



## Original article

## The acceptance and awareness of healthcare providers towards doctor of pharmacy (Pharm D) in the Palestinian health care system

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## ABSTRACT

Clinical pharmacy (Pharm.D or MSc Clinical Pharmacy graduates) is a patient care oriented specialty. It aims to improve patient therapeutic outcomes and minimize medication errors. In Palestine, it is a new specialty taught at two universities. In order to implement this new specialty in healthcare settings, healthcare providers should have a high awareness about it, its role and importance in clinical settings. This study aimed to evaluate the awareness and acceptance levels among healthcare providers' about clinical pharmacy specialty. A cross sectional study carried out using a self-administered questionnaire that was developed and tested by a panel of experts for validity and reliability, then it was distributed and filled by the convenient sample of health care providers in the northern and middle of Palestine between January and March 2019. An awareness scale and acceptance scale were developed from the questions used to identify the healthcare providers' awareness and acceptance. Chi-square ( $X^2$ ) - testing was performed to check for the significant association. Data were analyzed using SPSS (version22). Among 309 respondents, 203(65.7%) were male, 67(21.7%) were working at Jerusalem, 229 (74.1%) of them completed their first degree at Arab countries and 69(54.7%) completed higher education. Regarding their work, 169(54.7%) were physicians, followed by 85(27.5%) nurses and 55(17.8%) pharmacists. Results revealed that the majority of healthcare providers had a moderate 182(58.9%) and good 81 (26.2%) awareness level toward the Clinical pharmacy specialty roles and 217 (70.2%) had a good acceptance level toward their implementation among the health worker team. Significant differences were found between healthcare providers' awareness level and their sex ( $P = 0.001$ ), professions ( $P = 0.006$ ) and job descriptions ( $P = 0.013$ ). There were no significant differences between the health care providers' acceptance level and their age, sex, qualification, profession and job descriptions. Our results revealed the ability to collaborate in the integration of such specialty within the Palestinian healthcare system. Additional interest from the Ministry of Health is recommended to integrate clinical pharmacy workers among the health system and promote their relations with other disciplines.

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## 1. Introduction

The pharmacy profession was only known as dispensing, distributing and giving drugs to the patient in first 1900s, and that was frustrated to pharmacist and their studies. After 1960, an

evolution for a clinical pharmacist appeared worldwide as a patient oriented not product based specialist (Shahzad Hasan et al., 2019; Miller et al., 1981). As a unique profession, it was established among USA universities, then other countries developed a doctor of pharmacy (Pharm. D.) program differently. Subsequently, many studies were performed to assess the outcome of clinical pharmacist's intervention on hospitalized patient care, medicines use and health services provision. (Shahzad Hasan et al., 2019; Carter, 2016).

A realistic look at the clinical pharmacist's services revealed that it depends on drug therapy experts who have a deep therapeutic education, sufficient training and scientific skills to supply drug therapy based on scientific evidence (Abu-Gharbieh et al., 2010). Moreover, implementation of this service lead to a positive

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change in the practice including; dose regimen optimization for each case, improving the safety, efficacy and effectiveness of the medication, improving morbidity and mortality benefits especially within the patients of chronic diseases, increasing the patient compliance and adherence and providing quick correct information when needed for either health care professionals or patients. As a result, the desired cost benefit on health outcomes was achieved. Moreover, an improvement for the quality of life using systematic, complete and consistent support for each individual patient was accomplished (Shanika et al., 2017, 2018; Abduekarem, 2014).

In developing countries implementation of clinical pharmacy was done as a single profession, which is isolated from the population based healthcare system (Jamshed et al., 2007). Among majority of Arab countries, the health care system is still evolving, and doctor of pharmacy and MSc Clinical Pharmacy programs began to have emerged among a few of them. As a result, an improvement in the pharmacy practice was shown after 2000, but with lacking health professionals and public trust. On the other hand, the pharmacist's readiness to deal with that role is questionable (Abduekarem, 2014). These barriers may be found because of inadequate numbers of graduating, inadequate training, lack of support by hospitals administration, poor authority for clinical pharmacists and insufficient communication with physicians (Lemay et al., 2018). That reflects the real need for revising and updating the education curricula and practicing role (Abduekarem, 2014).

By the time, an improvement in perceptions, attitudes and acceptance toward clinical pharmacist profession among the health care system was shown in many studies conducted at different Arab countries including the United Arab Emirates, Saudi Arabia (Abu-Gharbieh et al., 2010; Al-Arifi et al., 2015). Other studies revealed the acceptance of pharmacist role only for drug products; as a reference to educate patients and counseling them. They were less comfortable with their role as an assistant in designing, monitoring or optimizing drug therapy treatment plans. (Tahaine et al., 2009; Wilbur et al., 2012). These results emphasize the real need to increase contact between physicians and pharmacists, to build trust between them, and reflect the importance of integrating clinical pharmacist specialty in the medical team.

The clinical pharmacy is a new discipline added recently to the Palestinian universities, and indeed, the integration of this service in the Palestinian health field is very limited till now. In Palestine, five universities offering bachelor's degree in pharmacy. Of those only two offers clinical pharmacy where the first Doctor of Pharmacy (Pharm.D) program was launched in 2008 and the second in 2010. At the same time, one pharmacy school has commenced a postgraduate clinical pharmacy program. Most of the graduated Palestinian clinical pharmacist's role is limited to drug dispensing and providing information about the medications. They are out of the multidisciplinary team and can't collaborate with the doctors and nurses to do their tasks (Shanika et al., 2017). Many reasons seem to be behind this exclusion such as that physician's fears of losing professional autonomy and independence (Čufar et al., 2014); or physicians were found to be 'uncomfortable' with pharmacists suggesting or recommending prescription medications to their patients (Ables and Baughman, 2002) and the existence of a communication gap between pharmacists and physicians as reported in previous studies (Nesbit et al., 1995; Sulick and Pathak, 1996). However, due to the lack of studies in Palestine, it is difficult to set how far clinical practice proceed in Palestine, and also lack of application of this service which leads to the lack of knowledge about it. To our knowledge, there is only one previous study has been conducted in the west bank which aimed to evaluate the medical doctors – pharmacists relationship. Furthermore, the study was conducted before the insertion of the specialty within the functional structure of the Palestinian Ministry

of Health, creation of a job description for this specialty which was on February 2016 and appointment of holders a bachelor degree of pharmacy from Doctor of Pharmacy program at three hospitals in the west bank. Therefore, this study aims to assess the awareness level (AWL) among health care providers team (HCPs) toward the clinical pharmacist and to determine HCPs acceptance level (ACL) to the clinical pharmacist among health care providers (physicians, pharmacists and nurses), that reflect the challenges facing the implementation of this services among the Palestinian hospitals.

## 2. Material and methods

### 2.1. Study design and sample

A quantitative, descriptive, cross sectional study was conducted between December 2018 to April 2019 among health care providers (physicians, pharmacists and nurses) in Jerusalem, the middle and the south of Palestine. They were workers at clinics, pharmacies and different governmental and private hospitals. There are around of 7794 health care workers registered among the Ministry of Health (Ministry of Health, Palestinian Health Information Center PHIC and Health Status, 2017). The sample size calculated online (Raosoft Inc, Seattle, WA, USA) with 95% confidence level and 5% as a margin of error. A sample size of 367 participants was calculated. The study was approved by the IRB committee at Faculty of Pharmacy, Nursing and Health Professions, Birzeit University with reference number BZUPNH 18002.

### 2.2. Study tool

A self-administered questionnaire was adapted with some changes after reviewing previous local and international studies (Abu-Gharbieh et al., 2010; Al-Arifi et al., 2015; Bilal et al., 2016). The questionnaire was written in the English language then translated to Arabic to exclude any misunderstanding of the questions by the participants. Therefore, the questionnaire was translated by experts at the Department of Languages and Translation, Birzeit University, based on standard translation guidelines. Furthermore, it underwent revision from an epidemiologist from the Faculty of Pharmacy, Nursing and Health Professions. It was reviewed by 15 experts and professionals for face and content validity of the questionnaire. The experts approved that the questionnaire is measuring what is supposed to measure with 0.72 content validity index. The questionnaire was also filled from 15 pharmacies as a pilot to check for clarity, then refilled by the same pharmacists to assess the test-retest reliability, then a finalized questionnaire was developed accordingly. After data collection, internal consistency (Cronbach's Alpha) was calculated for the questionnaire subsections ranging from  $\alpha = 0.57$  to  $\alpha = 0.73$ . It was structured into 3 sections; sociodemographic (9 questions), HCPs attitude and awareness regarding clinical pharmacist (10 questions), and HCPs acceptance to clinical pharmacist (5 questions). These questions were closed-ended answered with four response alternatives (agree, neutral, disagree and don't know).

### 2.3. Participants

All HCPs who were present at the main governmental hospitals at the selected days for collecting data were asked to participate. Other clinics, private hospitals and pharmacies were selected randomly and asked to participate. Written informed consent was taken after explaining the objective of the study. They filled the questionnaires within 20 min, others asked to submit the questionnaires later within a week, and others filled the questionnaires

after face interviews. All HCPs working at the mentioned hospitals and consented to participate in the study during the study period were included. Participants who had never heard about Pharm Doctor of pharmacy or clinical pharmacist as degree and clinical pharmacists were excluded from the study were excluded.

#### 2.4. Statistical analysis

Descriptive statistics were performed to show data; an awareness level scale (AWL) was developed from the ten questions that identify the healthcare providers' awareness toward the clinical pharmacist. Count has done for 'agree' answers, then the scale was recoded into having poor (score < 6), moderate (score 6 to 8) and good (score 9 to 10) AWLs. Another scale for acceptance level (ACL) was also developed from the five questions that identify the HCPs acceptance for the Pharm D role within their cadres. The count was performed and the scale was recoded into poor (score < 4) and high (score 4 to 5) ACLs. Chi-square test ( $\chi^2$ ) - testing with 95% confidence was performed to check for a significant association of each scale with each variable; age, sex, scientific degree (post graduated or none) and the graduation country, professional cadre (physician, pharmacist or nurse) and classification (head of the department, resident or employee), working city and institute. Data were analyzed using the Statistical Package for Social Sciences, (IBM SPSS Statistics 22).

### 3. Results

#### 3.1. socio-demographic characteristics

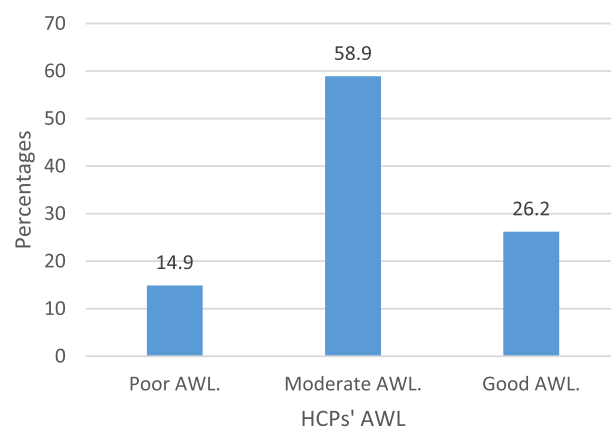
From 450 participants accepted to fill the questionnaires, 316 completed it with a response rate (70.2%). All of the participants were Palestinian,  $n = 7$  (2.2%) of the participants had never heard about doctor of pharmacy or clinical pharmacist as degree and they were excluded. Among 309 respondents,  $n = 203$  (65.7%) were male, the majority of them aged between 26 and 45yrs  $n = 227$  (73.5%). Only  $n = 67$  (21.7%) were working at Jerusalem, while  $n = 242$  (78.3%) were workers within the northern West Bank cities.  $n = 169$  (54.7%) stated that they had completed higher education. Regarding the first degree of qualification, it was obtained either from Palestine and Arab countries  $n = 229$  (74.1%), or from foreign countries (USA, Europe, Russia, Australia and Pakistan)  $n = 80$  (25.9%). Classifying their professions,  $n = 169$  (54.7%) were physicians,  $n = 55$  (17.8%) pharmacists, and  $n = 85$  (27.5%) nurses. They were classified as heads of their departments  $n = 113$  (36.6%), residents  $n = 117$  (37.9%) and employees  $n = 79$  (25.5%). Participants working places were clinics  $n = 59$  (19.1%), hospitals  $n = 214$  (69.2%) and pharmacies  $n = 36$  (11.7%). Regarding the implementation of that specialist,  $n = 94$  (30.4%) stated that this profession is already implemented within the health care system (Table 1).

#### 3.2. HCPs awareness level (AWL) regarding clinical pharmacist

Out of 309 respondents, only a minority of them  $n = 46$  (14.9%) showed poor AWL (Fig. 1). The fundamental of doctor of pharmacy specialty is its orientation toward patient care rather than drug and  $n = 230$  (74.4%) of the respondents were aware of that (Table 2). >90% of respondents stated that Clinical Pharmacist Specialists are an integral part among the medical team, the presence of clinical pharmacists improves the patient care quality at hospitals, minimizes medication errors and improves patient therapeutic outcomes. The notable share of respondents  $n = 259$  (83.8%) believed that the clinical pharmacists can provide medication therapy management, dosage adjustment, and drug information supply for patients and health professionals due to their deep therapeutic

**Table 1**  
Socio-demographic characteristics of study participants (N = 309).

Socio-demographic characteristics		No. (%)
Gender	Male	203 (65.7)
	Female	106 (34.3)
Age	<26	46 (14.9)
	26–35	126 (40.8)
	36–45	101 (32.6)
	>45	36 (11.7)
Country of first degree	Palestine	178 (57.6)
	Arab country	51 (16.5)
Completing higher education	Foreign country	80 (25.9)
	Yes	169 (54.7)
Profession	None	140 (45.3)
	Physician	169 (54.7)
Job description	Pharmacist	55 (17.8)
	Nurse	85 (27.5)
	Head of the department	113 (36.6)
	Resident	117 (37.9)
Working city	Employee	79 (25.6)
	Jerusalem	67 (21.7)
	West Bank	242 (78.3)
Working institute	Hospitals	214 (69.2)
	Private clinics	59 (19.1)
The profession is already implemented	Private pharmacies	36 (11.7)
	Yes	94 (30.4)
	I don't know	215 (69.6)



**Fig. 1.** HCPs' AWL toward Pharm D. profession (N = 309).

education and scientific skills. Furthermore,  $n = 237$  (76.7%) of HCPs believed that clinical pharmacists are able to maximize cost-effectiveness and improve patient outcomes. While only <50% of HCPs were agreed that the role of that specialty is well known, it is already applied in the health field and there is an increasing interest in that profession at the national scale.

Table 3 shows the HCPs AWL toward clinical pharmacists role within the health care cadre; more females (38.7%) were significantly having good AWL compared to males (19.7%,  $p = 0.001$ ). Regarding cadre, physicians (19.5%) were significantly less likely

**Table 2**

Health care providers' opinions toward clinical pharmacy services. (N = 309).

Statement	Agree N (%)	Neutral N (%)	disagree N (%)	I don't know N (%)
<b>Awareness questions</b>				
The clinical pharmacist is patient care oriented not a drug oriented.	230 (74.4)	19 (6.1)	47 (15.3)	13 (4.2)
The Doctor of Pharmacy is applied in the Palestinian health field.	159 (51.5)	23 (7.4)	104 (33.7)	23 (7.4)
In your opinion, the role of this Specialty is well known among the health care providers.	132 (42.7)	54 (17.5)	109 (35.3)	14 (4.5)
The clinical pharmacist is an important and integral part of the medical team.	288 (93.2)	14 (4.5)	1 (0.3)	6 (1.9)
The clinical pharmacist is trained to perform patient counseling.	263 (85.1)	32 (10.4)	3 (1.0)	11 (3.6)
The clinical pharmacist can provide medication therapy management, dosage adjustment, and drug information supply for patients and health professionals because he has a deep therapeutic education and scientific skills.	259 (83.8)	27 (8.7)	13 (4.2)	10 (3.2)
The clinical pharmacist as part of healthcare team minimizes medication errors and improves patient therapeutic outcomes.	281 (90.0)	15 (4.9)	3 (1.0)	10 (3.2)
There is increasing interest in clinical pharmacist as a profession in Palestine.	130 (42.1)	77 (24.9)	75 (24.3)	27 (8.7)
The presence of clinical pharmacist in a clinical ward team improves the quality of patient care in a hospital setting.	278 (90.0)	23 (7.4)	2 (0.6)	6 (1.9)
I think that the clinical pharmacist is able to maximize cost-effectiveness and improve patient outcomes since this specialist looks at the economic level of the patient including: availability of health insurance, fixed income source, etc.	237 (76.7)	47 (15.2)	14 (4.5)	11 (3.6)
<b>Acceptance questions</b>				
The application of clinical pharmacist will lead to the loosening of physician's autonomy and independency.	37 (12.0)	19 (6.1)	233 (75.4)	20 (6.5)
I accept the involvement of clinical pharmacist in patient management and in providing extra services within the framework of clinical pharmacy.	288 (93.2)	14 (4.5)	7 (2.3)	0 (0.0)
The resistance that may appear towards the clinical pharmacist may come from the lack of knowledge about this specialty which leads to misunderstanding the role of this job.	184 (59.5)	34 (11.0)	75 (24.3)	16 (5.2)
As a member of the healthcare team, I think the implementation of clinical pharmacist will compete for my job.	21 (6.8)	14 (4.5)	271 (87.7)	3 (1.0)
Overall, I think we need the implantation of clinical pharmacist in our Palestinian health field.	284 (91.9)	13 (4.3)	6 (1.9)	6 (1.9)

**Table 3**

Association between HCPs AWL toward Pharm D. role and different independent variables (N = 309).

Independent variables	Poor AWL No(%)	Moderate AWL	Good AWL	P- value
Gender	Male 34 (16.7)	129 (63.5)	40 (19.7)	0.001
	Female 12 (11.3)	53 (50.0)	41 (38.7)	
Age	<26 9 (19.6)	27 (58.7)	10 (21.7)	0.104
	26–35 14 (11.1)	75 (59.5)	37 (29.4)	
	36–45 19 (18.8)	63 (62.4)	19 (18.8)	
	>45 4 (11.1)	17 (47.2)	15 (41.7)	
Country of first degree	Palestine 25 (14.0)	97 (54.5)	56 (31.5)	0.074
	Arab country 8 (15.7)	37 (72.5)	6 (11.8)	
	Foreign country 13 (16.3)	48 (60.0)	19 (23.8)	
Completing higher education	Yes 25 (14.8)	105 (62.1)	39 (23.1)	0.356
	None 21 (15.0)	77 (55.0)	42 (30.0)	
Profession	Physician 32 (18.9)	104 (61.5)	33 (19.5)	0.006
	Pharmacist 2 (3.6)	35 (63.6)	18 (32.7)	
	Nurse 12 (14.1)	43 (50.6)	30 (35.3)	
Job description	Head of the department 13 (11.5)	80 (70.8)	20 (17.7)	0.013
	Resident 21 (17.9)	64 (54.7)	32 (27.4)	
	Employee 12 (15.2)	38 (48.1)	29 (36.7)	
Working city	Jerusalem 10 (14.9)	43 (64.2)	14 (20.9)	0.515
	West Bank 36 (14.9)	139 (57.4)	67 (27.7)	
Working institute	Hospitals 31 (14.5)	124 (57.9)	59 (27.6)	0.056
	Private clinics 14 (23.7)	31 (52.5)	14 (23.7)	
	Community pharmacies 1 (2.8)	27 (75.0)	8 (22.2)	

to have good AWL compared to pharmacists (32.7%) and nurses (35.3%), ( $p = 0.006$ ). Moreover, (70.8%) heads of participants departments were more likely to have a moderate AWL, compared to 54.7% of residents and 48.1% of employees ( $p = 0.013$ ). Not as expected, there were no significant associations between the participant AWL and whether they complete higher education, study outside or work at Jerusalem city.

### 3.3. Hcps acceptance level (ACL) for clinical pharmacist

The majority of HCPs  $n = 217$  (70.2%) revealed a good ACL toward clinical pharmacist role within the health care cadre (Fig. 2). The minority of HCPs against the belief that the establishing of clinical pharmacist specialty will compete for their job or will loosen the physician's autonomy. On the other hand,  $n = 288$



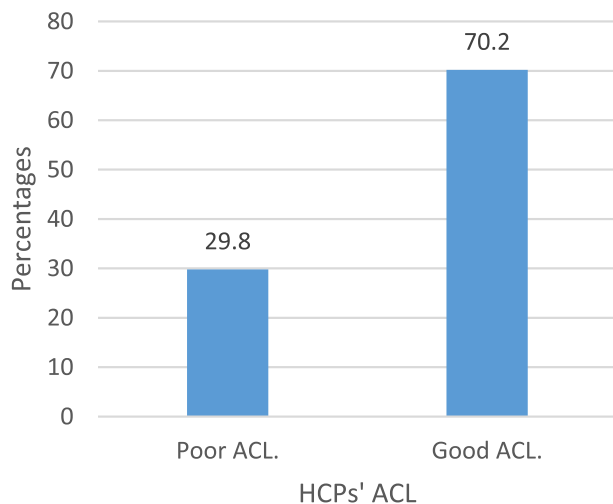


Fig. 2. HCPs' ACL toward Pharm D. implementation (N = 309).

(93.2%) accept the involvement of that specialist to provide an extra service among the clinical pharmacy framework (Table 2).

Chi-square test ( $\chi^2$ ) results revealed that HCPs at different ages have a good ACL, and there were no significant differences in the ACLs between males and females, or between those with higher education, who studied outside or worked at different cities in different institutes with different job description (Table 4).

#### 4. Discussion

Clinical pharmacist' scope of practice involves improving the quality of patient care and optimizing patient outcomes by addressing a patient's medication-related needs in collaboration with the patient and other healthcare professionals. This is differing from pharmacists' scope which includes services of preparing, producing and distributing drug preparations and other pharmaceutical care (Abu-Gharbieh et al., 2010).

Interestingly, there is a strong belief among Palestinian healthcare providers that clinical pharmacist is an important part of the clinical team and have a good AWL toward their different roles.

Moreover, the majority of participants have good ACL toward the clinical pharmacist as a part of the health care system. This might be due to the fact that at the Palestinian hospitals the attendance of clinical pharmacists and other HCPs (mainly medical doctors) coincides at the same clinical rounds. Furthermore, Clinical pharmacists and HCPs students are working as partners during several of educational activities such as journal club seminars, case presentations, patient medication groups, and development of educational posters on several topics. These facts gain the HCPs good knowledge about the importance of implementation of clinical pharmacists in healthcare settings. These results consistent with what found in studies performed in the United Arab Emirates (Abu-Gharbieh et al., 2010), Saudi Arabia (Al-Arifi et al., 2015), Kuwait (Matowe et al., 2006), Jordan (Tahaine et al., 2009), Sudan (Awad et al., 2007), Egypt (Sabry and Farid, 2014) and Ukraine (Zimenkovsky et al., 2019). Our study showed the presence of a small group who is < 25 years and > 56 years old they have no idea about clinical pharmacist; which may be due to the absence of clinical pharmacist application clinically in the Palestinian health system, the absence of Pharm D program in most of the Palestinian universities, the low experience of young professionals in the clinical world and the absence of keeping up with the new specialty among older ones (Bell et al., 2009).

Good AWL and ACL for the application of clinical pharmacist were found between those who obtained their first degree or higher qualification from either Arab or Foreign countries. This could be due that many hospitals in Europe and the US were implemented the clinical pharmacy services at their health setting a long time ago (Calvert, 1999). That is not consistent with what reported from a study done in Ethiopia; it showed that there was a significant difference between HCPs attitudes toward the clinical pharmacist role and their education level (Fekadu et al., 2019). Other studies performed in Saudi Arabia and Jordan revealed that HCPs who obtain their qualification from Foreign countries were more likely to accept the involvement of clinical pharmacists in comparison with those qualified in their countries (Tahaine et al., 2009; Al-Arifi et al., 2015). Moreover, the Jordanian physicians were reluctant that the clinical pharmacists can do their role inefficient way. These results were consistent with what the Palestinian physician had stated. They were less likely to have good AWL toward the clinical pharmacist role within the medical team. On

Table 4  
Association between HCPs ACL toward Pharm D. implementation and different independent variables (N = 309).

Independent variables		Poor ACL No(%)	Good ACL.	P- value
Gender	Male	53 (26.1)	150 (73.9)	0.056
	Female	39 (36.8)	67 (63.2)	
Age	<26	17 (37.0)	29 (63.0)	0.646
	26–35	38 (30.2)	88 (69.8)	
	36–45	27 (26.7)	74 (73.3)	
	>45	10 (27.8)	26 (72.2)	
Country of first degree	Palestine	56 (31.5)	122 (68.5)	0.697
	Arab country	15 (29.4)	36 (70.6)	
	Foreign country	21 (26.3)	59 (73.7)	
Completing higher education	Yes	57 (33.7)	112 (66.3)	0.095
	None	35 (25.0)	105 (75.0)	
Profession	Physician	46 (27.2)	123 (72.8)	0.525
	Pharmacist	19 (34.5)	36 (65.5)	
	Nurse	27 (31.8)	58 (68.2)	
Job description	Head of the department	29 (25.7)	84 (74.3)	0.099
	Resident	32 (27.4)	85 (72.6)	
	Employee	31 (39.2)	48 (60.8)	
Working city	Jerusalem	21 (31.3)	46 (68.7)	0.751
	West Bank	71 (29.3)	171 (70.7)	
Working institute	Hospitals	63 (29.4)	151 (70.6)	0.982
	Private clinics	18 (30.5)	41 (69.5)	
	Community pharmacies	11 (30.6)	25 (69.4)	

the other hand, Jordanian physicians who qualified after 2000 were more likely to agree that pharmacist is a reference that can play the clinical pharmacy role efficiently (Tahaine et al., 2009).

Around half of the participants agreed that clinical pharmacist is already applied in the Palestinian health field; and this result contradicts the reality; this might be because 77% of those who agreed are working at a hospital where one clinical pharmacist was recruited at each hospital, so they agreed that the specialty applied even if one clinical pharmacist specialist is responsible within the whole region. That is not sufficient to state that this role is applied.

Many studies done in the Middle East show that there is some resistance toward this clinical field and physicians felt uncomfortable with the direct clinical contact of clinical pharmacist with patients (Tahaine et al., 2009; Matowe et al., 2006). For example, physician's resistance toward the role of clinical pharmacist clinically was reported in Kuwait which was attributed to the poor collaboration between physicians and clinical pharmacist participating in clinical activities (Ranelli and Biss, 2000). On the other hand, early studies showed high acceptance rate of clinical pharmacist at the health care setting (Al-Azzam et al., 2013; SM et al., 2019). However, this study shows the opposite situation; in which HCPs welcomed the role of clinical pharmacist in direct patient care and in the clinical ward team work from whom they can regularly seek advice with regard to patient medication, and they accepted the involvement of this new team in patient management. Moreover, they show a high level of perception to the role of clinical pharmacist in improving patient outcomes, and that was in line with results of many studies performed in Ethiopia (Fekadu et al., 2019), Sir Linka (Shanika et al., 2017), Sweden (Shanika et al., 2017) and Australia (Dey et al., 2011).

Patients' level of awareness, satisfaction, and interaction with a pharmacist during a hospital stay is an important issue and has been evaluated by previous studies (Collins et al., 2006; Hall et al., 2017; Madiha et al., 2016; Shawn McFarland et al., 2014). 13–17 To our knowledge, there is no previous study has been conducted in the west bank which aimed to evaluate the patients' level of awareness and acceptance of clinical pharmacists. However, further studies are required in order to explore patients' level of awareness and acceptance of clinical pharmacists in Palestine.

## 5. Conclusion

This study shows a good AWL and ACL to clinical pharmacist among the HCPs who were ready to collaborate with this specialty in the health field to improve the quality of patient care service. The results also show that HCPs support the implementation of clinical pharmacists in direct patient care and in the clinical ward team work from whom they can regularly seek advice with regard to patient medication, and they accepted the involvement of this new team in patient management. Moreover, HCPs show a high level of perception of the role of clinical pharmacists in improving patient outcomes. These optimistic results guide us to give attention to implement that profession within the health care system. We need the stakeholder effort and ministry of health attention to speed up the steps toward practicing the clinical pharmacist specialty in order to integrate it with other health care jobs and try to build a friendly relationships between them to be able to work together.

## Limitations of the study

There were some limitations; first; the authors can't distribute the questionnaires to all desired areas especially Jerusalem, and the convenient sample was taken, so the results can be generalized

to the state of Palestine with cautions. Moreover, the questionnaires were dealing with doctors who always complain about lacking time to fill, therefore we turned it verbally in some cases to achieve the interaction.

## Data availability

The data used to support the findings of this study are available from the corresponding author upon request.

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## Declaration of Competing Interest

The authors state that they do not present any conflict of interests in the present research.

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