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Assessment of the Clinical Pharmacists' Role by Physicians at Baghdad Hospitals

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Abstract

In Iraq, there is a limited research work exploring the clinical pharmacists' role from the point of view of other healthcare professionals. To investigate physicians' assessment of clinical pharmacy services at Baghdad hospitals, and compare junior physicians with senior physicians' point of view.

The study was conducted in twelve governmental hospitals in Baghdad, Iraq. Data was collected from a sample of two hundred physicians, and through a validated, self-administered questionnaire, which comprised twenty statements in addition to a non-personal information form that precedes the questionnaire. Two hundred questionnaires were completely filled. The total average score of the participants' responses was 2.945±0.99, 59% of the participants had an average score ≥3. Junior physicians had more positive responses (average score=3.12±0.422), compared to senior physicians (average score=2.721±0.2662)

The study findings reveal a somewhat positive point of view towards clinical pharmacists' performance in Baghdad hospitals. Physicians are satisfied with clinical pharmacists' recommendations regarding their prescriptions, and their availability for consultation. However, they are dissatisfied with or unaware of the unconventional services that are not directly related to the medical prescription. Junior physicians are more appreciative of the clinical pharmacist's role than senior physicians.

Keywords: Physician, Clinical pharmacist, Baghdad, Assessment, Services.

تقييم الأطبّاء لدور الصّيدلانيّ السّريريّ في مستشفيات بغداد

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الخلاصة

تعتبر الأبحاث الّتي تستكشف دور الصّيادلة السّريريّين في العراق- من وجهة نظر غيرهم من مختصّي الرعاية الصّحية- محدودة. تدارس تقييم الأطبّاء لخدمات الصّيدلة السّريريّة في مستشفيات بغداد، والمقارنة بين وجهة نظر الأطبّاء الأخصائيّين ووجهة نظر الأطبّاء المقيمين والمقيمين الأقدمين. تمّ إجراء الدّراسة في اثني عشر مستشفى حكوميّ في بغداد، العراق، وتمّ جمع البيانات من عيّنة مكوّنة من مئتي طبيب، وعن طريق استبيان مثبت الصّلاحيّة، يشتمل على عشرين عبارة، بالإضافة إلى استمارة معلومات غير شخصيّة تسبق الاستبيان. مئتا استبيان مُلئت بالكامل. معدّل النّقاط الكلّيّ لإجابات المشاركين هو (٢,٩٤٥ ±٠,٩٩), ٥٩% من المشاركين كان معدّل نقاطهم ≤٣. إجابات الأطبّاء المقيمين والمقيمين الأقدمين كانت أكثر إيجابيّة (معدل النّقاط=٣,١٢±٠,٤٢٢) مقارنة بالأطباء الأخصّائيّين (معدّل النّقاط=٢,٧٢١±٠,٢٦٦٢). نتائج الدّراسة تكشف عن وجهة نظر إيجابيّة- إلى حدٍّ ما- لأداء الصّيادلة السّريريّين في مستشفيات بغداد. إجابات الأطبّاء تعبّر عن رضاهم عن توصيات الصّيادلة السّريريّين بخصوص الوصفات الطّبيّة، وتواجدهم المستمرّ من أجل الاستشارة. من جانبٍ آخر، معظمهم غير راضين عن أو غير مدركين لوجود الخدمات غير التّقليديّة الّتي لا تتعلّق بالوصفة الطّبيّة بشكل مباشر. الأطبّاء المقيمون والمقيمون الأقدمون أبدوا تقديرًا أكبر لدور الصّيدلاني السّريريّ، مقارنة بالأطبّاء الأخصائيّين.

كلمات مفتاحيّة: طبيب، صيدلانيّ سريريّ، بغداد، تقييم، خدمات.

Introduction

The concept of clinical pharmacy is based on the evolution of pharmacy practice from a passive role to an active role when it comes to providing patient care, which calls for a stable and effective interaction with other health care providers [(1)]. In Iraq, such interaction has always been hindered by the pharmacists' hesitance to take initiative and other health care members' unwillingness to involve the clinical pharmacist in their medicine related decisions and processes [(2)].

Ideally, the clinical pharmacist's job comprises collaboration with other health care providers, direct interaction with the patient for the assessment and monitoring of drug therapy, making any necessary therapeutic modification to warrant the safe and cost-effective use of medications, make any necessary arrangements with the community pharmacist for a seamless patient care, and being always available for consultation regarding medicine information and patient responses [(3)]. Calculating doses and monitoring medication blood levels are also among the services provided by clinical pharmacists. So the major role of the clinical pharmacists takes place in hospital wards and acute care settings, and the services that they provide tend to be more patient-oriented when compared to the community pharmacists [(4)].

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To be registered as a clinical pharmacist in Iraq, the newly graduated pharmacists must enroll in a one year clinical pharmacy program at a governmental teaching hospital, after which they would be lawfully committed to finish no less than five years of clinical pharmacy practice at a governmental institution [5]. The program is implemented by the Ministry of Health, and it is a quite beneficial way of introducing the clinical pharmacy branch to hospitals in Iraq, and the program was, and still is, fairly successful. However, it has some major drawbacks, it is not a specialized program, the Ministry of Higher Education does not officially recognize it, and its capacity to keep up with the advancements in medicine is questionable. In 2000, the idea for a Board certification program was presented, but due to the subsequent events that ringed the country, and the rejection by the Arabic Board for Medical Specializations, the idea was not implemented until 2011, when a 4-year training program was developed as a division of the Iraqi Board of Medical Specializations, which is recognized by the Iraqi Ministry of Higher Education and Scientific Researches, and was a major step forward towards a better more focused clinical pharmacy services [6].

The purpose of this study is to evaluate the physicians' observation of the clinical pharmacist's role in different hospitals in Baghdad governorate, and assess the difference between junior and senior physicians' point of view.

Subjects and Methods

Study Design

A cross sectional study was conducted in twelve governmental hospitals over a period of about three months from the 21st of September 2019 to the 3rd of January 2020. The option to conduct the study around a specific institution was considered, but then the choice was made to expand the range of research spanning different locations in the city of Baghdad, Iraq. All divisions and wards of the twelve governmental hospitals were included. Hospitals where the research was conducted are: Baghdad Medical City Complex, Al-Yarmouk Teaching Hospital, Al-Karkh General Hospital, Pediatrics' Central Teaching Hospital, Al-Forat General Hospital, Al-Shaikh Zayed Hospital, Ibn Al-Nafees Hospital, Al-Numan General Hospital, Al-Kadhimiya Teaching Hospital, Martyr Al-Sadir General Hospital, Ibn Al-Bitar Hospital, and Al-Karama Teaching Hospital.

Sample selection

Two hundred physicians with different specialties have participated. The heavy schedule of the participants was complied with, avoiding presenting the questionnaire at busy hours, which can lead to rushed responses, and no time to explain the nature of the questionnaire properly. Judging by the sample size, which was decided based on a previous study [7], and the inclusion of different professional classes and specialties, it can be assumed that this sample duly represents the physicians' society in Baghdad hospitals. Participants should meet the following criteria: Ward-based physicians, employed at a governmental hospital with its own pharmacy department, situated in the city of Baghdad, at least one year of experience, and were still employed at the time the study took place.

Questionnaire development

Initially, the questionnaire that was constructed comprised thirty-six statements that described various clinical pharmacy activities based on a number of literature references and journal articles [4,8], but two hospital visits were more than enough to affirm the need for a shorter more focused questionnaire, as most participants were confused and chose to omit some of the unclear and repetitive statements. So, modifications were made, and the resulted questionnaire comprised twenty statements that were variations of the original thirty-six, in addition to new statements catering to physicians, all of which were edited and revised using the broad expertise of five clinical pharmacy doctors and one pharmacology doctor. The questionnaire was written in English, and was subjected to a pilot-scale experiment that was conducted at Baghdad medical city, over the span of three weeks, in order to validate its reliability and internal consistency. Printed questionnaires were given to the participants, to which they responded by choosing the degree of their agreement on a Likert measurement scale (which was used to construct the questionnaire) from 1 to 5, 1 being "Never", and 5 being "Always". Non-personal information form preceded the questionnaire, and included professional title, specialty, years of practice, age, gender, and the name of institution, to ensure the variety in the sample chosen.

Data analysis

For the summarization and analysis of data, Statistical Package for Social Sciences (SPSS) version 23.0 and Microsoft Office Excel 2013 were used. Numeric data were expressed as mean± standard deviation, whereas categorical data were expressed as numbers and percentages. Pearson correlation coefficient (r) was used to compare between test and retest to determine the reliability of the questionnaire, while internal consistency was examined for each group of questions using Cronbach's alpha parameter, the results of which lie between (0-1). Unpaired student t-test was performed for each group pair, and statistical significance was defined as ($p\text{-value} \leq 0.05$). Pearson correlation coefficient (r) was used to determine the type of correlation between two means, if $p\text{-values} \leq 0.05$ the relationship was considered statistically significant.

Administrative and ethical considerations

A research proposal was reviewed and accepted by the clinical pharmacy scientific committee in the College of Pharmacy University of Baghdad, before it was submitted and officially approved. Additionally, the study was approved by the Ministry of Health, and participants' verbal consent was obtained.

Results

Validation of the questionnaire

In order to test the reliability and internal consistencies of the questionnaire, twenty participants (randomly chosen) were recruited for the pilot study. Pearson correlation between the test and retest (three weeks interval) was used to validate the reliability. As shown in table 1, the reliability of the questionnaire is excellent (r = 0.9123). For the validation of the internal consistency, Cronbach's alpha constant was used, and it showed excellent internal consistency for the test (α_1=0.9459), and good internal consistency for the retest (α_2=0.8721). The participants in the validation process were not involved in the rest of study.

Table 1. Validation of the questionnaire

	Cronbach's alpha (α_1) for test	Cronbach's alpha (α_2) for re-test	Pearson correlation(r) between time 1 and 2 scores
Physicians	0.9459	0.8721	0.9123

- Number of participants for test and re-test was = 20

Demographic characteristics of the participants

In total, 200 questionnaires were completely filled (any questionnaire with missing data was omitted). As shown in table 2, the average age of the participants was (30.96±3.79 years), males represent 29% (58) of the participants, while females represent 71% (141) of them. With respect to the professional classification, 84% (169) of the participants were juniors while 16% (31) were seniors. The average duration of experience of the participants was (4.52±2.2 years).

Table 2. Demographic characteristics of the participants

		Physicians N=200
Age (years)		30.96±3.79
Gender	**Male**	58(29%)
	Female	142(71%)
Professional Classification	**Junior**	169(84.5%)
	Senior	31(15.5%)
Duration of Experience(years)		4.52±2.2

- Number of participants = 200

Participants' responses to the questionnaire

The physicians' answers in response to the 20 statements are demonstrated in table (3). Responses with never ranged from 8% (in statement 13) to 40% (in statement 20); responses with rarely ranged from 15% (in statement 12) to 34 % (in statement 20); responses with sometimes ranged from 15% (in statement 7) to 25% (in statement 9); responses with often ranged from 6% (in statement 20) to 37% (in statement 13); and responses with always ranged from 5% (in statement 20) to 24% (in statement 3). The average score for each statement ranged between 2.035 (in statement 20) to 3.445 (in statement 13). These results provide an overall impression of a moderately acceptable response for the role of clinical pharmacists in hospital wards, since responses (sometimes, often and always), when combined, are almost near responses (never and rarely). However, more objective analysis and interpretation will be presented later.

Table 3. Physicians' assessment of clinical pharmacist services

Physicians		Never	Rarely	Sometimes	Often	Always	Average Score
Q1/ The clinical pharmacist provides information concerning essentially similar medications and interchange possibilities to physicians	**N**	20	49	33	51	47	3.28
	%	10%	25%	17%	26%	24%	
Q2/ The clinical pharmacist arranges the interchange of essentially similar medications, with respect to their accessibility, with physicians in the wards	**N**	17	45	41	54	43	3.305
	%	9%	23%	21%	27%	22%	

Table 3. Continued Physicians' assessment of clinical pharmacist services.

Physicians		Never	Rarely	Sometimes	Often	Always	Average Score
Q3/ The clinical pharmacist tour with the physician, on a daily basis, to optimize patient treatment	**N**	29	40	42	41	48	3.195
	%	15%	20%	21%	21%	24%	
Q4/ The clinical pharmacist enquires information on medicines and presents it to physicians	**N**	30	55	36	51	28	2.96
	%	15%	28%	18%	26%	14%	
Q5/ The clinical pharmacist collects and assesses the literature data about medicines and presents his/her statements to the physicians	**N**	32	50	37	51	30	2.985
	%	16%	25%	19%	26%	15%	
Q6/ The clinical pharmacist collects and assesses medication data in order to develop and submit solutions for minimizing medication costs	**N**	43	43	37	50	27	2.875
	%	22%	22%	19%	25%	14%	
Q7/ The clinical pharmacist takes an active part in creating pharmacotherapeutic guidelines	**N**	32	52	30	52	34	3.02
	%	16%	26%	15%	26%	17%	
Q8/ The clinical pharmacist develops and proposes systems for improving the safety of procedures of preparation and administration of medicines	**N**	32	46	40	51	31	3.015
	%	16%	23%	20%	26%	16%	
Q9/ The clinical pharmacist collects and assesses information on the use of medical devices and suggests solutions for minimizing costs of their use	**N**	48	40	50	39	23	2.745
	%	24%	20%	25%	20%	12%	
Q10/ The clinical pharmacist provides medication history and a list of patient's medications at admission	**N**	45	44	42	50	19	2.77
	%	23%	22%	21%	25%	10%	
Q11/ The clinical pharmacist detects medication contraindications, and suggests changes to the physician when necessary	**N**	20	35	33	70	42	3.395
	%	10%	18%	17%	35%	21%	
Q12/ The clinical pharmacist detects drug interactions, and suggests changes to the physician when necessary	**N**	20	29	41	72	38	3.395
	%	10%	15%	21%	36%	19%	
Q13/ The clinical pharmacist reviews the prescribed doses, and suggests dose adjustments in therapy to the physician when required	**N**	15	34	38	73	40	3.445
	%	8%	17%	19%	37%	20%	
Q14/ The clinical pharmacist is always available for consultation about pharmacotherapy	**N**	20	35	43	55	47	3.37
	%	10%	18%	22%	28%	24%	
Q15/ The clinical pharmacist gives advice to the physician about compatibility, stability of parenteral medications	**N**	36	46	43	49	26	2.915
	%	18%	23%	22%	25%	13%	
Q16/ The clinical pharmacist gives advice about the selection of the most appropriate enteral or parenteral nutrition product concerning the patient's condition	**N**	60	48	33	39	20	2.555
	%	30%	24%	17%	20%	10%	
Q17/ The clinical pharmacist performs therapeutic drug monitoring and advises the physician on therapy optimization	**N**	49	44	37	39	31	2.795
	%	25%	22%	19%	20%	16%	

Table 3. Continued physicians' assessment of clinical pharmacist services

Physicians		Never	Rarely	Sometimes	Often	Always	Average Score
Q18/ The clinical pharmacist suggests performing certain laboratory tests that can have an impact on the prescribed medication	**N**	61	51	47	20	21	2.445
	%	31%	26%	24%	10%	11%	
Q19/ The clinical pharmacist takes part in conducting clinical trials for medicines and assesses the results	**N**	57	61	42	24	16	2.405
	%	29%	31%	21%	12%	8%	
Q20/The clinical pharmacist can (has the power to) interchange essentially similar medications without consulting the physician when this is necessary for cost- or accessibility-related reasons concerning the prescribed medicine	**N**	79	67	32	12	10	2.035
	%	40%	34%	16%	6%	5%	

Interpretation of the role of clinical pharmacists

An interpretation of the role of clinical pharmacists, as judged by the physicians, is presented in table 4. Average scores <3 were interpreted as bad, while average scores ≥3 were interpreted as good. 59% of participants had an average score ≥3, while 41% had an average score <3, and the average score of physicians' agreement with the questionnaire items was 2.945±0.99.

Table 4. Interpretation of the role of clinical pharmacists.

Domain	Good Role for Clinical Pharmacist Average score of ≥3 *n* (%)	Bad Role for Clinical Pharmacist Average score of < 3 *n* (%)	Mean score ±SD
Physicians	117.05 (59%)	82.92 (41%)	2.945±0.99

Impact of demographic characteristics on the results

Concerning the professional classification of the participants, and when interpreting the results of the participants as good role if the average score is ≥3, and bad role if the average score is <3, there was no significant difference between the percentage seniors and juniors' responses (*p*-value=0.542). As illustrated in figure (3.1), 53% of senior physicians were appreciative of the clinical pharmacist role in hospital wards (average score ≥3), while 47% were not appreciative of the clinical pharmacist role (average score <3). As for the responses from junior physicians, 59% were appreciative of the clinical pharmacist role, and 41% were not.

On the other hand, the difference between the overall average scores of junior physicians and senior physicians was significance (*p*-value=0.0195). As presented in table 5, juniors had an average score of (3.12±0.422), while seniors had an average score of (2.721±0.2662).

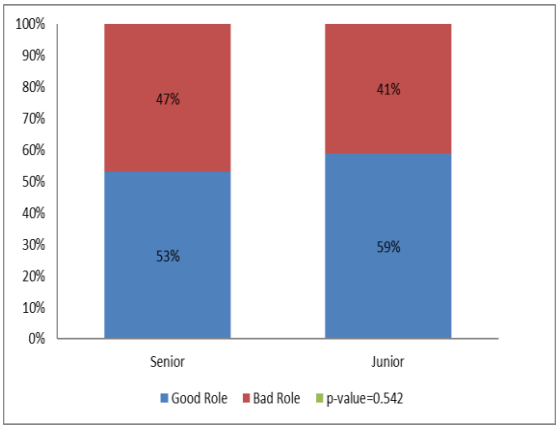

Figure 1. Interpretation of the percentages of physicians' response to the role of clinical pharmacists based on their professional classification.

Table 5. Average scores of participants' responses to the role of clinical pharmacists based on their professional classification.

	Juniors	Seniors	*P*-value
Physicians	3.12±0.422	2.721±0.2662	0.0195

Correlation between the average score of the participants and their demographic characteristics

When testing the relationship between variables, a significant association was found between participants' age and their average score (*p*-value=0.042), with younger participants having a more positive assessment of the clinical pharmacist role. No significant association was found between the average score and the professional classification or the duration of experience (*p*-value=0.914 & 0.227 respectively) as demonstrated in table 6.

Table 6. Correlation between the average score of the participants and their demographic characteristics

Characteristic	Average Physicians Score	
	r	***P***
Age	-0.132	0.042
Professional Classification	-0.0762	0.914
Duration of Experience (years)	-0.086	0.227

Discussion

In today's medical environment in Iraq, the position of clinical pharmacists in the wards can only be defined by the services they provide, which depend on their pharmacotherapeutic knowledge and their capacity to take initiative and communicate with other members of the medical team. A number of studies in the Middle East, including Iraq, have tackled the same topic with varying results, but their main focus was evaluating the expectations and the level of comfort of physicians concerning a recently introduced or soon-to-be introduced clinical pharmacy model, as opposed to evaluating their assessment of the current state of clinical pharmacy in their respective area of study [9–11].

While physicians' responses to the questionnaire give an impression of a moderately acceptable overlook, they also show physicians' dissatisfaction with certain services. The highest average score was for the statement concerned with recommendations for dose adjustments (3.445), which is not surprising because it is among the more conventional pharmacist roles that are directly related to prescriptions. Participants were also fairly satisfied with other conventional prescription-related interventions, including detection of any contraindications and drug-drug interactions.

This goes along with one of the findings of a study conducted in Kuwait where 57.8 % of the physicians agreed that pharmacists routinely provide recommendations about prescription-related problems [10]. While the lowest average score was for the statement that describes the clinical pharmacist as an authoritative figure with the power to switch similar medications without consulting the physician in necessary cases (2.035), which is also not surprising, mainly because of the blame culture that usually holds the physician accountable for any adverse events, and so they tend to be protective of their prescriptions, and it is unlikely for the pharmacist to take such responsibility. This is, to a certain degree, similar to one of the findings of a study conducted in Ljubljana, Slovenia, where most physicians did not expect pharmacists to have the authority to interchange similar medications without consulting them first [12]. Most participants were fairly positive about the clinical pharmacists' participation in the daily medical rounds (average score = 3.195), and even more so about clinical pharmacists' availability for consultation (average score = 3.37), which can imply that, in most cases, shortage of interventions is not necessarily due to lack of interaction, and this is contrary to the results of another study conducted in Baghdad were 91.5% of the participants reported rarely interacting with pharmacists [7]. This is a step forward for an efficient physician-pharmacist relationship as has been demonstrated in a study conducted in Massachusetts, United States, which showed a 66% decline in adverse drug events caused by prescribing errors that was brought about by

pharmacists' participation in the daily medical rounds [13]. Most participants' responses indicated that clinical pharmacists do not often perform services that are not confined within medication consultation in the traditional sense. This is concordant with a study conducted in Irbid, Jordan which concluded that physicians were skeptical about clinical pharmacists performing nontraditional roles [11].

The results showed that junior physicians are more appreciative of the clinical pharmacist role compared to senior physicians. The age of the participants could be a factor in this regard in addition to the professional classification. This underlines the widespread belief that senior physicians do not need or accept pharmacists' interventions and recommendations, and this belief does hold some truth as demonstrated in one of the findings of a study conducted in England, where seniors rejected pharmacists' recommendations that they disapproved, while juniors were more willing to act on pharmacists' advice [14].

Conclusion

The study findings reveal a somewhat positive point of view towards clinical pharmacists' performance in Baghdad hospitals. Physicians are satisfied with clinical pharmacists' recommendations regarding their prescriptions, and their availability for consultation. However, they are dissatisfied with or unaware of the unconventional services that are not directly related to the medical prescription. There is also a considerable difference between junior and senior physicians' point of view, as senior physicians are less appreciative of the clinical pharmacist role, so, strategies should be designed or adopted to close the gap between senior physicians and clinical pharmacists.

Study limitations

Despite the questionnaire's validity, the possibility of social and professional bias is still considerable. Some participants had limited English skills, and even though all their inquiries were fully explained, it cannot be asserted that they understood all the statements. Some participants did not seem to recognize pharmacists who went through the clinical pharmacy program or those who held a board certificate, additionally, not all wards had a clinical pharmacist, and so, some of the participants' responses reflect the performance of any pharmacist based in their respective wards.

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