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Article

Implications of Health Care Providers by Physicians' and Pharmacists' Attitudes and Perceptive Barriers towards Interprofessional Collaborative Practices

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The study was aimed at assessing and comparing physicians' and pharmacists' attitudes and experiences with collaborative practices, along with the extent of barriers toward interprofessional collaboration in Iraqi healthcare settings. A descriptive, cross-sectional study was conducted among physicians and pharmacists in different healthcare settings in Baghdad, Iraq through an interview using a structured 3-part questionnaire, assessing the demographic characteristics, attitudes and barriers to interprofessional collaborative practices. A total of 384 participants were enrolled in this study. The physicians and pharmacists reported a significant positive attitudes towards collaboration, such as *''pharmacists are qualified to assess and respond to patients' drug treatment needs''* (69.8%, vs. 89.6%,; P=0.001);*''pharmacists have special expertise in counseling patients on drug treatment''* (59.9%, vs. 86%; P=0.001); *''physicians and pharmacists should be educated to establish collaborative relationships''* (80.7%, vs. 100%; P=0.001), respectively. However, 57.3% of the physicians agreed about *''lack or inadequate of pharmacists' time to provide direct and effective patient care because of medications dispensing duties'',* while 56.8% of the pharmacists disagreed about this barrier (P=0.005). Both professions reported significant, positive attitudes and shared some barriers toward collaborative practices; however, there is a disagreement in some areas in which both professions would like more collaboration for better patient care.

KEYWORDS: Attitudes. Interprofessional collaboration. Iraq. Pharmacists. Physicians.

INTRODUCTION

Collaboration has been highlighted by the World Health Organization (WHO) as a key competency and highly functioning care delivery when different health and social care providers and professions work together to solve patient-related problems and provide safe care services. The pharmacists have been identified on a global scale as essential members of the healthcare team through the declaration of the World Health Professionals' Alliance (WHPA) created by the WHO (Beardsley, Kimberlin, Tindall, 2008). Accordingly, the inter-professional relationship of the healthcare team with diverse skills, resources, and expertise is considered an integral component for the design, implementation and monitoring of a therapeutic plan that could meet the patients' demands, deliver of cost-effective therapy and improve the quality of life (Al-taie *et al*., 2020).

Furthermore, a patient's health issues are typically too complex for one health professional to handle, and therefore, the need for interdisciplinary expertise becomes obvious. The confrontational relationships and procedural obstacles can be replaced with collaborative and trusting relationships when both physicians and pharmacists work on reducing feelings of discomfort about each other's skills, roles, and authority (Mohammed, Al-taie, Albasry, 2020; Isetts *et al*., 2003). This kind of collaborative practice depends upon open interprofessional communication, shared authority, responsibility, and clinical decision-making processes (Kuo *et al*., 2004). Moreover, effective collaboration has been shown to reduce healthcare

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costs, improve patient and practitioner satisfaction and optimize patient-related outcomes (Hirsch *et al*., 2014). Currently, many pharmacists are realizing that they must work more closely with physicians and other healthcare providers through a collaborative approach to effectively contribute to patient care and facilitate the process of pharmaceutical care (Kelly *et al*., 2013).

Meanwhile, the significance of drug-related problems (DRPs) contributes to poor patient-and health-related outcomes and significantly increases the cost of healthcare services (Al-taie *et al*., 2016; Al-taie, Köseoğlu, 2019). However, such problems are now highly identified and avoided due to the active roles of pharmacists in providing proper education about medical conditions, rational use of medications, optimise medication adherence, monitoring drug regimens, adjusting drug therapy and optimising medication therapy (Izzettin *et al*., 2017). Thus, pharmacists have a broad spectrum of clinical responsibilities that ensure the accuracy and appropriateness of medication administration, pharmacotherapy management, provision of proper patient-related care and the promotion of good therapeutic outcomes for patients during the process of pharmaceutical care. Accordingly, these expanding roles make pharmacists among the reliable, trusted, and accessible healthcare providers in the prevention of different diseases and drug-related problems (Mohammed, Al-taie, Albasry, 2020; Al-taie, Köseoğlu, 2018).

Although physicians' beliefs that pharmacists could perform better in clinical roles, the medical profession might work to prevent or retard this, as the clinical decision-making process is a competitive responsibility form of professional protectionism. These physicians' negative attitudes have been among the potential barriers that faced pharmacists in their attempts to expand the scope of pharmacy practice (Gallagher, Gallagher, 2012; Mann, 2018). Understanding attitudes and barriers to collaboration between pharmacists and physicians may further optimize the delivery of health care services. The present study aims to assess and compare the differences in attitudes between physicians and pharmacists towards physician-pharmacist collaboration alongside exploring their perceived barriers to implementing collaborative practices among a sample of physicians and pharmacists in Iraqi healthcare settings.

MATERIAL AND METHODS

Study design and population setting

This was a descriptive, cross-sectional study involving enrolment and collection of a convenient sample of physicians and pharmacists from January to March 2019. The study was carried out in the tertiary hospitals of Baghdad Medical City, which is a complex of several teaching hospitals (5 major hospitals) alongside a certain sector in Baghdad that is characterized as the most populous district including community pharmacies in Baghdad province, Iraq. Around the time of performing the present study, as no up-to-date list of physicians and pharmacies was available, the participants were selected from the aforementioned settings after being given verbal information and an explanation regarding the research purpose. Inclusion criteria included physicians and pharmacists of both genders licensed by the Iraqi Ministry of Health, practicing in Iraqi hospitals or community pharmacies and expressed willingness to take part in this study, while those who declined participation or with uncompleted responses were excluded. All study participants who expressing willingness, agreement and the ability to take part were fully informed about the proposed study and provided with written informed consent. Furthermore, all participants were informed that participation was voluntary, and they were assured of their anonymity and confidentiality of response.

By using Cochran's sample size formula (Cochran, 1977), the sample size of a large population whose degree of variability is unknown and assuming the response distribution to be 50% with the maximum variability and taking 95% confidence level with ±5% precision, the sample size required was 384 participants. A total of 425 participants were approached during this study. However, only 384 participants with an equal proportion

of participating physicians and pharmacists completed the entire items of the questionnaires giving a response rate of 90.4%.

The study was approved by the ethical committee of the Pharmacy Department, Osol Aldeen University College, Baghdad province, Iraq (01. 15.11.2018). All procedures performed in the study involving human participants followed the ethical standards of the institutional research committee and the 1964 Helsinki Declaration and its later amendments (World Medical Association, 2013).

Questionnaire design

As aforementioned, all data was collected in Baghdad province, Iraq. The information was gathered via a structured self-administered questionnaire, which was distributed and filled in by direct interview with the participants. The purpose and procedures of the study were described in an introductory letter included with the questionnaire which took about 15 minutes to complete and was collected back immediately after completion.

The questionnaire consisted of three parts. The first part consisted of four items related to the demographic characteristics of the respondents; the second part consisted of 16 items about the perceptions and attitudes of the physicians and pharmacists towards interprofessional collaboration. The third part consisted of thirteen items aimed at exploring opinions about the potential barriers to physician-pharmacist collaboration.

The assessment of the perceptions of healthcare professionals of the attitudes between physicians and pharmacists towards physician-pharmacist collaboration using the validated Scale of Attitudes Toward Physician-Pharmacist Collaboration (SATP2C) (Hojat *et al*., 2012; Hojat, Gonnella, 2011), This scale is provided in the English language as a single psychometrically sound instrument to measure attitudes toward physician-pharmacist collaborative relationships, which includes 16 items, each answered on a 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree) which was categorized into 2-point classification.

The assessment of potential barriers that would hinder physician-pharmacist collaboration using a questionnaire consisting of 13 items, developed after a thorough and comprehensive literature search in well-known databases, customized to suit the study purpose and was validated and performed by four academicians from the pharmacy and medical background with extensive experience in survey-based research. Furthermore, to address any ambiguity in the questions and to determine whether the data would provide reliable information, a preliminary test was applied on representative a sample for around 5% of the target sample (n= 19) and data collected during this pilot part of the study were excluded from the final data analysis. The respondents were given options to answer either ''Agree'' or ''Disagree''.

Statistical analysis

Data were analysed using The Statistical Package for the Social Science (SPSS) version 23.0 and Microsoft Office Excel 2013. Descriptive analyses were conducted to describe the study population, and the results were expressed in numbers, percentages, means, and standard deviations. The score and the results depend on the 4-point Likert scale rating. However, to ease running the statistical analysis, we categorized the 4-scale into 2-scale. The Chi-square test (Wuensch, 2011) was used to study the comparisons between proportions of the groups. Responses to the SATP2C questionnaire based on Likert scale rating were also presented as percentages, medians and means. P-value was considered significant at <0.05 and highly significant at <0.01.

RESULTS

Table I presents the socio-demographic characteristics of the study participants, the mean age of the participating physicians was 32.2±8.4 years and for the participating pharmacists was 29.3±7.9 years. Almost half of the participating physicians were males (54.7%) and females for the participating pharmacists (57.3%). In regard to the years of experience, the majority of the participating physicians and pharmacists had work experience less than 5 years (43.2%, 56.8%), respectively; whereas 30.2% of the participating physicians had experienced between 5-10 years followed by 26.6% had work experience of more than 10 years. An almost

equal proportion of the participating pharmacists had work experience between 5-10 years and more than 10 years (21.9%, 21.3%) respectively reflecting the junior predominance of the respondents. All of the participating physicians (100%) stated that the hospital is the main practice setting of working in departments of surgery (25%), paediatrics (20.8%) obstetrics and gynaecology (18.2%), internal medicine (17.7%), emergency (11.5%) and urology (6.8%), whereas almost half of the participating pharmacists stated that the community pharmacy is the main practice setting (53.6%), as shown in Table I.

TABLE I - Socio-demographic characteristics of the study participants (N=384)

Variable	Physicians N= 192 n (%)	Pharmacists N=192 n (%)
Gender		
Males	105 (54.7)	82 (42.7)
Females	87 (45.3)	110 (57.3)
Years of Experience		
Less than 5 years	83 (43.2)	109 (56.8)
5-10 years	58 (30.2)	42 (21.9)
More than 10 years	51 (26.6)	41 (21.3)
Practice Settings		
Hospital	192 (100)	89 (46.4)
Community Pharmacy	0 (0)	103 (53.6)
Hospital practice setting		
Surgery	48 (25)	18 (20.2)
Pediatrics	40 (20.8)	14 (15.7)
Obstetrics and	35 (18.2)	12 (13.5)
gynaecology	34 (17.7)	23 (25.8)
Internal medicine	22 (11.5)	10 (11.2)
Emergency	13 (6.8)	12 (13.5)
Urology		

Data presented as number and percentage: n, (%)

Table II presents the responses of the participating physicians and pharmacists to the different items of the SATP2C. The participants reported a significant agreement about the majority of the survey items, reflecting favourable and positive attitudes towards physician-pharmacist collaborative relationships. The present study reported a highly significant agreement for the participating physicians and pharmacists regarding the following items: *''pharmacists are qualified to assess and respond to patients' drug treatment needs''* (69.8%, mean 2.9 vs. 89.6%, mean 3.4; P=0.001), respectively;*''pharmacists have special expertise in counseling patients on drug treatment''* (59.9%, mean 2.8 vs. 86%, mean 3.4; P=0.001); *''physicians and pharmacists should be educated to establish collaborative relationships''*(80.7%, mean 3.3 vs. 100%, mean 3.5; P=0.001); *''physicians should be made aware that pharmacists can help in providing the right drug treatment''*(77.6%, mean 3.1 vs. 88%, mean 3.4; P=0.006), and ''*inter-professional relationships between physicians and pharmacists should be included in their professional education programs''* (77%, mean 3.2 vs. 88%, mean 3.4; P=0.004), respectively. Moreover, both the participating physicians and pharmacists disagreed regarding the item *''the primary function of the pharmacist is to fill the physician's prescription without question'' (*57.8%, mean 2.2 vs. 71.4%, mean 1.9; P=0.005), respectively. Other responses regarding items of the SATP2C are shown in Table II.

TABLE II - SATP2C scale of physicians' and pharmacists' attitudes toward physician-pharmacist collaboration (N=384)

Item	Agree/Strongly Agree		Disagree/Strongly Disagree		Median Mean (SD)		*P-value
	Physicians N=192 n (%)	Pharmacists N=192 n (%)	Physicians N=192 n (%)	Pharmacists N=192 n (%)	Physicians	Pharmacists	
A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior	152 (79.2)	164 (85.4)	40 (20.8)	28 (14.6)	3.0 3.3 (0.6)	3.0 3.2 (0.6)	0.10
Pharmacists are qualified to assess and respond to patients' drug treatment needs	134 (69.8)	172 (89.6)	58 (30.2)	20 (10.4)	3.0 2.9 (0.7)	3.0 3.4 (0.5)	0.001
During their education, pharmacy and medical students should be involved in teamwork in order to understand their respective roles	155 (80.7)	172 (89.6)	37 (19.3)	20 (10.4)	3.0 3.4 (0.6)	4.0 3.6 (0.5)	0.01
Pharmacists can contribute to decisions regarding drug interactions that can affect the patients	153 (79.7)	153 (79.7)	39 (20.3)	39 (20.3)	3.0 3.4 (0.6)	3.0 3.3 (0.7)	1.00
Pharmacists should be accountable (responsible) to patients for the drug therapy they provide	145 (75.5)	164 (85.4)	47 (24.5)	28 (14.6)	3.0 3.2 (0.7)	3.0 3.3 (0.6)	0.01
There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of the patients	146 (76)	156 (81.3)	46 (24)	36 (18.7)	3.0 3.1 (0.6)	3.0 3.2 (0.7)	0.21
Pharmacists have special expertise in counseling patients on drug treatment	115 (59.9)	165 (86)	77 (40.1)	27 (14)	3.0 2.8 (0.8)	3.0 3.4 (0.7)	0.001
Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to the patients	136 (70.8)	152 (79.2)	56 (29.2)	40 (20.8)	3.0 3.0 (0.7)	3.0 3.2 (0.8)	0.06
The primary function of the pharmacist is to fill the physician's prescription without question	81 (42.2)	55 (28.6)	111 (57.8)	137 (71.4)	2.0 2.2 (0.8)	2.0 1.9 (0.7)	0.005
Pharmacists should be involved in making drug policy decisions concerning the hospital/ pharmacy services upon which their work depends	148 (77)	168 (87.5)	44 (23)	24 (12.5)	3.0 3.1 (0.6)	3.0 3.3 (0.6)	0.007
Pharmacists as well as physicians should have responsibility for monitoring the effects of drugs on the patients	144 (75)	145 (75.5)	48 (25)	47 (24.5)	3.0 3.2 (0.8)	3.0 3.1 (0.9)	0.90

TABLE II - SATP2C scale of physicians' and pharmacists' attitudes toward physician-pharmacist collaboration (N=384)

Item	Agree/Strongly Agree		Disagree/Strongly Disagree		Median Mean (SD)		*P-value
	Physicians N=192 n (%)	Pharmacists N=192 n (%)	Physicians N=192 n (%)	Pharmacists N=192 n (%)	Physicians	Pharmacists	
Pharmacists should clarify a physician's order when they feel that it might have detrimental (harmful) effects on the patient	146 (76)	164 (85.4)	46 (24)	28 (14.6)	3.0 3.3 (0.7)	4.0 3.4 (0.7)	0.02
Physicians and pharmacists should be educated to establish collaborative relationships	155 (80.7)	192 (100)	37 (19.3)	0 (0)	3.0 3.3 (0.5)	3.0 3.5 (0.5)	0.001
Physicians should consult pharmacists for help with patients having an adverse reaction or refractory (not responsive) to drug therapy	143 (74.5)	159 (82.8)	49 (25.5)	33 (17.2)	3.0 3.1 (0.7)	3.0 3.3 (0.7)	0.04
Physicians should be made aware that pharmacists can help in providing the right drug treatment	149 (77.6)	169 (88)	43 (22.4)	23 (12)	3.0 3.1 (0.5)	3.0 3.4 (0.5)	0.006
Inter-professional relationships between physicians and pharmacists should be included in their professional education programs	148 (77)	169 (88)	44 (23)	23 (12)	3.0 3.2 (0.6)	4.0 3.4 (0.6)	0.004

Responses based on a 4-point Likert scale: 1= strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree
Data presented as number and percentage: n, (%)
SD: standard deviation; significant at <0.05; highly significant at $P \leq 0.01$
* Comparisons between proportions were analysed using Chi-square test

Table III shows the participating physicians and pharmacists significantly shared some opinions about the barriers to physician-pharmacist collaboration regarding the following items:*'' lack or negative attitudes for inter-professional collaboration''* (58.9% vs. 74%; P=0.001), respectively; *''lack of support from the healthcare administration defining the pharmacist's role in direct patient care role''* (64.1% vs.73.4%; P=0.04); ''*lack or inadequate physicians' trust in the pharmacists' abilities and/or accepting pharmacists' new role''* (56.3% vs. 68.2%; P=0.01); ''*lack or inadequate of physicians' trust in pharmacists' clinical abilities to provide better patient care''* (59.9% vs. 75%; P=0.001), and *''physicians' concern that patient care recommendations by the pharmacist will conflict with their care plan for patients, causing poor or negative patient outcomes''* (55.2% vs. 68.2%; P=0.008), respectively. However, 57.3% of the participating physicians agreed regarding the barrier that mentions *''lack or inadequate of pharmacists' time to provide direct and effective patient care because of medications dispensing duties'',* while 56.8% of the participating pharmacists disagreed about this barrier (P=0.005), as shown in Table III.

TABLE III - Physicians' and pharmacists' perceptions toward barriers to effective physician-pharmacist collaboration (N=384)

Item	Agree		Disagree		*P-value
	Physicians N=192 n (%)	Pharmacists N=192 n (%)	Physicians N=192 n (%)	Pharmacists N=192 n (%)	
Lack or negative attitudes for interprofessional collaboration	113 (58.9)	142 (74)	79 (41.1)	50 (26)	0.001
Lack of time for appropriate inter-professional collaboration as teamwork for sufficient patients' care	107 (55.7)	120 (62.5)	85 (44.3)	72 (37.5)	0.17
Lack or inadequate education and training in communication skills regarding inter-professional collaboration and teamwork for patients' care	129 (67.2)	167 (87)	63 (32.8)	25 (13)	0.11
Lack of support from the healthcare administration defining the pharmacist's role in a direct patient care role	123 (64.1)	141 (73.4)	69 (35.9)	51 (26.6)	0.04
Lack or inadequate access of the pharmacists to get full patient information and other clinical documentationto provide a good collaboration	97 (50.51)	110 (57.3)	95 (49.5)	82 (42.7)	0.18
Lack or inadequate physicians' trust in the pharmacists' abilities and/or accepting pharmacists' new role	108 (56.3)	131 (68.2)	84 (34.7)	61 (31.8)	0.01
Pharmacists being physically separated from patient care areas, which impairs communication with physicians	117 (61)	113 (58.9)	75 (39)	79 (41.1)	0.67
The professional culture and tradition of physicians assuming total responsibility for clinical decision-making regarding patients' treatment and care	124 (64.6)	135 (70.3)	68 (35.4)	57 (29.7)	0.23
Lack or inadequate of physicians' trust in pharmacists' clinical abilities to provide better patient care	115 (59.9)	144 (75)	77 (40.1)	48 (25)	0.001
Lack of systemic approach to clinical problem documentation or inability of pharmacists to effectively document patient care recommendations in the medical record	109 (56.8)	121 (63)	83 (43.2)	71 (37)	0.21
Physicians' concern that patient care recommendations by the pharmacist will conflict with their care plan for patients, causing poor or negative patient outcomes	106 (55.2)	131 (68.2)	86 (44.8)	61 (31.8)	0.008
Lack or inadequate pharmacists' time to provide direct and effective patient care because of medications dispensing duties	110 (57.3)	83 (43.2)	82 (42.7)	109 (56.8)	0.005
Lack of pharmacists' desire or willingness to change from medication dispensing duties to a direct patient care practice	106 (55.2)	94 (49)	86 (44.8)	98 (51)	0.22

Data presented as number and percentage: n, (%); SD: standard deviation; significant at <0.05; highly significant at $P \leq 0.01$;
* Comparisons between proportions were analysed using Chi-square test

DISCUSSION

The findings of the present study showed that both groups of the participating physicians and pharmacists indicated a high level of agreement to collaborate more for optimal physician-pharmacist collaborative practices, and this is in agreement with earlier evidence (Farrell *et al*., 2010). Moreover, the collaborative practices of both professions need a close working relationship between like-minded team members in the setting of hospital wards or physician office practice. This would improve physicians' trust in the pharmacists, help better understand each other's roles and expertise and enhanced clinical support and collegiality, thereby promoting better patient care. On the other hand, this could exceed the physicians' want for more support from pharmacists in areas not only related to the dispensing of medications, but for more counselling, improving medications adherence and pharmacotherapy optimisation (Mekonnen, McLachlan, Joanne, 2016; El-Ibiary, Yam, Lee, 2017; Pottie *et al*., 2008; McGrath *et al*., 2010).

Besides, the results of the present study highlight that the Iraqi physicians had positive attitudes towards the acceptance of pharmacists' clinical roles which might be linked to doctor's experience of interaction with pharmacists. A study found that the majority of physicians were highly valuable in the medication therapy management services offered by pharmacists (Guthrie *et al*., 2017). Meanwhile, to continue building these practices particularly for those with little work experience of less than 5 years, both professions should have interprofessional learning activities and experiences with collaborative practices by gaining teamwork and communication experiences, attending joint education activities and conferences, understanding on the roles, responsibilities and limitations of other health professionals during their undergraduate professional study and training (Pojskic *et al*., 2009; Ernawati, Ping Lee, Hughes, 2015).

On the other hand, identifying the barriers that limit interprofessional collaboration should be a priority concern. The results of this study showed that both professions shared the perceived barriers to interprofessional collaboration. Several factors might be related to the presence of these barriers, such as the majority of the study participants had limited years of experience in collaborative working. Others include unsatisfactory communication and poor interaction between both professions despite being a part of the clinical team due to incomplete recognition of the valuable pharmacist's roles and functions in clinical settings. Furthermore, the physicians' perception of pharmacists' roles is majorly related to technical and logistical issues, such as dispensing prescriptions and not for clinical queries and advanced clinical pharmacy care. These findings are in accordance with previous studies (Guthrie *et al*., 2017; Rosenthal, Austin, Tsuyuki, 2010; Adnan *et al*., 2014; Olsson, Kalvemark Sporrong, 2012; Norwood, Wright, 2016).

Despite physicians' agreement to the concept of pharmacists as medication counsellors, the physicians' professional decisions and actions have assumed responsibility for patient-related outcomes and not favourably involving the pharmacists in expanding into roles traditionally held by physicians in the provision of managing medication therapy, direct patient care and clinical decision-making process. This could make the interprofessional collaboration more complicated as there is a hesitation regarding the pharmacists' independent prescribing and clinical decision-making responsibilities (Adnan *et al*., 2014; Berenguer *et al*., 2004). Earlier studies were in agreement with the findings of our study which reported perception issues regarding the pharmacist's role in direct patient care. These studies found that physicians' perception towards the pharmacist's role was primarily linked to selecting over-the-counter medications, and optimising medication adherence in contrast to the pharmacists' view which is based upon advising physicians about the best medication regimens (Alkhateeb *et al*., 2009; Howard *et al*., 2003).

An important theme that also needs to be adjusted to reduce the barriers for good interprofessional collaboration is that the pharmacists should ensure research on the patient's medication regimen and history to make valuable, brief, reasoning and rationale recommendations (Lauffenburger *et al*., 2012). A lack of complete pharmacist's access to the patient's medical records is considered another potential barrier for

successful interprofessional collaboration and the ability to communicate with physicians through these records.

In the present study, almost half of the participating physicians agreed that the lack of or inadequate pharmacists' time to provide direct and effective patient care because of medications dispensing duties is an additional prohibitive factor to effective inter-professional collaboration which can be fixed by better delineation between the roles of the pharmacists and the pharmacy technicians. This could be considered one of the major problems facing pharmacists due to the lack of a sufficient number of pharmacy technicians in Iraqi hospitals. This is in line with a previous study by Laubscher *et al.* (2009) which found those time constraints limit the extent of effective interprofessional collaboration to provide more patient care. This is also observed in the situation of remuneration which is tied to the dispensing of products, rather than for clinical services rendered since the Iraqi national legislation required pharmacists to both perform their traditional roles of dispensing of medicines, drug information alongside clinical roles that include medication reviews and counselling, observation and prevention of DRPs, therapeutic drug monitoring and formulation of intravenous preparations.

An important consideration which has to be mentioned is that the philosophy and principles of pharmaceutical care have been integrated into the education courses and training programs of under- and post-graduates of all pharmacy faculties in Iraq. Furthermore, at the time of its real implementation into actual practice in the Iraqi hospital settings, this new philosophy has faced many obstacles, including the lack of understanding and appreciation of this kind of pharmacy care practice by other healthcare professionals along with inadequate interprofessional relationships between physicians and pharmacists to accept pharmacists' provision of direct patient care. This poor or lack of inter-professional collaboration among physicians and pharmacists should be a major concern for medical and pharmacy education in Iraq. This might include simulated physician-pharmacist coordination and involvement in two-way interactions; enhance the knowledge, communication skills, attitudes, and behaviours to work collaboratively and avoid any gap between what is being taught and what is practised at the clinical training sites.

To the best of our knowledge, this is the first cross-sectional study conducted to investigate the perceptions and attitudes of interprofessional collaboration and barriers between Iraqi physicians and pharmacists working in different practice settings. Nevertheless, the present study has some limitations that could be taken into consideration in future studies. Firstly, the study was carried out on selected healthcare facilities and community pharmacies and did not include all listed physicians and pharmacists licenced in other parts of Iraq. On the one hand, this might lead to some degree of a recall bias, but on the other hand, interprofessional collaboration could be expected to be relatively similar in public hospitals related to the similar regulations across the country. Secondly, most participants in our study had little work experience less than 5 years. Thirdly, the study did not take into consideration the impact of postgraduate degree and specialized post-registration medical qualification for the participants. Accordingly, the reported views and perceptions of experienced physicians and pharmacists may have been different. Moreover, as the education level increases, such as undergoing fellowship training or pursuing postgraduate degree alongside an area of practice and work experience could, influence the perceptions of the participants toward positive perception of interprofessional collaboration.

CONCLUSION

The study highlights that both the Iraqi physicians and pharmacists reported significant agreement, favourable and positive attitudes toward interprofessional cooperation and sharing some barriers toward collaborative practices. However, there is a disagreement in some areas in which both professions would like more collaboration for better patient care.

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CONFLICT OF INTEREST

The author declare that there is no conflict of interest.

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