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Research Paper

A pilot study to assess the need for new hospital pharmaceutical services in Algerian patients and physicians' perspective

Mustapha Chelghoum[1,*], Walid Khitri[2], Feriel Kadouri[1] and Khedra Chaouche[1]

[1]Faculty of Medicine of Sidi Bel Abbes, University of Djillali Liabes, Sidi Bel Abbes, Algeria
[2]Faculty of Medicine, University of Oran 1, Oran, Algeria

*Correspondence: M. Chelghoum, Faculté de médecine, Université Djillali Liabes de Sidi Bel Abbes, Boulevard colonel Othmane, 22000 Sidi Bel Abbes, Algeria. Tel: (+213)659683600; Fax: (+213)48681867; Email: muschelghoum@gmail.com; mustapha.chelghoum@univ-sba.dz

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Abstract

Objectives The objective of this study was to assess the needs for pharmaceutical services from the perspectives of physicians and patients in the hospital setting and to contribute to the implementation of new hospital pharmacy activities.

Methods A cross-sectional descriptive study was carried out among the doctors and patients encountered in hospital departments in Sidi Bel Abbès (Algeria); each service was evaluated using a Likert scale. Associated characteristics with an important need were evaluated by univariate analysis and binary logistic regression.

Key findings All pharmaceutical services were important to the patients, particularly providing treatment advice and therapeutic education. Women presented an important need for insurance of the availability of pharmaceutical products (P = 0.02) and lifestyle and dietetic information (P = 0.05). High frequency of taking medication was associated with an important need for information about drug interactions (P = 0.005). Patient-oriented pharmaceutical services were not important to the physicians who considered drug information and therapeutic education to be the most important need.

Conclusions To implement patient-centred services, it is important to improve the contact between pharmacists and physicians and to provide information about pharmaceutical services that can benefit patients. Implementation of new practices in university hospital is more feasible than in public health facilities.

Keywords: pharmaceutical services; hospital pharmacy; needs assessment

Introduction

Over the last decade, new paradigms have characterized health systems around the world, influenced by innovation and financial crises. Each health profession has been affected and has adapted to maintain its place in the healthcare chain. Hospital pharmacy is an essential part of the health system. The most serious pathologies are treated in the hospital setting where the entire drug circuit must be secured. The principal function of the hospital pharmacy provided for by the Algerian law is to regulate the stocks of pharmaceutical products; to carry out the manufacture of hospital preparations in compliance with good manufacturing practices; and to decide on the nomenclature of medicines in collaboration

with doctors.[1] The focus of these missions is primarily on pharmaceuticals. This model implies that the pharmacist performs the function of managing and supplying pharmaceutical products, which is a very imposing activity, especially when the number of pharmacists is small. It was the most frequently reported practice model in many of the nations in 2005.[2] Since then, the environment of hospital pharmacy has changed. According to a report on the demographic and health situation (2000–2014) made public by the Algerian Ministry of Health, the number of hospital pharmacists has increased.[3] However, with the advent of specific therapeutics (outpatient dispensing, oral drugs for specific therapies, biotherapy and with a high financial impact), the pharmacist has been in regular contact with patients and their physicians. These changes in the hospital pharmacy environment have enhanced the professional qualities of pharmacists in all their dimensions: scientists, experts in drugs and medical devices, major players in public health and also managers and quality assurance referents.[4] As a result, the profession of hospital pharmacists has evolved by developing new patient-centred pharmaceutical activities. These include individual daily dispensing, medication reconciliation, pharmaceutical validation of prescriptions, adjustment of drug therapy, patient counselling and therapeutic education, pharmacovigilance, ambulatory dispensing, clinical trials and evaluation of professional practices.[5]

Several studies have demonstrated the value of the new pharmaceutical services to patient management.[6–8] However, as the profession attempts to expand its clinical role, the pharmacist must ensure public acceptance. A better understanding of the needs and expectations of users is an influential factor in implementing those new pharmacy services. Information about consumers' use of pharmacy services and their opinions can help pharmacists address unmet needs, improve services and increase client satisfaction. Several studies have assessed the need for pharmacy services, particularly for community pharmacies.[9, 10] Others have assessed the need for a particular service like for travellers[11] or seniors.[12] In the hospital setting, some studies have been conducted to evaluate the implementation of clinical pharmacy in some medical services, and a qualitative study in Sweden evaluated physicians' perceptions of clinical pharmacy services without assessing their needs.[13] Baseline surveys, administered to physicians, nurses and administrators, were used in the implementation models of pharmacy services.[14]

In Algeria, education institutions and professional organizations have developed initiatives aimed to implement new hospital pharmacy services, but the lack of regulations organizing these services has made these initiatives sporadic and dependent on individuals. In 2018, postgraduate education in clinical and hospital pharmacy was created. The new graduates in clinical and hospital pharmacy will be affected to hospital wards before the implementation of patient-centred services. There is a lack of current knowledge about how physicians and patients perceive these activities. Despite some clinical pharmacy studies that have assessed clinical pharmacy activity and need in hospital medical wards,[7, 15, 16] there is no information at the present state of our knowledge, which has focussed on assessing the need for pharmaceutical services in the hospital setting. The objective of this study was to evaluate the importance of the need for pharmaceutical services from the perspective of patients and physicians in the hospital setting and from the perspective of developing educational programs and providing evidence to regulators on the need for these services and their contribution to patient care.

Materials and Methods

Type of study

This was a cross-sectional descriptive study carried out in the health facilities of the Wilaya of Sidi Bel Abbès (Algeria) during the period from 28 February 2020 to 28 April 2020.

Population

Physicians were recruited during different visits to the hospital wards. During the period study, any patient registered as an entrant by the entrance office and presenting the inclusion criteria were included in the study. Patients included were met in the entrance office of all health facilities of the Wilaya of Sidi Bel Abbès, namely the University hospital centre (Centre Hospitalier Universitaire [CHU], an academic general hospital of 700 beds), the Anti-Cancer Centre (Centre AntiCancer [CAC], an academic establishment specialized in cancer cares with 200 beds), the hospital establishment specialized in psychiatry (Etablissement Hospitalier Spécialisé en Psychiatrie [EHS Psy]), the hospital establishment specialized in genecology and obstetrics (Etablissement Hospitalier Spécialisé en Gynécologie [EHS Gyn]), the public hospital (Etablissement Public Hospitalier [EPH], a general hospital with 200 beds) and the community healthcare facility (Etablissement Public de Santé de Proximité [EPSP]), according to the following criteria:

Inclusion criteria for the physician population

- Holder of a medical doctor's degree.
- Works in public health institutions in the Wilaya of Sidi Bel Abbès.

Non-inclusion criteria for the physician population

- Medical students

Inclusion criteria for the patient population

- Suffering from an illness.
- Registered as an entrant in any hospital ward.

Non-inclusion criteria

- Visitors

Questionnaire

The questionnaires were developed in two stages. First, a bibliographical review[5, 17] allowed the definition of the different pharmaceutical services of the hospital pharmacist, which were put into item form. For instance, counselling and therapeutic education, lifestyle advice and dietetics, availability and good management conditions. Then a pre-survey was carried out to evaluate the degree of understanding of the items by the participants. The items were modified to establish two questionnaires: one for patients whose activities are related to the needs of patients and the other one for physicians whose activities are related to the needs of physicians. The patient's questionnaire consisted of two parts: demographic details about the participant and the participant's opinion about the importance of pharmacy practice. The physician's questionnaire was divided into three parts: demographic details about the physician, his opinion about the importance of pharmacy services and his opinion of which activity must be implemented first. The responses were scaled by

a Likert scale from 'not at all important' to 'very important' and scored from one to five, respectively. The approach used was direct interviews with physicians and patients, in local languages – Arabic and French. They were given brief oral information to explain the terms of the questionnaire. The ethics committee of the university hospital of Sidi Bel Abbès validated the questionnaire and gave its ethics approval (N°15/Ceth/CHUSBA/2020). Patients and physicians were informed about the objective of the study. They gave their consent to participate voluntarily in the survey. All necessary authorizations were obtained before conducting the investigation.

Statistical analyses

SPSS version 17 software was used for reporting and data processing.

To evaluate the importance of the need for pharmaceutical services, we used two methods. Firstly, the mean score of the Likert items was calculated, a service with a mean of more than 4 was considered important. Secondly, after forming groups with binary modality, 'important' for the answers, 'important and very important' and 'not important' service for the answers 'neutral, not important and not at all important', the frequency of the 'important' modality was used in the assessment. Services were ranked according to their importance.

To assess the association between the characteristics of our populations and the perception of an important need for pharmaceutical services, a univariate analysis was carried out first. The chi-square test was used for groups with the binary modality 'important, not important' and the Student's *t*-test to compare the means of the Likert scores. *P*-value was calculated with a risk of error at 5%.

To account for confounding factors and to identify the independent variables significantly associated with the dependent variable (importance of pharmacy practice), a binary logistic regression was performed. The strengths of associations were determined by odds ratios (ORs) with their 95% confidence intervals (CIs). Modelling was carried out with variables whose significance thresholds were $P < 0.26$ in univariate analysis.

Results

Patients' perception of the importance of pharmaceutical services

Ninety-nine patients responded to the questionnaire; the mean age was 40.22 ± 19.31 years old; the sex ratio was 0.16. More than 77% of the patients had an academic level above the medium academic level. About 70% of the patients had chronic conditions, and 70% were under treatment at the time of the survey. More than 57% of the sampling patients consulted a physician several times a year. The characteristics of the patient's population are presented in Table 1. Regarding the patients' opinion on consulting physicians, 39.4% indicated that the physician did not provide them with complete information on the management of their health condition. They felt that the time given to them by their doctor was insufficient. The additional information that patients found insufficient concerned the diagnosis with 35.6% of patients and information on lifestyle with 25.4%. Only 11.9% were looked for additional information on treatment. Patients who already have received advice from a pharmacist represented 66.7%, where 76.5% of which was about treatment and less than 12% of the advice was on pathology.

Pharmacy services presented to patients were ranked from 'not at all important' to 'very important': services that had responses from 'not at all important' to 'medium' were considered not important; services that had responses from 'important' to 'very important' were considered important. Insurance of the availability and good management of medications was important for 75.5% of the patients. Providing treatment counselling and therapeutic education was important for more than 83% of patients. About 80% of patients considered information on adverse drug reactions to be important. More than 81% of patients felt that providing a link between the patient and their doctor is an important service. More than 30% of patients did not see generic drug information as important. Patients who rated as important the services of lifestyle counselling and drug interaction counselling accounted for 76% and 81%, respectively (Table 2). Counselling and therapeutic education, information on drug interactions and management of adverse events were, therefore, important for more than 80% of the participating patients. Ranking the importance of services in order of the mean of Likert scores, counselling and therapeutic education was first with an average of 4.4, followed by information on drug interactions and drug availability with 4.26 and 4.24, respectively. Counselling and therapeutic education, information on drug interactions and pharmaceutical management were the most important needs with a score above the average (>4.15).

Table 1 Characteristics of the patient population

Characteristics of the patient population		*N*	%
Age	0–14	5	5.1
	5–24	18	18.2
	25–64	59	59.6
	65+	17	17.2
Gender	Female	85	85.9
	Male	14	14.1
Academic level	Illiterate	14	14.1
	Primary	8	8.1
	Secondary	35	35.4
	Academic	42	42.4
Chronicity of the pathology	Acute	30	30.3
	Chronicle	69	69.7
Taking a treatment	No	30	30.3
	Yes	69	69.7
Frequency of consultation	Not reported	3	3.0
	1/Year	33	33.3
	1/Month	6	6.1
	Several times/year	51	51.5
	Several times/month	6	6.1
Frequency of taking a treatment	1/day	15	22.7
	2/day	27	39.1
	Less than 1/day	9	13.0
	More than 3/day	18	26.1

Table 2 Importance of pharmacy services according to patients

Pharmacy practice	*N* (%)[1]	Importance[2]	SD[3]
Counselling and therapeutic education	83 (83.8)	4.40	0.91
Information on drug interactions	78 (81.3)	4.26	0.99
Availability and good management conditions	74 (75.5)	4.24	0.94
The link between doctor and patient	81 (81.8)	4.10	1.08
Management of undesirable effects	79 (79.8)	4.08	1.08
Healthy lifestyle and dietetics	73 (76.8)	4.08	1.29
Advice on generic medicines	65 (69.9)	3.89	1.27

[1]Important need.
[2]Mean score Likert scale.
[3]Standard deviation.

Table 3 Factors associated with a perception of an important need for pharmacy services by patients

		Counselling and therapeutic education	Lifestyle advice and dietetics	Availability and good management conditions	Information on drug interactions	Management of adverse reactions	Link with the doctor
Gender	Female	4.5 (86)	4.21 (76.5)	4.36 (79)	–	–	–
	Male	3.79 (64)	3.38 (57.1)	3.57 (50)	–	–	
	P-value	0.006	0.05	0.003	–	–	
Frequency of taking a treatment	Once a day or less	4.47 (77.8)	4.31 (79.6)	–	3.98 (67)	–	
	More than once a day	4.37 (88.9)	3.82 (66.7)	–	4.58 (93)	–	
	P-value	0.04	0.05	–	0.005	–	
Do you think that the time the doctor gives you is sufficient?	Yes	4.24 (72)	–	–	4.39 (67)	–	
	No	4.50 (90)	–	–	4.18 (87)	–	
	P-value	0.02	–	–	0.01	–	
Taking a medication	No	4.14 (70)	–	–	–	3.79 (67)	
	Yes	4.51 (88)	–	–	–	4.2 (84)	
	P-value	0.02	–	–	–	0.04	
Chronicity	Acute	4.24 (90)	–	–	–	–	
	Chronicle	4.50 (79.7)	–	–	–	–	
	P-value	0.04	–	–	–	–	
Academic level	Medium	–	–	–	–	–	3.50 (63.6)
	High	–	–	–	–	–	4.27 (87.0)
	P-value	–	–	–	–	–	0.01

Results represented by the mean of Likert score (frequency of significant need %).

The results of the univariate analysis (Table 3) revealed that women (80% participants), as compared with men (50% participants), thought their need was important for ensuring good management and availability of treatment. Information on lifestyle and dietary information, counselling and therapeutic education and the association between gender and these services were statistically significant ($P = 0.02$, $P = 0.05$, and $P = 0.04$, respectively).

Perception of an important need for information on lifestyle and dietary information was statistically associated with the frequency of taking treatment ($P = 0.05$). Patients who take medication less frequently had a high need for this activity. An important need for information on drug interactions characterized patients who take medicines more frequently, with a statistically significant association ($P = 0.005$). The need for adverse event management was associated with the fact that a patient is taking or not a treatment ($P = 0.04$), with a higher need in patients taking the drugs. The need for the pharmacist to provide a link with the physician was high in patients with a medium academic level ($P = 0.01$). Other pharmaceutical services have been associated with certain patient characteristics without a large difference between their importance being noted: for instance, counselling and therapeutic education and taking or not a medication or the chronicity of the illness (Table 3).

After binary logistic regression, it was noted that gender is associated with an important need for ensuring good product availability and management ($P = 0.02$; adjusted OR = 4.16; 95% CI, 1.25 to 13.81). The frequency of treatment administration was associated with a strong need for information on drug interactions ($P = 0.005$; adjusted OR = 6.67; 95% CI, 1.78 to 25.01). The patient's opinion on the time given by the doctor is associated with the need for therapeutic counselling and education ($P = 0.02$; adjusted OR = 3.77; 95% CI, 1.21 to 11.71) and information on drug interactions ($P = .03$; adjusted OR = 3.03; 95% CI, 1.06 to 8.71). Academic level influences the need for the pharmacist to a link with the doctor ($P = 0.01$; adjusted OR = 3.82; 95% CI, 1.28 to 11.42).

Perception of the pharmaceutical services needs by physicians

Two hundred sixteen physicians responded to the questionnaires, 75% practiced in the university hospital centre and 12.5% in the specialized establishments, giving a total of 82.5% of physicians practicing in a university hospital establishment. Physicians with medical specialties represented 64.8%; the most represented specialty was internal medicine with 14% of the sample. University hospital physicians, residents included, were the most represented with a percentage of 65.7%. The characteristics of the responding physicians are presented in Table 4.

About 65% of the physicians indicated the absence of a pharmacist in their department. Physicians who indicated had contact with a pharmacist represented 63.9%, of whom 37.5% were in the hospital. Physicians with no knowledge of pharmacist training represented 23.1%. Counselling and therapeutic education, pharmacovigilance and practice evaluation were the most frequently expressed important needs. Physicians noted them in more than 80% of responses. Approximately, 50% of physicians rated the need for dosage adjustment as not important. The distribution of physicians' opinions on the importance of pharmaceutical services is presented in Table 5. Ranking the importance of the needs to pharmaceutical services, according to Likert scores, the most important needs in descending order of importance were counselling and therapeutic education (4.32 ± 0.06), pharmacovigilance (4.26 ± 0.06), pharmacoeconomics evaluation (4.11 ± 0.06), practices evaluation (4.03 ± 0.05) and

Table 4 Characteristics of the physician population

Characteristics of the patient population		*N*	%
Establishment	CHU	162	75.0
	EHS	27	12.5
	EPH	7	3.2
	EPSP	20	9.3
Service	Surgical	22	10.2
	Dental	3	1.4
	Medical–surgical	33	15.3
	Medical	140	64.8
	Social	10	4.6
Professional category	Generalist	30	13.9
	University Hospital	8	3.7
	Resident	134	62.0
	Specialist	41	19.0
Specialty	Surgical	22	10.2
	Dental	3	1.4
	General medicine	27	12.5
	Medical–surgical	31	14.4
	Medical	119	55.1
	Social	10	4.6
Presence of the pharmacist in the department	No	140	64.8
	Yes	76	35.2
Previous work with a pharmacist	No	76	35.2
	Yes	138	63.9
Place of contact with the pharmacist	Hospital setting	81	37.5
	During graduation	43	19.9
	Knowledge	57	26.4
Knowledge on the education of pharmacist	No	50	23.1
	Yes	156	72.2

comparative assessment (4.00 ± 0.06). Pharmaceutical validation, outcomes evaluation and prescription adjustment were assessed as not important.

The factors associated with a perceived high need for pharmaceutical services by physicians, after univariate analysis, are presented in Table 6. About 93.7% of physicians in university hospital settings perceived a significant need for a pharmacist on the ward. This need was associated with the type of establishment ($P = 0.03$). The perception of a significant need for the presence of a pharmacist in the service was associated with the type of service ($P = 0.001$). The frequency of perception of a significant need among doctors in surgical wards (82.2%) was the highest and that of doctors working in social services was the lowest (20%).

The need for counselling and therapeutic education had a statistically significant association ($P = 0.04$ with the type of service). Surgical and social services had the highest frequencies of perceived need (92.00% and 90.00%, respectively); doctors in medical-surgical services expressed this need less frequently (67.70%).

The perception that the need for the pharmacovigilance service was most frequent and had the highest average frequency in the medical services (85.8%, 4.40); medical–surgical services expressed the lowest frequency (62.10%), and the association between this perception and the type of service was statistically significant ($P = 0.008$). The need for the practice assessment activity was the greatest according to the doctors in the medical services (4.15, 84.50%), and the association between the perception of the need for this activity and the type of service was statistically significant ($P = 0.001$).

Binary logistic regression analysis between the characteristics of the physician population and pharmacy services with a *P*-value less than or equal to 0.26 in the univariate analysis revealed the following information:

Table 5 Pharmacy services ranked in order of importance, calculated by the mean of Likert scale scores

Pharmacy practice	%[1]	M (SD)[2]	
Counselling and therapeutic education	84.30	4.32	(0.06)
Pharmacovigilance	82.80	4.26	(0.06)
Pharmacoeconomics evaluation	79.90	4.11	(0.06)
Evaluation of practices	80.30	4.03	(0.05)
Pharmaceutical balance	74.00	4.00	(0.06)
Pharmaceutical validation	72.00	3.93	(0.07)
Outcomes evaluation	71.80	3.85	(0.07)
Prescription adjustment	50.90	3.38	(0.08)

[1]Frequency of an important need.
[2]Mean (standard deviation).

Physicians' perception of a significant need for the presence of a pharmacist in the service is associated with the practice of the physician in a university hospital ($P = 0.036$), a university versus public health structure had an adjusted OR = 3.35 (95% CI, 1.07 to 10.41).

The perception of a significant need for a pharmaceutical balance was associated with the type of establishment ($P = 0.016$, adjusted OR = 2.95, CI 95%, 1.22 to 7.14). The association was also statistically significant with the type of service, a medical service versus a surgical service had an adjusted OR = 27.03 (95% CI, 4.15 to 166.67).

The association between the type of ward in which the physician practices and the perception of an important need for the practice assessment activity were statistically significant ($P = 0.043$), one medical service had an adjusted OR = 9.64 (CI 95%, 1.079 to 86.214).

More than 92% of the physicians considered the presence of a pharmacist in their department desirable. About 78% of the physicians confirmed that the presence of a pharmacist would decrease their workload. According to physicians, the presence of a pharmacist in medical and medical-surgical wards was more important (important needs at 93.90% and 96.60% of physicians, respectively) than surgical and social services (important needs at 82.80% and 80.00% of physicians, respectively).

The physicians working in a teaching hospital expressed an important need at 93.70%, while those working in public health facilities expressed an important need at 81.50%. The association between the type of the establishment and the needs for the presence of pharmacist in the wards was statistically significant ($P = 0.03$).

The categories of pharmaceutical activities to be implemented according to the physicians in the department are in descending order were supply (40.7%), pharmacoeconomics (36.8%), review of use (33%) and evaluation of results (31.9%).

Discussion

The objective of this study was to assess the perception of the importance of pharmacy practice. Needs were defined in different ways.[18, 19] In our study, the 'need' is a 'felt need', meaning that the different respondents involved, as recipients of the service, indicated what they considered to be a need. The results of this study showed that patients and physicians had a significant need for pharmacy services, beyond what pharmacists are usually asked to do, such as managing and providing medications. Indeed, the need for pharmaceutical counselling, therapeutic education and information on adverse drug reactions (80% need and 4.40 of average importance) was greater than the need for pharmaceutical management (75.5% need and 4.24 of average importance). This result was in line with

Table 6 Factors associated with a perception of an important need for pharmacy services by physicians

		Pharmaceutical balance	Counselling and therapeutic education	Pharmacovigilance	Evaluation of practices	Adjustment of prescriptions
Hospital	Public health facilities	4.00 (59.30)	–	–	–	–
	University hospital	4.00 (75.70)	–	–	–	–
	P-value	0.07	–	–	–	–
The service	Surgical	4.21 (82.80)	4.57 (92.00)	4.25 (79.30)	3.50 (48.30)	–
	Medical-surgical	3.86 (72.40)	3.93 (67.70)	3.52 (62.10)	4.00 (79.30)	–
	Medical	4.10 (75.70)	4.36 (86.00)	4.40 (85.80)	4.15 (84.50)	–
	Social	2.30 (20.00)	4.20 (90.00)	4.20 (100.00)	3.90 (10.00)	–
	P-value	0.001	0.04	0.008	0.001	–
Previous work with a pharmacist	Yes	–	4.50 (89.70)	4.45 (87.2)	–	3.58 (57.7)
	No	–	4.22 (81.20)	4.15 (79.77)	–	3.28 (47.1)
	P-value	–	0.09	0.16	–	0.13

Results are represented by the mean of Likert score (frequency of significant need %).

a study carried out in a health centre in Scotland,[17] to determine the need for pharmaceutical service when integrating pharmacists in patient management, where the need for advice and information on medicines, therapeutic education was the most important. On the other hand, the need for generic drug information was greater in the Scottish study, this can be explained by the date of the study, in 2000 the notion of generic drugs was more recent than at present.[17] Another difference noted with Magretti[20] in his dissertation, in which he found that practices on the management of adverse events and information on drug interactions are more important than counselling services.

All the studies carried out on pharmaceutical services have shown that, despite their satisfaction, patients expect pharmacists to provide more treatment advice; this advice must be provided even if the patient does not request it.[21] Patients want personalized information, so that they can effectively manage their treatment.[22] The pharmacist's management function is still considered the most important. Some patients do not consider the pharmacist's role in therapy because they are unaware of the services they can provide[23]; therefore, the patients need to be informed about other pharmacy services that may be available to them.

In countries where these services are available, patients have expressed their ability to pay for these services.[11, 24, 25] Some countries have regulated these services particularly for patients on anticoagulants and asthma patients.[26] In the current state of the Algerian health system, care in hospitals is completely free. Pharmaceutical or medical services are not charged, but, with the trend towards contracting with the social security system, these activities will have to be defined in anticipation of their introduction in the nomenclature of hospital activities.

The vast majority of patients (81%) wanted that the pharmacist would act as a link between physician and patient. This need was assessed in a previous study in which activities such as advising prescribers on better drug choices because of reduced costs, making prescription drug cost data available to physicians and providing periodic updates on new drugs were estimated.[21] This finding confirms the importance of physician and pharmacist meetings for patient management. A multidisciplinary healthcare team will increase the efficiency of the therapeutic strategy. Patients appreciate spending a relatively long amount of time with healthcare professionals,[23] but with the workload of physicians, the length of the patient interview may not be as long as they would like. According to the results of our study, more than a third (39%) of patients were not satisfied with the time given by the physician and expressed a need for additional information, mainly on the diagnosis of their pathology. The pharmacist can help to fill this gap; he can listen to the patient, answer his questions and thoroughly review his treatment.[22] Some patients find that, for certain information, they avoid wasting time waiting to see the attending physician by consulting the pharmacist directly.[27]

Measuring the association between the importance of the need and patient characteristics can help to understand what information may be of interest to patients and how to make hospital pharmacy resources more efficient. At the current state of our knowledge, there are no studies focussed on this aspect. Our results have confirmed that taking medication is associated with a significant need for counselling and therapeutic education (88% of patients, $P = 0.02$). It is well established that therapeutic education accompanied by medication is better than medication alone in terms of morbidity, cost-effectiveness and the evolution of the pathology.[28, 29] It was noted that women express a greater need for assurance of drug availability ($P = 0.02$), counselling and therapeutic education ($P = 0.04$) and information on healthy living ($P = 0.05$). This result is in line with a study in the United Arab Emirates, in which women were the highest providers of pharmaceutical services.[30] In her thesis, Gendre[31] revealed that women express a greater need for good quality counselling, therapeutic education, preventive health care and pharmaceutical maintenance; he further revealed that women and men had the same need for assurance of drug availability. In a study, among patients in a rural community in the UK, men expressed the greatest need for drug counselling.[32]

For physicians, the most important needs were counselling and therapeutic education, pharmacovigilance, pharmacoeconomics evaluation and practice evaluation. These are mainly drug-oriented activities, except for therapeutic education, which is a multidisciplinary activity. The activities on pharmaceutical validation, outcome evaluation and prescription adjustment were assessed as not important; the latter activities are patient oriented and have a clinical character. Physicians rate the importance of the activity according to their needs and their experience of their interaction with the pharmacist. This finding was consistent with various studies conducted on physicians' perceptions of clinical pharmacy services. Physicians' opinions are divided on the clinical role of pharmacists; those who believe that pharmacists can be directly involved in patient management have limited their activity to counselling and medication information.[33]

Some physicians feel that medication reconciliation and history taking are important and prefer to do it themselves, but, because it is

a time-consuming activity, they have indicated that they will be able to delegate it to the pharmacist.

The information that a pharmacist can provide is varied, but the most important information that physicians feel relevant is drug interactions.[13] In his thesis, Miget[34] revealed that more than 54% of general practitioners think that the new missions attributed to dispensing pharmacists in France; in this case, the pharmaceutical interview on anti-vitamin k will not be of interest to the patient. In the establishments where our survey was performed, no pharmacist was working in the hospital departments, but, for more than 30% of the physicians questioned, the holder of the stock of pharmaceutical products in the department is a pharmacist, whereas they are only stock managers. This ignorance and lack of interaction between physicians and pharmacists were revealed in a rural area in Sweden.[13] Most physicians were unaware of the activities assigned to the pharmacist in their department, and some were unaware of the structure of the department and its mode of operation: for example, they did not know how to contact the pharmacist.[13] The activity of stock management and supply remains the most important according to the physicians; this result is consistent with those of previous studies,[7] where the function of supplying, holding and dispensing is the monopoly of the pharmacist. In some previous studies, the decentralization of pharmacies has contributed to the implementation of patient-centred activities – first by mastering the management of pharmaceutical products in the departments and then by entering the care teams.[35] This study had some limitations on sample size and patient sampling. Some questionnaires returned by physicians were incomplete due to misunderstanding of some items. Despite these limitations, the results were comparable to previous studies, so that does not diminish the value of the conclusions.

Conclusions

During the study period, the new pharmaceutical services were not implemented yet in the hospital setting. The physicians and patients evaluated their perceived need for the services. The results revealed physicians' and patients' expectations on the services that pharmacists can offer after their definition by the authors. Overall, any patient-focussed service is important from the patient's perspective. Physicians do not realize the benefit of pharmaceutical services that can help reduce their workload and provide them the necessary information for better patient management. The contact between the pharmacist and the physician limited to the issue of product availability needs to be developed to facilitate the implementation of the pharmacist's patient-oriented activities.

Author Contributions

Mustapha Chelghoum Drafting the research protocol, Manuscript writing, Statistical analysis; **walid Khitri** Discussion; **Feriel Kadouri** Conducting the field's survey, Reporting on SPSS; **Khedra Chaouche** Conducting the field's survey, Reporting on SPSS.

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Conflict of Interest

The authors have no conflict of interest related to this study to declare.

References

1. Algerian Health Ministry. *Arrêté ministériel portant création de la pharmacie principale au sein des centres hospitalo-universitaires*. Bulletin officiel du MSP, 1996, 1.
2. Doloresco F, Vermeulen LC. Global survey of hospital pharmacy practice. *Am J Health Syst Pharm* 2009; 66: S13–9. http://doi.org/10.2146/ajhp080674
3. Direction de la Population du Ministère de la Santé, de la Population et de la Réforme Hospitalière. *Situation Démographique et Sanitaire (2000–2014)*. Algiers, Algeria: Ministère de la Santé, de la Population et de la Réforme Hospitalière, 2014, 28.
4. Syndicat National des pharmaciens des établissements publics de santé. *Le livre blanc: pharmacie hospitalière horizon 2012*. SYNPREFH report. 2008, 84. https://www.synprefh.org/files/medias/livre-blanc_pharmacie-hospitaliere_2008.pdf
5. Guérin A, Lebel D, Marando N *et al*. Déterminants de l'évolution de la pharmacie hospitalière en France et au Québec: perception de pharmaciens hospitaliers. *Ann Pharm Fr* 2014; 72: 202–15. https://doi.org/10.1016/j.pharma.2014.01.001
6. Renaudin P, Boyer L, Esteve MA *et al*. Do pharmacist-led medication reviews in hospitals help reduce hospital readmissions? A systematic review and meta-analysis. *Br J Clin Pharmacol* 2016; 82: 1660–73. http://doi.org/10.1111/bcp.13085
7. Hélène C, Marion J, Stéphanie B *et al*. Essais cliniques: enquêtes de satisfaction auprès des investigateurs et des promoteurs. *Pharm Hosp Clin* 2011; 46: 169–76. https://doi.org/10.1016/j.phclin.2011.05.015
8. Gibberson S, Yoder S, Lee M. Improving patient and health system outcomes through advanced pharmacy practice. A report to the US surgeon general. USA: US Public Health Service, 2012; 95.
9. Kamei M, Teshima K, Fukushima N *et al*. Investigation of patients' demand for community pharmacies. *Yakugaku Zasshi* 2001;`121: 215–20. https://doi.org/10.1248/yakushi.121.215
10. Larson LN, Rovers JP, MacKeigan LD. Patient satisfaction with pharmaceutical care: update of a validated instrument. *J Am Pharm Assoc (Wash)* 2002; 42: 44–50. http://doi.org/10.1331/108658002763538062
11. Hind CA, Bond CM, Lee AJ *et al*. Needs assessment study for community pharmacy travel medicine services. *J Travel Med* 2008; 15: 328–34. http://doi.org/10.1111/j.1708-8305.2008.00231.x
12. Wood K, Gibson F, Radley A *et al*. Pharmaceutical care of older people: what do older people want from community pharmacy? *Int J Pharm Pract* 2015; 23: 121–30. http://doi.org/10.1111/ijpp.12127
13. Vinterflod C, Gustafsson M, Mattsson S *et al*. Physicians' perspectives on clinical pharmacy services in Northern Sweden: a qualitative study. *BMC Health Serv Res* 2018; 18: 35. http://doi.org/10.1186/s12913-018-2841-3
14. Gill TK, Thornton LM, Schroeder TR *et al*. Implementation and evaluation of a team-based pharmacy practice model in a community health system. *Am J Health Syst Pharm* 2019; 76: 470–7. http://doi.org/10.1093/ajhp/zxy082
15. Dunn SP, Birtcher KK, Beavers CJ *et al*. The role of the clinical pharmacist in the care of patients with cardiovascular disease. *J Am Coll Cardiol* 2015; 66: 2129–39. http://doi.org/10.1016/j.jacc.2015.09.025
16. Robelet A, Bussières J-F, Boivin J *et al*. Évaluation des besoins pharmacothérapeutiques d'un service de pédopsychiatrie. *Neuropsychiatr Enfance Adolesc* 2008; 56: 439–45. https://doi.org/10.1016/j.neurenf.2008.03.001
17. Williams SE, Bond CM, Menzies C. A pharmaceutical needs assessment in a primary care setting. *Br J Gen Pract* 2000; 50: 95–9.
18. Stewart GT. Epidemiological approach to assessment of health. *Lancet* 1970; 2: 115–9. http://doi.org/10.1016/s0140-6736(70)92699-1
19. Donaldson C, Mooney G. Needs assessment, priority setting, and contracts for health care: an economic view. *BMJ* 1991; 303: 1529–30. http://doi.org/10.1136/bmj.303.6816.1529
20. Magretti A. *Perceptions et attentes des patients souffrant de maladie chronique sur les nouveaux services pharmaceutiques officinaux relatifs au pharmacien correspondant: enquête auprès de 102 patients*. Faculté de pharmacie de Grenoble, France, 2013. http://dumas.ccsd.cnrs.fr/dums-01044794

21. Hirsch JD, Gagnon JP, Camp R. Value of pharmacy services: perceptions of consumers, physicians, and third party prescription plan administrators. *Am Pharm* 1990; NS30: 20–5.
22. Montgomery AT, Sporrong SK, Manap N *et al*. Receiving a pharmaceutical care service compared to receiving standard pharmacy service in Sweden—how do patients differ with regard to perceptions of medicine use and the pharmacy encounter? *Res Soc Adm Pharm* 2010; 6: 185–95. https://doi.org/10.1016/j.sapharm.2009.09.002
23. Petty DR, Knapp P, Raynor DK *et al*. Patients' views of a pharmacist-run medication review clinic in general practice. *Br J Gen Pract* 2003; 53: 607–13.
24. Larson RA. Patients' willingness to pay for pharmaceutical care. *J Am Pharm Assoc (Wash)* 2000; 40: 618–24. http://doi.org/10.1016/s1086-5802(16)31101-9
25. Suh DC. Consumers' willingness to pay for pharmacy services that reduce risk of medication-related problems. *J Am Pharm Assoc (Wash)* 2000; 40: 818–27. http://doi.org/10.1016/s1086-5802(16)31129-9
26. Dupuy M. *Les nouvelles missions du pharmacien d'officine apportées par la loi Hôpital-Patient-Santé-Territoire, illustrées par l'entretien pharmaceutique des patients insuffisants respiratoires*. UFR de Médecine et de pharmacie, Rouen, 2014. https://dumas.ccsd.cnrs.fr/dumas-01075406
27. Naik Panvelkar P, Armour C, Saini B. Community pharmacy-based asthma services—what do patients prefer? *J Asthma* 2010; 47: 1085–93. http://doi.org/10.3109/02770903.2010.514638
28. Núñez M, Núñez E, Yoldi C *et al*. Health-related quality of life in rheumatoid arthritis: therapeutic education plus pharmacological treatment versus pharmacological treatment only. *Rheumatol Int* 2006; 26: 752–7. http://doi.org/10.1007/s00296-005-0071-6
29. Labrunée M, Pathak A, Loscos M *et al*. Therapeutic education in cardiovascular diseases: state of the art and perspectives. *Ann Phys Rehabil Med* 2012; 55: 322–41. http://doi.org/10.1016/j.rehab.2012.04.003
30. Hasan S, Sulieman H, Stewart K *et al*. Patient expectations and willingness to use primary care pharmacy services in the United Arab Emirates. *Int J Pharm Pract* 2015; 23: 340–8. http://doi.org/10.1111/ijpp.12176
31. Gendre T. *Attentes des patients vis-à-vis de la pharmacie d'officine: critères de choix d'une officine et de satisfaction des patients*. Faculté de pharmacie, Lorraine, 2015. https://hal.univ-lorraine.fr/hal-01732348
32. Merks P, ŚWieczkowski D, Jaguszewski MJ. Patients' perception of pharmaceutical services available in a community pharmacy among patients living in a rural area of the United Kingdom. *Pharm Pract (Granada)* 2016; 14: 774. http://doi.org/10.18549/PharmPract.2016.03.774
33. Sjölander M, Gustafsson M, Gallego G. Doctors' and nurses' perceptions of a ward-based pharmacist in rural northern Sweden. *Int J Clin Pharm* 2017; 39: 953–9. http://doi.org/10.1007/s11096-017-0488-5
34. Miget P. *Nouvelles misions du pharmacien d'officine et collaboration entre les médecins généralistes et les pharmaciens d'officine: enquête sur la perception des médecins généralistes*. Faculté de pharmacie, Lorraine, 2017. https://hal.uni-lorraine.fr/hal-01932390
35. Pickette SG, Muncey L, Wham D. Implementation of a standard pharmacy clinical practice model in a multihospital system. *Am J Health Syst Pharm* 2010; 67: 751–6. http://doi.org/10.2146/ajhp090283