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# PERCEPTIONS, EXPERIENCES, AND EXPECTATIONS OF HOSPITAL PHYSICIANS REGARDING PHARMACISTS' PROFESSIONAL DUTIES IN YEMEN

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# ABSTRACT

This study aimed to assess physicians' expectations, perceptions, and experiences with pharmacists in two hospitals in Yemen and to clarify the intensity of interaction between physicians and pharmacists in a hospital setting. A cross-sectional survey study was performed among Yemeni physicians who are working in two tertiary hospitals in Sana'a, Yemen. This study was conducted between the 10thof November 2018 and the 20th of April 2019 using a self-administered validated questionnaire. The questionnaire comprised of four parts evaluating physicians' expectations, perceptions, and experiences with pharmacists.

Completed questionnaires were received from 83 (37.7%) of 220 physicians. 41.0% of the physicians never or rarely had interacted with the pharmacists regarding patients' medication. Most of the respondents showed positive perceptions regarding the role of pharmacists in providing different pharmaceutical care services. However, nearly half (47.0%) of physicians twere not comfortable with pharmacists proposing to patients the use of prescription medications. The majority of physicians (73.5%) expected the pharmacist or educate their patients about the proper and safe the way of using their medication. Experiences of participants with pharmacists were less favorable; while 54.2% of the participants agreed that pharmacists are routinely a trustworthy resource of drug information, 37.3% disagreed that pharmacists revealed that physicians in Yemen were more acceptable with pharmacist activities linked to traditional pharmacy services than newer clinical services. Increase awareness of physicians about the positive effect of interprofessional collaboration with pharmacists is strongly needed.

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#### Introduction

Problems associated with drug treatment like adverse drug reactions (ADRs), medication errors, and adverse drug events (ADEs) are common [1, 2]. ADEs may result in drug-related mortality and morbidity [3]. There is evidence that the provision of clinical pharmacy can play a crucial role in the reduction in ADEs [4, 5], lengths of stay, readmissions to hospital and it results in positive effects on medication use, health service use, and costs [6-9]. Throughout the years, in Europe and the US, after the successful introduction of clinical pharmacy services and concepts, the rest of the world has followed suit in transforming pharmaceutical services [10-12].

Clinical pharmacy is quietly a new conception in Yemen. Recently, some public and private universities have started the PharmD program intending to promote clinical pharmacy services extension. However, the Bachelor of Pharmacy program which is drug-oriented is still the most popular program in Yemen. Generally, in practice, the Yemeni pharmacist's role is limited to preparing formulations, dispensing medications, and doing administrative tasks such as ordering medications from the medical stores. Unfortunately, clinical pharmacy activities, are limited and only based on individual pharmacists'

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initiatives. Only some Yemeni pharmacists who have a passion for clinical services participate in patients' care and the majority of them do not participate.

Physicians and pharmacists are being progressively encouraged to implement a collaborative method to delivery of health services and the patient care. Strong collaboration between pharmacists and physicians optimizes patient outcomes [13-17]. Worldwide, many pharmacists are involved in clinical pharmacy services in hospital wards, and in many places, pharmacists have become integral members of the health care team [6, 18, 19]. However, pharmacists in Yemen are not automatically included in the multidisciplinary patient circle of care yet. The authors assumed that one reason for this could be that physicians in Yemen have little knowledge of pharmacists' involvement in direct patient care. This assumption may be evidenced by the fact that pharmacists in Yemen had limited expertise, training, and exposure to clinical pharmacy [20]. Furthermore, the professional duties of clinical pharmacists in the Yemen health care system are not supported by the Ministry of Health. However, it worth mentioning that a certain number of the private hospitals have established a job description of the clinical pharmacy and thus have allowed some clinical pharmacist to practice their work under the hospital's full responsibility. Therefore, it is essential to understand the physicians' perceptions regarding their present experience with pharmacists' expectations and services.

To the best of our knowledge, this is the first study that provides new insights into the physician pharmacist relationship in Yemen. Hence, one aim of this study was to evaluate whether there is resistance from physicians to expand in pharmacists' role and to explore the relationship between physicians and pharmacists, including physicians' expectations, perceptions, and their actual experiences with pharmacists at hospital settings in Yemen. This study will help set up baseline data that would be updated on a regular basis in the future to see the impact of the newly established PharmD degrees and clinical pharmacy on physicians' perceptions, experiences, and expectations of pharmacists.

# **Materials and Methods**

#### Study Design, Settings, and Subjects

A cross-sectional study was done between the 10<sup>th</sup> of November 2018 and the20<sup>th</sup> of April 2019 at the University of Science and Technology Hospital (USTH) andTypical Police Hospital (TPH),which are located in Sana'a, the capital city of Yemen USTH is a tertiary teaching hospital and it is one of the largest private hospitals inSana'a, Yemen with a capacity of 190 beds and around 150 physicians, whereas TPH is a government hospital in Sana'a with a capacity of 120 beds and about 80 physicians serve in these hospitals.

Two hundred and twenty specialist physicians and residents were included in thestudy using a convenience sampling technique. Each specialist physician and residents were asked to fill a self-administered validated structured questionnaire. The questionnaires were distributed on different working days of the week to the available physicians on those days.

The questionnaire was adapted from a questionnaire distributed to physicians in Jordan [21] in a study conducted in 2009 with some modification to apply to Yemen.

The questionnaire has 5 sections on personal information, physician's perception, expectations, and experience with pharmacists. The first part includes physician's demographic data: age, gender, site of work, current position, and current area of practice. The second part address the frequency and reasons for interactions between physicians and pharmacists. The third part investigates physicians' degree of comfort with pharmacists providing different pharmaceuticalcare services. In the next part, eight questions were used to assesses physicians' expectations toward pharmacists' professional roles. The last part assesses Physicians' experience with pharmacists.

#### Ethical Consideration

This study was approved by the Ethics Committee/Scientific Research Center of Yemen University (Reference number: ERC/2018/122), Yemen. Participation of physicians was voluntary with a high level of confidentiality and anonymity, so only verbal informed consent was obtained before the interview.

# Statistical Analysis

Data were analyzed using SPSS v.24 (IBM Co., Armonk, NY, USA). Descriptive statistics were used to analyze the categorical variables using percentages and frequencies.

# **Results and Discussion**

220 specialist physicians and residents were invited to participate in this study, 83 of them completed the questionnaire giving a response rate of 37.7%. Details of the physicians' personal information are given in **Table 1**. The physicians' sample was from both genders with male predominance (73.5%). The majority of physicians obtained their medical degrees from local universities (89.2%). Around one-quarter of the study sample were junior residents (first-year or second-year residents; 25.3%).

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Table 1. Socio-demographic characteristics of the respondents	
The Variable	n (%)
Age ≤35 yr	45 (54.2%)
36-46 yr	34 (41.0%)
≥ 47 yr	4 (4.8%)
Gender	
Male	61 (73.5%)
Female	22 (26.5%)
Place of work	
University of Science and TechnologyHospital	43 (51.8%)
Typical Police Hospital	40 (48.2%)
Country where the medical qualification was obtained Yemen	74 (89.2%)
Others	9 (10.8%)
Current position	
Trainee (the first year of training after graduation)	18(21.7%)
Junior (first and second-year resident)	21 (25.3%)
Senior (third and fourth-year resident)	19 (22.9%)
Fellows	7 (8.4%)
Consultant	18 (21.7%)
Current area of practice Internal Medicine	26 (31 3%)
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	1 (1.2%)
Surgery	34 (41.0%)
Obstetric & Gynecology	1 (1.2%)
Ear, nose, throat	1 (1.2%)
Dermatology	1(1.2%)
Emergency	8 (9.6%)
Neurology	1 (1.2%)
Anesthesiology	2 (2.4%)
Orthopedics	1 (1.2%)
ICU	5 (6.0%)
Urology	2 (2.4%)

Among the respondents, (41.0%) of the physicians stated that they rarely or never interacted with the pharmacists, and (31.3%) had daily interaction experience with pharmacists. The physicians who had interaction with the pharmacists declared that their interaction was related to queries about drug availability (42.6\%), medicine substitution (27.9%), drug interactions (11.8%), and side effects (8.4%) as listed in **Table 2**.

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Frequency of interactions	n (%)
Never/rarely	34 (41.0%)
Once a week	23 (27.7%)
Once a day/more	26 (31.3%)
Reasons for interactions (morethan 1 choice can be checked)	
Drug-availability queries	61 (42.6%)
Side-effects queries	12 (8.4%)
Drug-alternative queries	40 (27.9%)
Drug-dosage queries	7 (4.8%)
Drug-interaction queries	17 (11.8%)

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Price	6 (4.2%)

The comfort level of physicians with pharmacists carrying out different pharmaceutical care duties is shown in **Table 3**. The study disclosed that more than one-third of physicians were comfortable with the pharmacist, suggesting the use of nonprescription medications, eg, paracetamol, and providing patient education. However, nearly half (47.0%) of physicians were not comfortable with pharmacists, recommended the use of prescription medications to patients, such as, antibiotics.

Table 3. The degree of cor	mfort of physicians w	ith pharmacists who	o provide various	pharmaceutical care services
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Pharmacists' Duty	Comfortable, n (%)	Moderately comfortable, n (%)	Uncomfortable, n (%)
Providing patient education	30 (36.1%)	41 (49.4%)	12 (14.5%)
Suggesting use of non-prescription medications, e.g. paracetamol	35 (42.2%)	24 (28.9%)	24 (28.9 %)
Detecting and preventing prescription errors	30 (36.1%)	35 (42.2%)	18 (21.7%)
Treating minor illnesses, e.g., headaches	30 (36.1%)	30 (36.1%)	23 (27.7%)
Suggesting use of prescription medications to physicians	24 (28.9%)	35 (42.2%)	24 (28.9%)
Designing and monitoring pharmacotherapeutic regimes	12 (14.5%)	38 (45.8%)	33 (39.8%)
Suggesting for patients to use prescription drugs, e.g., antibiotics	18 (21.7%)	26 (31.3%)	39 (47.0%)

When the physicians were asked about their expectations towards the role of pharmacists, around three-fourths (73.5%) of them expected pharmacists to educate patients about the proper and safe use of their medications. Also, (63.9%) of physicians expected pharmacists to be knowledgeable drug-therapy experts (**Table 4**). Nevertheless, (31.3%) of physicians did not expect pharmacists to take personal responsibility to solve any drug-related problems they discover relating to patients.

Physicians' expectations	Agree, n (%)	Neutral, n (%)	Disagree, n (%)
I expect pharmacists to educate my patients about the proper and safe use of their medication	61 (73.5%)	13 (15.7%)	9 (10.8%)
I expect pharmacists to be knowledgeable drug-therapy experts	53 (63.9%)	23 (27.7%)	7 (8.4%)
I expect pharmacists to be available to me for consultation when I see patients (eg, during rounds)	44 (53.0%)	23 (27.7%)	16 (19.3%)
I expect pharmacists to know specific indication of each medication I prescribe, even if drugs contain more than one recognized or approved indications	38 (45.8%)	25 (30.1%)	20 (24.1%)
I expect pharmacists to monitor my patients' response to drug therapy and let me know if a patient encounters any drug-related problem	28 (33.7%)	36 (43.4%)	19 (22.9%)
I expect pharmacists to assist me in designing drug-therapy treatment plans for my patients	32 (38.6%)	30 (36.1%)	21 (25.3%)
I expect pharmacists to assist my patients in selecting appropriate nonprescription medications	31 (37.3%)	28 (33.7%)	24 (28.9%)
I expect pharmacists to take personal responsibility to resolve any drug-related problems they discover involving patients	33 (39.8%)	24 (28.9%)	26 (31.3%)

Table 4. Expectations of physicians towards the roles of pharmacists

Concerning the actual experience of physicians with pharmacists, the findings of this study revealed that the physicians agreed the most (54.2%) with pharmacists being a reliable source of general drug information. Furthermore, just about half of the physicians (42.2%) agreed when they were asked about whether pharmacists usually inform them of more cost-effective options. Nevertheless, (38.6%) of physicians disagreed that pharmacists regularly informed them that their patients had experienced problems with their medications (**Table 5**).

Table 5. The actual experience of physicians with pharmacists			
Physicians' experiences	Agree, n (%)	Neutral, n (%)	Disagree, n (%)
In my experience, pharmacists are a trustworthy source of general medicine information (e.g., specific facts about drugs which can be found in standard references)	45 (54.2%)	29 (34.9%)	9 (10.8%)

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Pharmacists routinely advise my patients as to the safe and appropriate use of their medications	34 (41.0%)	32 (38.6%)	17 (20.5%)
In my experience, pharmacists are a reliable source of clinical drug information (ie, information regarding the clinical use of drugs in specific situations)	28 (33.7%)	40 (48.2%)	15 (18.1%)
Pharmacists routinely inform me about more cost-effectivealternatives	35 (42.2%)	25 (30.1%)	23 (27.7%)
Pharmacists frequently ask me to clarify for them the drug-therapy objectives I have in mind for my patients	24 (28.9%)	32 (38.6%)	27 (32.5%)
Pharmacists routinely inform me if they discover clinical problems with my prescriptions	29 (34.9%)	25 (30.1%)	29 (34.9%)
In my experience, pharmacists appear willing to take personal responsibility for managing any drug-related problems they discover	18 (21.7%)	34 (41.0%)	31 (37.3%)
Pharmacists often inform me that my patients have experienced some problems with their drugs	21 (25.3%)	30 (36.1%)	32 (38.6%)

This study was conducted to evaluate the relationship between physicians and pharmacists, including expectations, perceptions, and actual experiences of physicians with pharmacists in hospitals in Yemen. Our findings suggest that physician perceptions regarding the role of pharmacists in providing different pharmaceutical care services were generally positive. In addition, although physicians had little experience about certain activities of pharmacists, pharmacists were seen by physicians as drug experts.

The respondents were most comfortable for pharmacists to provide activities that are considered established pharmacy roles, such as providing patient education, suggesting the use of non-prescription medications, and detecting and preventing prescription errors. These results support prior reports in the MENA region [17, 21-24] and worldwide [25-27]. On the contrary, the majority of physicians appeared uncomfortable with pharmacists making independent decisions about drug therapy, such as suggesting the use of certain prescription medications to patients. These findings are in line with the results of previous studies, which disclosed that physicians are more cautious to accept pharmacists' roles, which include any aspects of prescribing [25, 28, 29]. Such discomfort may be due to many reasons, one of which is, possibly, understandable since physicians may feel that this would be an incursion into their own authority and may damage the doctor-patient relationship if the pharmacist's recommendation differed from their own.

In terms of physicians' expectations, this study reported that physicians showed to have high expectation from pharmacists in hospitals setting, with more than half of them regarding pharmacists as knowledgeable drug-therapy experts who can educate patients to use the medications safely and appropriately. Furthermore, physicians were likely to expect pharmacists to be available for consultation when they see patients. This is encouraging as it shows a willingness to include pharmacists in patient-centered care. This finding is similar to several prior studies on this issue [21, 23, 30].

However, contrary to some studies [24, 31], around a third of the participants disagreed that they expect pharmacists to take personal responsibility to solve any drug-related problems they discover involving patients. A possible explanation for this might be due to that more than one-third of sampled physicians declared that they never or rarely interact with pharmacists. This lack of interaction between physicians and pharmacists is thought to make physicians cautious to accept more clinical duties for pharmacists [32]. There is a need for Yemeni pharmacists to work more closely with physicians, thus providing the physicians with the opportunity to recognize pharmacists performing clinical responsibility leading to building the physicians' recognition and confidence in the pharmacists.

Physicians have agreed in their experience that pharmacists were a trustworthy source of general drug information and that pharmacists routinely informed them about more cost-effective alternatives to drugs they prescribed. This reflects physicians' expectations about pharmacists being knowledgeable drug therapy experts. However, some physicians agreed that pharmacists are a trustworthy source of general as opposed to clinical drug information, suggesting that pharmacists are less able to provide information relatable to patients' clinical needs. Furthermore, physicians' experience of pharmacists showed less favorable, being neutral or disagreed about other domains; for example, monitoring patients and informing physicians when patients experience side effects from medication (38.6% disagreed) and taking responsibility for any drug-related problems they discovered (37.3% disagreed). These results were generally in line with other investigations that studied this issue [21, 24, 31]. The probable explanation of these low experiences could include that the majority of pharmacists lack confidence in participating in clinical decision making. This can be owing to deficiencies in the clinical content of the pharmacy curriculum. In addition, the lack of sufficient pharmacist's clinical training could be an additional reason.

In general, despite the fact that physicians had little experience with definite activities of pharmacists, the results concerning the physicians' expectations on new roles of pharmacists were promising. Therefore, Yemeni pharmacists need to be proactive in offering new clinical pharmacy services beyond traditional boundaries by building trust and collaborative relationships with physicians.

It is worth mentioning here that the limitations of the study were the response rate was fairly low (37.7%), which may have introduced bias. Moreover, the results of this study cannot be generalized to all physicians, since the sample was limited to

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physicians in hospitals; views may be different among physicians in primary care settings. A large study is recommended to extrapolate and generalize the results.

# Conclusion

This study demonstrated that physicians are more comfortable with pharmacist activities closely linked to traditional pharmacy services than newer clinical services for hospital-based pharmacists in Yemen. Physicians considered pharmacists reliable pharmacologists, but regarded them as not frequently providing a wide range of higher-level pharmacy services. Subsequently, we recommended that pharmacists should work together with physicians more positively and more frequently. This will promote the improved understanding of pharmacists' roles by physicians, and expand the role of hospital-based pharmacists in future patient therapy management. It is also essential to include direct patient care during clinical rotations with physicians in the pharmacy educational program.

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Conflict of interest: None

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Ethics statement: This study was approved by the Ethics Committee/Scientific Research Center of Yemen University (Reference number: ERC/2018/122), Yemen.

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