imposed the establishment of CPS in both public and private hospitals (2). In Malaysia, CPS is still new in the current trend of the healthcare system and clinical pharmacists are struggling to integrate into the PHT in order to achieve a better therapeutic outcome of pharmaceutical care. Therefore, the attitudes and perceptions of other HCPs towards the roles of clinical pharmacists are significant in achieving the concept of pharmaceutical care.

The HCPs in LDH showed positive perception of the roles of clinical pharmacists in improving patient therapeutic outcomes, minimising medication errors, and maximising the cost-effectiveness of drugs. Besides, this study also revealed that other HCPs expected clinical

pharmacists to perform patient counselling and provide patient medication education because the majority of them agreed that these were the core jobs of clinical pharmacists. This is in consonance with the results of a study conducted in Saudi Arabia (19). However, this study reported that there was a significant difference between the doctors and nurses in terms of their perception on whether clinical pharmacists can improve the quality of patient care and in their role in patient medication education. As compared to the study conducted by Abu-Gharbiah *et al*., the findings were different from this study as both doctors and nurses in UAE recognised the role of clinical pharmacists in medication counselling and enhancing the quality of patient care (18). A plausible explanation of this finding would be the staff nurses are still unclear about the role of clinical pharmacists and their expectations regarding the clinical pharmacists' responsibilities in PHT. Some studies even suggested that clinical pharmacists should clearly define their roles and responsibilities in the PHT and educate the other healthcare team members about the clinical pharmacists' roles (13).

Resistance of doctors and nurses to the role of the clinical pharmacists in LDH was discovered in this study as only two-thirds of the respondents showed their interest in CPS provided in LDH. Several studies suggested that lack of exposure to clinical pharmacists participating in clinical activities or misunderstanding CPS could be the contributing factors that reduced their interests in CPS (8). On the other hand, unclearly defined roles of clinical pharmacists and therapeutic drug monitoring (TDM) pharmacists among the HCPs in LDH caused one-third of the respondents to doubt that clinical pharmacists have fulfilled their roles in LDH as they presumed clinical pharmacokinetic service is part of the jobs of clinical pharmacists. Similarly, a study conducted by Almazrou *et al.* reports that the inaccessibility of clinical pharmacists when needed and uncertain specific responsibilities of clinical pharmacists were barriers that hindered the contribution of clinical pharmacists to the healthcare team (20).

Good communication between clinical pharmacists and other HCPs is an essential part of their practice (21). Poor communication not only leads to frustration and lack of respect among the HCPs but it will also compromise patient care if any information is left out or ineffectively conveyed. Most of the nurses chose poor communication skills as one of the main obstacles that hindered the integration of clinical pharmacists into the PHT. Ineffective communication between nurses and clinical pharmacists in drug handling and administration contributed to the nurses

perceiving poor communication skills as a significant barrier for clinical pharmacists to participate in clinical activities. Therefore, a communication skills training course should be provided to clinical pharmacists to ensure their core competencies in communicating with other HCPs.

On the other hand, lack of training and low confidence level among the clinical pharmacists in LDH were also considered significant identifiable barriers that hindered the integration of clinical pharmacists into the PHT. The reason could be that most of the clinical pharmacists in LDH were junior pharmacists and none of them went through proper clinical pharmacy training before being appointed as clinical pharmacists. Therefore, this might explain why some clinical pharmacists in LDH had low confidence when participating in clinical ward rounds. A study conducted by *Frankel et al*., reported that pharmacists believed that clinical knowledge, working experience, and continuous professional education were the most important factors in developing confidence (22). Hence, all clinical pharmacists should undergo a clinical pharmacy training programme to improve their skills in therapeutics and clinical knowledge before they are appointed to be clinical pharmacists in LDH in order to enhance the collaboration between clinical pharmacists and other HCPs in the provision of patient care.

This study had some limitations. Despite the high response rate, the sample size of each participant's profession in LDH was small, hence restricting the generalisability of our findings. In addition, the level of understanding the roles of clinical pharmacists among the HCPs in LDH and the duration of collaboration with clinical pharmacists among the respondents in LDH as a healthcare team in this survey remained undefined. These factors might affect their attitudes and perceptions toward the CPS in this study. On the other hand, acquiescence bias cannot be ruled out as the survey forms were distributed and filled in under the direct observation of pharmacists. Future studies should employ non-pharmacy-related personnel to administer the questionnaire. Anyhow, the results of this study may not apply to the current CPS in LDH as the data were collected nine years ago and the attitudes and perceptions of HCPs towards CPS have most likely changed over time. Moreover, the different disciplines or specialties of respondents were also not collected in this study. For future studies, it is suggested that authors focus on comparing the attitudes and perceptions of HCPs towards CPS provided in LDH from different disciplines as their attitudes and perceptions may vary according to their respective disciplines in LDH.

CONCLUSION

Overall, the doctors and nurses in LDH have positive attitudes and perceptions toward clinical pharmacy practices. However, not all of the HCPs in LDH have accepted clinical pharmacists as part of the clinical team. The interprofessional relationships between doctors, nurses, and clinical pharmacists in LDH should be strengthened. Besides, clinical pharmacists need to be more proactive in fulfilling their jobs and always be ready to provide valuable recommendations in pharmaceutical care. Lastly, there is a need to improve communication skills among clinical pharmacists in LDH for better integration into the PHT.

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REFERENCES

1. American College of Clinical Pharmacy. The definition of clinical pharmacy. *Pharmacotherapy 2008; 28:816–817.*
2. Hepler C, Strand L. Opportunities and responsibilities in pharmaceutical care. *J Am Pharm Assoc 1990; 47:533-543.*
3. Ahmed SI, Hasan SS, Hassali MA. Clinical pharmacy and pharmaceutical care: a need to homogenize the concepts. *Am J Pharm Educ. 2010 Dec 15; 74(10): 193g*
4. Bero LA, Mays NB, Barjesteh K, Bond C. Expanding the roles of outpatient pharmacists: effects on health services utilisation, costs, and patient outcomes. *Cochrane Database Syst Rev 2000; 336.*
5. Bond CA, Raehl CL, Franke T. Clinical pharmacist staffing in United States hospitals. *Pharmacotherapy 2002;22;1489-1499*
6. Statement of principles and standards of good practice for hospital pharmacy in the United Kingdom. Royal Pharmaceutical Society of Great Britain; 1995.

7. Smith WE, Ray MD, Shannon DM. Physicians' expectations of pharmacists. *Am J Health Syst Pharm 2002, 59(1):50-57.*

8. Ranelli PL, Biss J. Physicians' perceptions of communication with and responsibilities of pharmacists. *J Am Pharm Assoc 2000, 40(5).*

9. Muijrers PE, Knottnerus JA, Saijbrandij J, Janknegt R, Grol RP. Changing relationship: attitude and opinion of general practitioners and pharmacist regarding the role of the community pharmacist. *Pharm World Sci 2003, 25(5):235-241*

10. Azhar S, Hassali MA, Ibrahim MIM. Doctors' perception and expectations of the role of the pharmacist in Punjab, Pakistan, *Trop J Pharm Res, Jun 2010; 9(3):205-222.*

11. Bradley F, Elvey R, Ashcroft DM, Hassell K, Kendall J, Sibbald B, Noyce P. The challenge of integrating community pharmacists into the primary health care team: a case study of local pharmaceutical services (LPS) pilots and interprofessional collaboration. *J Interprof Care. 2008 Aug;22(4):387-98.*

12. Dolovich L, Pottie K, Kaczorowski J, Farrell B, Austin Z, Rodriguez C, Gaebel K, Sellors C. Integrating family medicine and pharmacy to advance primary care therapeutics. *Clin Pharmacol Ther. 2008 Jun;83(6):913-7.*

13. Jorgenson D, Dalton D, Farrell B, Tsuyuki RT, Dolovich L. Guidelines for pharmacists integrating into primary care teams. *Can Pharm J (Ott). 2013;146(6):342-352.*

14. Berdine H, Dougherty T, Ference J, Karpa K, Klootwyk J, Kozminski M, Leon N, Osborne M, Welch AC, Willey VJ, Peterson A, Stanchak LA, Whisler AG. The pharmacists' role in the Patient-Centered Medical Home (PCMH): a white paper created by the Health Policy Committee of the Pennsylvania Pharmacists Association (PPA). *Ann Pharmacother. 2012 May;46(5):723-50.*

15. Assa-Eley M, Kimberlin CL. Using interpersonal perception to characterize pharmacists' and patients' perceptions of the benefits of pharmaceutical care. *Health Commun. 2005;17(1):41-56.*

16. 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 Feb;19(1):21-9.*

17. Brock KA, Doucette WR. Collaborative working relationships between pharmacists and physicians: an exploratory study. *J Am Pharm Assoc (2003). 2004 May-Jun;44(3):358-65.*

18. Abu-Gharbieh E, Fahmy S, Abdul Rasool B, Abduelkarem A, Basheti I. Attitudes and perceptions of healthcare providers and medical students towards clinical pharmacy services in United Arab Emirates. *Trop J Pharm Res. 2010 Oct;9(5):421-430*

19. Said, Ragab & Al-Arifi, Mohamed & Alghamdi, Bashayeir & Al-Saadi, M & Idris, AE & Ali, Wajid & Babelghaith, Salmeen. Attitudes and Perceptions of Healthcare Providers towards Clinical Pharmacy Services at a Tertiary Care Hospital in Riyadh, Saudi Arabia. *Trop J Pharm Res. 2015 May;14(5). 913-8.*

20. Almazrou S, Alnaim L & Al-Kofide H. Perceptions, Expectations and Barriers of Physicians towards Working with Clinical Pharmacists in Saudi Arabia. *JSRR. 2015 Jan;6(5). 404-415165.*

21. Calvert RT. Clinical pharmacy—a hospital perspective. *Br J Clin Pharmacol. 1999 Mar; 47(3): 231–238.*

22. Frankel GE, Austin Z. Responsibility and confidence: Identifying barriers to advanced pharmacy practice. *Can Pharm J (Ott). 2013;146(3):155-161.*