

COMMUNITY PHARMACISTS' ATTITUDES TOWARD COLLABORATION WITH PHYSICIANS

JAMSHID TABESHPOUR^{1,2}, MOHAMMAD REZA ZIRAK¹, HOUSHANG MIRAKHORLI³, BIBI SEDIGHEH FAZLY BAZZAZ⁴, MONAVAR AFZALAGHAEI⁵, MOHAMMAD AMIN KERACHIAN^{6,7}, SAEID ESLAMI^{8,9}, ZHILA TAHERZADEH^{10*}

¹Department of Pharmacodynamics and Toxicology, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran, ²Student Research Committee, Mashhad University of Medical Sciences, Mashhad, Iran, ³Targeted Drug Delivery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran, ⁴Biotechnology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran, ⁵Management and Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Islamic Republic of Iran, ⁶Medical Genetics Research Center, Mashhad University of Medical Sciences, Mashhad, Iran, ⁷Department of Medical Genetics, Mashhad University of Medical Sciences, Mashhad, Iran, ⁸Pharmaceutical Research Center, Mashhad University of Medical Sciences, Mashhad, Iran, ⁹Department of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, ¹⁰Neurogenic Inflammation Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
Email: Taherzadezhz@mums.ac.ir

Received: 31 Jul 2017 Revised and Accepted: 02 Nov 2017

ABSTRACT

Objective: Healthcare providers play a key role in reducing medication errors and improving patient care, especially for those who suffer with chronic diseases. This study aims to assess pharmacist attitudes toward collaborative practice in northeastern Iran.

Methods: A face-to-face survey was offered to a sample of 124 pharmacists in Mashhad, Iran, and some other cities of the Razavi Khorasan province. This survey assessed the following elements of community pharmacists' collaborative behaviour: "interactional determinants," "environmental determinants," and "pharmacist determinants." Results were analyzed to determine how pharmacists' attitudes and other variables would influence their collaborative behaviour.

Results: The survey response rate was 100%. Principal component analysis revealed that the attitudes towards collaboration instrument for pharmacists (ATCI-P) in our sample consisted of two factors: interactional determinants and pharmacist determinants, both with high internal consistency (Cronbach's alpha = 0.83). The lowest and the highest scores in the interactional determinants domain were 19 and 35, respectively. The higher attitudes toward collaboration were obtained in the capital city, Mashhad, rather than in towns (P-value = 0.006). Multiple linear regression analysis of the complete model was significant (R = 0.38, P-value = 0.004). The age and city/community size were also found to be significant predictors of collaboration behavior (B = 0.300, p = 0.002 and B = 0.259, p = 0.004, respectively).

Conclusion: The community pharmacists in Razavi Khorasan, Iran, have a profound attitude toward collaboration with physicians, and their collaborative behaviour is influenced by the age and community size.

Keywords: Community Pharmacists, Attitude, Collaboration, Physician, ATCI-P, Iran

© 2017 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open-access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)
DOI: <http://dx.doi.org/10.22159/ijpps.2017v9i12.21712>

INTRODUCTION

The role of pharmacists in the healthcare system is not separate from diagnostic and treatment services. In recent years, it has expanded to encompass areas beyond the dispensing function, and it has now extended to *pharmaceutical care* [1]. Pharmaceutical care is the provision of drug therapy with the goal of achieving definite therapeutic outcomes toward patients' health and quality of life. This involves identifying, addressing and preventing medication-related problems [1]. Pharmacists are trained to optimize medication management, especially when regimens become complicated. Because of this specific expertise, adding pharmacists to in-patient services and speciality clinics can improve patients' health outcomes [2]. One study provided proof of concept that community pharmacists, working in partnership with physicians, can have a major beneficial impact on cholesterol risk management [3]. This collaborative approach also has a positive impact on patients' health outcomes in various chronic conditions such as asthma [4], hypertension [5-6], diabetes [7-8] and heart failure [9]. In addition, it improves patient safety outcomes such as medication appropriateness [10-11] and lowers the incidence of adverse drug events [12-14]. In another study, it was shown that a clinical pharmacist can conduct effective consultations with regard to elderly patients' health [15-16].

The need to improve patient care by coordinating the activities of various healthcare providers has become a topic of increasing interest in the healthcare community. Pharmacists can provide the team with

the expertise needed to improve a patient's drug therapy and self-care skills. However, to optimize this contribution, pharmacists need to learn to work in a collaborative manner as members of an interdisciplinary team [17]. The World Health Organization (WHO) suggests that collaboration between the healthcare providers will result in improved health outcomes for the patients [18]. Furthermore, randomized controlled trials have shown that collaboration between pharmacists and physicians positively affects the clinical outcomes for their mutual patient [19-20]. In a study of primary care pharmacists and physicians, Zillich *et al.* [21] reported that exchange factors were especially important in developing collaboration between practitioners. Specifically, they reported that trustworthiness, role specification, relationship initiation, and professional interactions were completely associated with collaborative care.

Van *et al.* have shown collaborative behaviour is influenced directly by *interactional* and *environmental* determinants, and indirectly by *practitioner* determinants [22]. An attitude toward collaboration is an important subject that may influence the degree to which physicians and pharmacists collaborate with each other. Past investigations have considered this collaboration from the view of physicians [21], and several studies have been conducted on the influential factors in the development of physician-pharmacist collaboration and from the view of physicians [23]. The aim of this study was to assess the attitude of pharmacists to collaborate with physicians from the pharmacists' point of view, through standardized questionnaires.

MATERIALS AND METHODS**Study design**

A cross-sectional paper-based survey was conducted in a random sample of 124 practicing pharmacists in Razavi Khorasan Province, in northeastern Iran. The study was approved by the university ethical institutional review board of Mashhad University of Medical Sciences. The samples were randomly selected from the database of the food and drug department in Mashhad (the capital of the province), supported by Mashhad University of Medical Sciences.

The study was carried out independently of any commercial entity. A face-to-face survey was conducted between the years 2015 and 2016. This survey was comprised of a three-page questionnaire and was delivered to practicing pharmacists in all regions of the province. The pharmacists' attitudes toward collaboration with physicians were measured using nineteen items adopted from Van *et al.* [22], on a four-point Likert-type scale (1, strongly disagree; 2, disagree; 3, agree; 4, strongly agree) for each statement [23]. The questionnaire also included items about practice characteristics and demographics such as the pharmacists' age and gender, the location of the pharmacy, the number of years they have been in practice, the years they graduated from college and their distance from a medical centre.

Data collection

We collected data through an adopted 19-item questionnaire, "ATCI-P in Primary Care" [22]. ATCI-P stands for "attitudes towards collaboration instrument for pharmacists". The ATCI-P measures included: interactional determinants, environmental determinants and pharmacist determinants. The interactional determinants domain encompasses components of interpersonal relationships and includes key components of collaboration identified as communication (items 1, 2), trust (items 3, 4), mutual respect (item 5) and willing to collaborate (items 6, 7, 8, 9). Environmental determinants designate the settings under which the practitioner practices, including elements of proximity to physician's office (item 10), systems for collaboration (item 11), interprofessional education (item 12), remuneration (item 13) and physician contact during training (item 14). Finally, the pharmacist determinants domain includes the recognition of roles

(items 14-16) and expectations (items 16-19), and it comprises features correlated to the pharmacist individually

To use the ATCI-P, a cross-cultural adaptation and validation process was performed, comprising translation, synthesis of translation, back translation, expert committee review and pretesting [24]. The pretesting of the questionnaire was conducted by ordering it to a convenient sample of 15 pharmacists whose names were not included in the sampling frame for the main study. Cronbach's alpha was used to measure the reliability and assess the item consistency of the instrument. Values above 0.7 were considered acceptable.

After cross-cultural adaptation and validation, the resulting questionnaire was given to a sample of 124 practicing pharmacists. The researcher physically traveled to each respondent's location to conduct a personal interview and administered the questionnaire in a face-to-face manner; therefore, respondents answered all of the questions.

Each of the identified pharmacists was asked to complete a survey of basic background and demographic information along with the questionnaire. Demographic information was collected to describe the respondent and context characteristics that could influence the relationships being studied.

Data analysis

Statistical differences of gender, the location of the pharmacy and distance from a medical center were evaluated by independent sample *t*-tests or one-way analysis of variance (ANOVA) followed by John Tukey's post-hoc test. We used backward elimination regression to establish the important explanatory variables. A probability value (*p*-value) of less than 0.05 was considered significant, and in regression, if variables were under the significance level, they were retained in the model. Finally, the backward stepwise protocol was performed in order to establish the most influential variables. The data analysis was conducted using SPSS 11.5 statistical software for Windows (SPSS, Chicago, IL).

RESULTS

A total of 124 pharmacists participated in our survey. We had face-to-face interviews and the response rate was 100%. The demographic characteristics of the participants are shown in table 1.

Table 1: Demographic characteristics of participants

Characteristics	Mean (SD)/N (%)
Age (mean, SD), Y	39.73 (10.87%)
Years in practice (mean, SD), Y	13.65 (9.51%)
Gender	Male 69 (55.64%) Female 55 (44.35%)
Community size	Capital city 90 (72.58%) small town 34 (27.41%)
Years after college graduation, year	student 9 (7.25%) Up 10 48 (38.7%) 10-20 39 (31.45%) 20-30 22 (17.74%) 30-40 6 (4.83%)
Distance from a medical center	Same location ¹ 45 (36.29%) Near ² 60 (48.38%) Far ³ 19 (15.32%)

Data of age were expressed as mean±SD (standard deviation); others were shown as frequency (percentage), ¹The pharmacy was located in the medical center building, ²The pharmacy was located ≤ 500 meters from the medical center, ³The pharmacy was located more than 500 meters from the medical center.

Of the respondents, 56% were male and 44% were female; 85.5% were permanently responsible pharmacists, compared to 14.5% temporarily responsible pharmacists; and 73% lived in Mashhad while 27% resided in other cities.

The preliminary study (15 experts) showed that the interactional determinants and pharmacist determinants domains had reliability (Cronbach's alpha>0.7), but the environmental determinants domain was excluded due to lack of reliability (Cronbach's alpha <

0.5). The environmental determinants domain included items like preferred methods and frequency of communication, methods for improving collaboration and history of contact in the past.

Measured ATCI-P scores throughout the questionnaire ranged from 33 to 57 (the minimum and maximum possible scores were 15 and 60, respectively). There was no significant difference between male and female pharmacists' scores (*p* = 0.53). Likewise, the mean score of temporary and permanently responsible

pharmacists was statistically the same ($p = 0.76$). The ATCI-P mean score was higher in small towns than in the capital city ($p = 0.006$). The mean score of pharmacists with the same location or

near a medical centre was higher than those of pharmacists far from a medical centre; however, it was not statistically significant ($p = 0.2$) (table 2).

Table 2: Attitudes towards collaboration instrument for pharmacists (ATCI-P) score

Factors		Score (mean±SD)	P-value
Gender	Male	45.01±5.57	0.53
	Female	45.47±6.47	
Community size	Capital city	44.37±5.87	0.006
	small town	47.44±5.72	
Distance from a medical center	Same location	45.17±6.59	0.20
	Near	45.91±5.28	
	Far	43.10±6.28	

Statistical differences of gender and location were evaluated by independent sample *t*-tests. For analysis of distance, we used one-way ANOVA followed by a Tukey post-hoc test.

As depicted in fig. 1, pharmacists agreed that collaborative practice can result in better health outcomes for patients (100% agreement). Furthermore, they declared that physicians thought the same way.

There was a high level of agreement among pharmacists that for an improved collaboration, they should respect each other and have an honest and frank relationship with physicians (100% agreement).

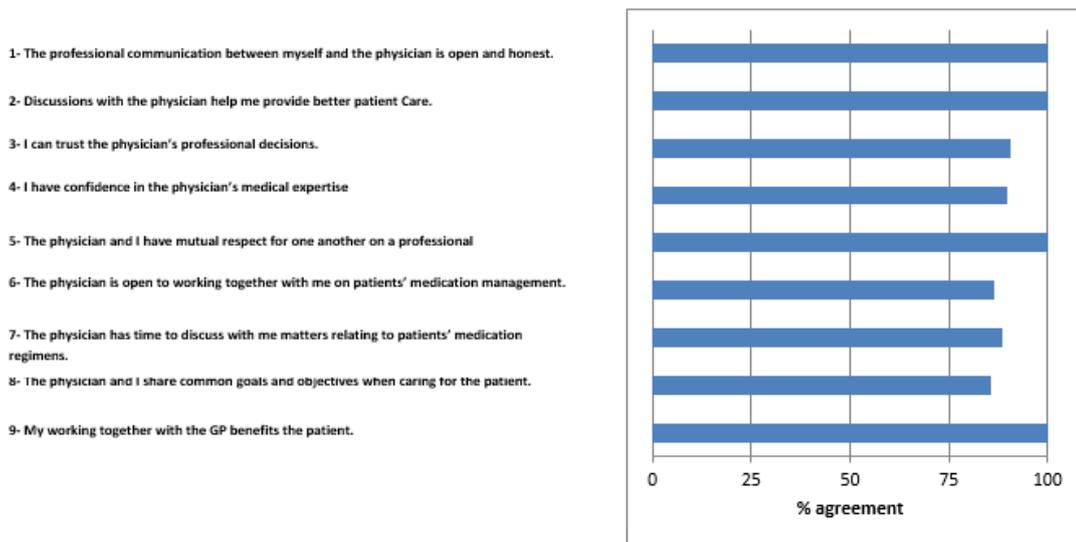


Fig. 1: Attitudes toward collaborative practice (interactional determinants)

Most of the pharmacists believed that physicians had enough abilities and skills to provide high-quality healthcare services, and

since they cared about patients' health, they communicated with the pharmacists in necessary situations (fig. 2).

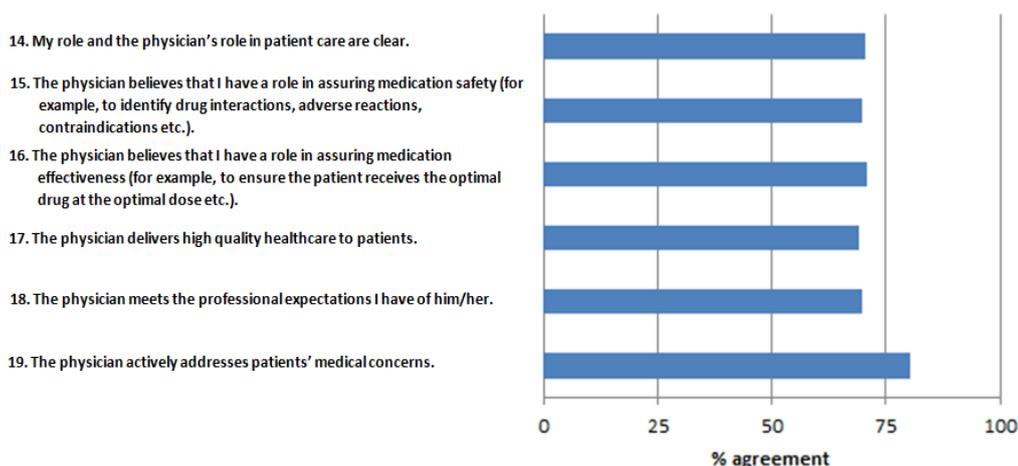


Fig. 2: Attitudes toward collaborative practice (pharmacist determinants)

Table 3 represents the multiple regressions stepwise, backward developed using ATCI-P as a dependent variable, and distance, age, gender, city, and type of pharmacy as predictors. The age ($p = 0.002$) and city/community size ($p = 0.004$) were detected as important

simultaneous influent variables. Backward elimination, which involves starting with all candidate variables and testing them one by one for statistical significance, deleted any factor that was not significant [25].

Table 3: Backwards stepwise regression results (n = 124)

Model	Predictors	R	P-value of model
1	(Constant), distance, age, gender, city, type of pharmacy, years in practice	0.388	0.004*
2	(Constant), age, gender, city, type of pharmacy, years in practice	0.386	0.002*
3	(Constant), age, city, type of pharmacy, years in practice	0.383	0.001*
4	(Constant), age, city, years in practice	0.372	<0.001*
5	(Constant), age, city	0.347	<0.001*

*Statistically significant,

The multiple linear regression for pharmacist attitude was statistically significant ($R = 0.38$, $p = 0.004$). The regression analysis

showed that age and city are significant predictors of collaboration (table 4).

Table 4: Pharmacist attitude toward collaboration with community pharmacist regression, complete model

Belief measures (independent variables)	Standardized beta coefficient	P-value
Gender	0.045	0.602
Age	0.300	0.002*
Community size	0.259	0.004*
Distance	0.032	0.712
Type of pharmacy	0.083	0.384
Years in practice	-0.30	0.094

* Statistically significant

DISCUSSION

Several studies on pharmacist-physician collaboration have been accomplished from the viewpoint of physicians, but there are only a few studies on this collaboration from the viewpoint of pharmacists. As far as we know, this is the first study to examine the attitudes of pharmacists in collaboration with physicians in Iran. Pharmacists agreed that collaborative practice can result in better health outcomes for patients (100% agreement), as we can observe in the third domain (pharmacist determinants). This domain measures the extent of interdependence between pharmacists and physicians. This interdependence is important in a lower stage of the collaborative relationship [17]. In this area, the healthcare perception of the professional role is a significant factor to form an effective team and it is a key component of collaboration [26]. Our study showed that there was a high level of agreement among pharmacists that for an improved collaboration they should respect each other, and have an honest and frank relationship with physicians (100% agreement) which can be perceived from the first domain (interactional determinants). This domain evaluates the interpersonal relationship. It is obvious for pharmacists that team-based approaches to the delivery of healthcare where pharmacists work collaboratively with physicians can significantly improve the quality of care and clinical outcomes [27].

The pharmacists who participated in our study were interested in having more collaboration with the physician in all areas identified, although some areas were of greater concern. Age and city/community size are independent predictors of collaborative behaviour. Many of the pharmacists from this study believed that the communication and collaboration between healthcare professionals are more beneficial for patients (items 1, 2). They also believed that there should be mutual respect between physicians and pharmacists, and should work together as partners instead of subordinates and superiors (item 5). We also showed that the pharmacists have a strong willingness to collaborate because they agree that collaborative practice can benefit the patients (item 9), but they are not sure if physicians wish to collaborate with them as well (items 6, 7, 8). The pharmacists in cities other than the capital (Mashhad) are more interested in collaborating with physicians than have been able to so far. Also, collocated or closely located physicians and pharmacist had a stronger attitude toward

collaboration. It means that shorter geographical distances between pharmacists and physicians would make them more reachable to one another and thus it would increase their likelihood of inter-professional collaboration.

As the physician-pharmacist relationship is established, followed by initial discussions and then shared professional experiences, the roles of each party become clear. Over time, the professional interactions that proceed favourably will tend to be repeated because the roles are more clearly defined. As the relationship advances to more collaborative levels, the professional interactions become associated with collaboration [28]. Within the medication use process, roles for pharmacists can include multiple activities such as educating patients, monitoring drug therapy and communicating with physicians. When pharmacists and physicians jointly determine specific roles, the relationship is more likely to become collaborative [23]. Patients' conditions also improve when pharmacists participate successfully in medication therapy management. Several studies have reported that physician-pharmacist collaboration has led to health improvements for patients diagnosed with hypertension [29], diabetes [30], high cholesterol [31] and depression [32].

Mutual respect and trust are also important factors in teamwork practices. Trust is vital in the development of collaborative relationships, as in any relationship [23]. As time passes and the pharmacist is able to demonstrate his/her competence, the physician's trust begins to grow. That is, the physician evaluates the pharmacist's abilities through the quality of his/her medication recommendations. When useful recommendations are made consistently over time, then the physician comes to trust the pharmacist's expertise [33-34]. This also is true for the pharmacist's trust of the physician. As trust develops, communication becomes more open between the two professionals. Each party becomes willing to have frank discussions about approaches to managing conditions and about treating specific patients. Thus, trust is a contributing factor to the development of collaboration between pharmacists and physicians [23]. Most of the respondents agreed that their relationship with physicians should be based on honesty and truth. The ultimate goal of this collaboration is to provide the best solution for patients' treatment. Pharmacists know that collaboration between themselves and physicians can be more

beneficial to patients. Therefore, this can be a step forward in the creation of mutual understanding between the two professions.

Among the predictors of collaboration, age and city/community size were significant. Age is a significant predictor that pharmacists and physicians will believe that this collaboration impacts the prevention of medication-related problems. As their age increases so does their work experience. Therefore, the collaboration between two professionals would be facilitated. It may be debated that a positive assessment of physicians by pharmacists is, in fact, a criterion for strong interactions. Less agreement was seen in the pharmacist determinants domain. Role understanding and appreciation of other roles are important for effective collaborative practice [35]. Many of the pharmacists who participated in our study were not strongly sure if physicians recognized and appreciated them for their role in medication safety and effectiveness. This illustrates a need to improve the recognition of roles and expectations for the services provided [36].

This study has some limitations. It was done in only one province. However, there is a unique pharmacy education program in Iran. In addition, Mashhad is the second most populous city in Iran and Razavi Khorasan is one of the biggest provinces; they could be representative of Iran as a developing country. Face-to-face surveys still deliver the most representative results. However, even here, one should control potential biases such as interviewer bias, high cost per respondent, geographical limitations and time pressure on respondents.

For the future study, we suggest examining physician attitudes toward collaboration with pharmacists for improving patients' care. We also suggest defining the barriers to collaboration. This continued focus on collaboration should make it possible to optimize the delivery of primary healthcare services.

CONCLUSION

We found that the pharmacists who participated in our study showed great inclination to collaborate with physicians, but this attitude has not reciprocated yet. Therefore, it is necessary for pharmacists to become familiar with professional communications in the health system—during their educational courses, during their continuing medical education and after graduation—and try to eliminate the existing imperfections. Furthermore, the curriculum at pharmacy schools could be improved by training pharmacists to better collaborate with physicians.

ACKNOWLEDGMENT

The authors are thankful to the Vice Chancellor of Research, Mashhad University of Medical Sciences for financial support. The present study is a Pharm. D thesis in the field of pharmacist education from Mr. Houshang Mirakhorli.

AUTHORS' CONTRIBUTION

Fazly Bazzaz B. S jointly conceived the study with Afzalaghaee M and Eslami S; Taherzadeh Zh, Fazly Bazzaz B. S, Eslami S, Kerachian M. A participated in the design of the study and drafting the manuscript; Mirakhorli H participated in the data collection; Tabeshpour J drafted the manuscript; Zirak M. R performed the statistical analysis and Afzalaghaee M supervised its analysis and edited the manuscript; Taherzadeh Zh, Fazly Bazzaz B. S, Kerachian M. A and Eslami S revised the manuscript critically for important intellectual content; Taherzadeh Zh gave final approval of the version to be published; All authors read and approved the final manuscript.

CONFLICTS OF INTERESTS

All authors approved the manuscript and this submission. The author reported no conflict of interest and no funding was received for this work.

REFERENCES

1. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm* 1990;47:533-43.
2. Wubben DP, Vivian EM. Effects of pharmacist outpatient interventions on adults with diabetes mellitus: a systematic review. *Pharmacotherapy* 2008;28:421-36.

3. Tsuyuki RT, Johnson JA, Teo KK. A randomized trial of the effect of community pharmacist intervention on cholesterol risk management: The study of cardiovascular risk intervention by pharmacists (scrip). *Arch Intern Med* 2002;162:1149-55.
4. Abdelhamid E, Awad A, Gismallah A. Evaluation of a hospital pharmacy-based pharmaceutical care services for asthma patients. *Pharm Pract (Granada)* 2008;6:25-32.
5. Chisholm MA, Mulloy LL, Jagadeesan M, Martin BC, DiPiro JT. Effect of clinical pharmacy services on the blood pressure of African-American renal transplant patients. *Ethn Dis* 2002;12:392-7.
6. Kandasamy K, Natarajan A, Sebastian J, Konakalla M, Sam R, Rajagopal SS, *et al.* Impact of pharmacist intervention in screening and education on blood pressure in a rural area in Southern India. *Asian J Pharm Clin Res* 2016;9:339-43.
7. Chung WW, Chua SS, Lai PSM, Chan SP. Effects of a pharmaceutical care model on medication adherence and glycemic control of people with type 2 diabetes. *Patient Prefer Adherence* 2014;8:1185-94.
8. George AK, Jewel VG, Manohar M, Kumar SP, Muneerudeen J. Impact of patient counselling on knowledge, attitude, practices of patients with type 2 diabetes mellitus at a tertiary care teaching hospital. *Asian J Pharm Clin Res* 2017;10:293-6.
9. Gattis WA, Hasselblad V, Whellan DJ, O'Connor CM. Reduction in heart failure events by the addition of a clinical pharmacist to the heart failure management team: results of the pharmacist in heart failure assessment recommendation and monitoring (PHARM) study. *Arch Intern Med* 1999;159:1939-45.
10. Hanlon JT, Weinberger M, Samsa GP, Schmader KE, Uttech KM, Lewis IK, *et al.* A randomized, controlled trial of a clinical pharmacist intervention to improve inappropriate prescribing in elderly outpatients with polypharmacy. *Am J Med* 1996;100:428-37.
11. Taylor C, Byrd D, Krueger K. Improving primary care in rural Alabama with a pharmacy initiative. *Am J Health Syst Pharm* 2003;60:1123-9.
12. Schmader KE, Hanlon JT, Pieper CF, Sloane R, Ruby CM, Twersky J, *et al.* Effects of geriatric evaluation and management on adverse drug reactions and suboptimal prescribing in the frail elderly. *Am J Med* 2004;116:394-401.
13. Williams ME, Pulliam CC, Hunter R, Johnson TM, Owens JE, Kincaid J, *et al.* The shortterm effect of interdisciplinary medication review on function and cost in ambulatory elderly people. *J Am Geriatr Soc* 2004;52:93-8.
14. Mohammed SI, Al-Razaq AFA. Knowledge and attitude of Iraqi pharmacists in Baghdad community toward adverse drug reactions monitoring. *Asian J Pharm Clin Res* 2017;10:219-22.
15. Zermansky AG, Petty DR, Raynor DK, Freemantle N, Vail A, Lowe CJ. Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice. *Br Med J* 2001;323:1340.
16. Umar NF, Joel JJ, Sharma R, Shastry CS, Adepu R. Significant role of clinical pharmacists in the assessment of inappropriate medications prescribed to the elderly patients in a university teaching hospital. *Asian J Pharm Clin Res* 2015;8:109-12.
17. McDonough R, Doucette W. Developing collaborative working relationships between pharmacists and physicians. *J Am Pharm Assoc* 2001;41:682-92.
18. Organization WH. Framework for action on interprofessional education and collaborative practice. Geneva: World Health Organization; 2010.
19. Hunt JS, Siemenczuk J, Pape G, Rozenfeld Y, MacKay J, LeBlanc BH, *et al.* A randomized controlled trial of team-based care: impact of physician-pharmacist collaboration on uncontrolled hypertension. *J Gen Intern Med* 2008;23:1966-72.
20. Amariles P, Sabater-Hernandez D, Garcia-Jimenez E, Rodriguez-Chamorro MA, Prats-Mas R, Marin-Magan F, *et al.* Effectiveness of dader method for pharmaceutical care on control of blood pressure and total cholesterol in outpatients with cardiovascular disease or cardiovascular risk: EMDADER-CV randomized controlled trial. *J Manag Care Pharm* 2012;18:311-23.
21. Zillich AJ, McDonough RP, Carter BL, Doucette WR. Influential characteristics of physician/pharmacist collaborative relationships. *Ann Pharmacother* 2004;38:764-70.

22. Van C, Costa D, Mitchell B, Abbott P, Krass I. Development and initial validation of the pharmacist frequency of interprofessional collaboration instrument (FICI-P) in primary care. *Res Social Adm Pharm* 2012;8:397-407.
23. Doucette WR, Nevins J, McDonough RP. Factors affecting collaborative care between pharmacists and physicians. *Res Social Adm Pharm* 2005;1:565-78.
24. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)* 2000;25:3186-91.
25. Telmo C, Lousada J, Moreira N. Proximate analysis, backwards stepwise regression between gross calorific value, ultimate and chemical analysis of wood. *Bioresour Technol* 2010;101:3808-15.
26. Bradley EH, Byam P, Alpern R, Thompson JW, Zerihun A, Abeb Y, *et al.* A systems approach to improving rural care in Ethiopia. *PLoS One* 2012;7:e35042.
27. Irons BK, Meyerrose G, Laguardia S, Hazel K, Seifert CF. A collaborative cardiologist-pharmacist care model to improve hypertension management in patients with or at high risk for cardiovascular disease. *Pharm Pract (Granada)* 2012;10:25-32.
28. Dieleman SL, Farris KB, Feeny D, Johnson JA, Tsuyuki RT, Brilliant S. Primary health care teams: team members' perceptions of the collaborative process. *J Interprof Care* 2004;18:75-8.
29. Borenstein JE, Graber G, Saltiel E, Wallace J, Ryu S, Jackson A, *et al.* Physician-pharmacist comanagement of hypertension: a randomized, comparative trial. *Pharmacotherapy* 2003;23:209-16.
30. Baran RW, Crumlish K, Patterson H, Shaw J, Erwin WG, Wylie JD, *et al.* Improving outcomes of community-dwelling older patients with diabetes through pharmacist counseling. *Am J Health Syst Pharm* 1999;56:1535-9.
31. Bluml BM, McKenney JM, Cziraky MJ, Elswick Jr R. Pharmaceutical care services and results in project ImPACT: Hyperlipidemia. *J Am Pharm Assoc (Wash)* 2000;40:157-65.
32. Boudreau DM, Capoccia KL, Sullivan SD, Blough DK, Ellsworth AJ, Clark DL, *et al.* Collaborative care model to improve outcomes in major depression. *Ann Pharmacother* 2002;36:585-91.
33. Swan JE, Trawick IF, Silva DW. How industrial salespeople gain customer trust. *Industrial Marketing Management* 1985;14:203-11.
34. Swan JE, Trawick IF. Building customer trust in the industrial salesperson: process and outcomes. *Adv Business Marketing* 1987;2:81-113.
35. Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2009;Cd000072.
36. Kelly DV, Bishop L, Young S, Hawboldt J, Phillips L, Keough TM. Pharmacist and physician views on collaborative practice: Findings from the community pharmaceutical care project. *Can Pharm J (Ott)* 2013;146:218-26.