



Original article

Drive-thru pharmacy service: Assessments of awareness, perception and barriers among pharmacists in Jordan

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ABSTRACT

Objective: Drive-thru pharmacy services have become widely recognized service worldwide. Despite its proven success, there were doubts in its ability to maintain safe practice. Thus, the aim of the current study was to investigate the awareness, perception and barriers of drive-thru pharmacy services among pharmacists in Jordan.

Methods: A cross-sectional study was conducted in Amman-Jordan between February–May 2017. During the study period, 226 pharmacists were approached. Pharmacists were interviewed to assess their perception toward drive-thru services, and to assess their opinions regarding the advantages and disadvantages of this system using validated questionnaire.

Results: Although the majority of pharmacists reported that they were aware about the concept of drive-thru pharmacy service (n = 194, 85.5%), but only 27.9% (n = 63) reported that they are willing to register with this service. The most important advantage of drive-thru pharmacy service was serving sick patients, elderly, disabled people or women with child in the car (n = 166, 88.0%). Most of pharmacists agreed that drive-thru pharmacy service may negatively affect the image of pharmacy profession (n = 168, 74.6%), and it makes pharmacists feel more like a fast food worker than a pharmacist (n = 147, 65.9%). Pharmacists working in chain community pharmacies showed better perception to drive-thru pharmacy service compared to pharmacists who are working in independent community pharmacies (p-value = 0.004).

Conclusion: Most of the study pharmacists showed relatively poor perception toward drive-thru pharmacy service and were unwilling to use this service. More effort is needed to better introduce the concept of drive-thru pharmacy service among pharmacists in Jordan since the benefit of this service is well established across the world.

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1. Introduction

Pharmacy services have been found to expand simultaneously with the increasing role of pharmacists and the increase in the number of prescriptions dispensed (Kantor et al., 2015). This was associated with increasing pressure on pharmacists to provide

their patients with convenient access to pick up their medications which required the introduction of several changes in pharmacy workflow (Plews-Ogan et al., 2004). Drive-thru pharmacy prescription refill service was inaugurated as one mean to keep up with the increase in demands of facilitated prescription processing in modern society (Plews-Ogan et al., 2004).

Drive-thru service is an integral service in many industries such as banks and fast food restaurants aims to promote fast and efficient services. In pharmacy practice, drive-thru pharmacy services have become widely recognized worldwide (Che Noriah et al., 2010; Holt, 1992). The service was initially introduced in the United States in 1990s by Walgreens community pharmacies which enabled customers to refill their prescriptions by driving up to dispensing windows (Myers, 2011). This offered faster and more convenient dispensing of medications, and provided a

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solution to the limited parking slots, thus improving patient satisfaction (Che Noriah et al., 2010; Holt, 1992).

Despite years of experience with the drive-thru pharmacy service, its proven success, and convenience (Che Noriah et al., 2010), there is always the issue of maintaining safe practices at the delivery level (Donaldson et al., 2000). Usually, faster services do not always translate to safe drug delivery and optimal patient care. Thus, this service resulted in a number of concerns whether pharmacists can deliver the same level of care at the drive-thru window as they would through traditional walk-in prescription technique (Chui et al., 2009; Lee and Larson, 1999). There were also doubts in the ability to maintain the pharmacist's role in patient care in this drive-thru setting due to the lack of proper time for optimal pharmacist-patients' interaction compared to that provided at the traditional walk-in prescription at stores (Chui et al., 2009; Lee and Larson, 1999). This lack of patient counseling was found to negatively impact patient care (Puspitasari et al., 2009), and to be associated with a reduction in patients' medication adherence and accordingly therapy failure (Haynes et al., 2005; Lee et al., 2006; Schnipper et al., 2006; Simpson, 2006; Svarstad et al., 2003).

Furthermore, the implementation of this system may increase the risk of medication related errors, mainly dispensing errors (Peterson et al., 1999; Plews-Ogan et al., 2004). This included any deviations from the prescription order such as the dispensing of incorrect drug, incorrect dosage form, incorrect strength or incorrect dose labeling (Peterson et al., 1999; Plews-Ogan et al., 2004).

In Jordan, drive-thru pharmacy service was only introduced recently, in 2016. This service is provided through pharmacy windows, where customers/patients asked for their medication while they are in the car throughout the first window, then the car move through the drive-thru allowing customers to pick-up medications from the exterior of the pharmacy through another window. Since most medications in Jordan can be dispensed without prescription (except for controlled narcotics and major tranquilizers) (Wazaify et al., 2010), pharmacists are supposed to carry a huge responsibility in providing such service to the public, especially with the difficulty in providing patient counseling through windows which may have an impact on healthcare outcomes.

There is currently no available data about pharmacists' perception regarding this service except for unofficial reviews by Jordanian pharmacist on social media. This mandates a study to investigate pharmacists' perception of the influence of drive-thru services on pharmacy profession. This will enable decision makers to review the drive-thru service policy to be able to fulfill patients' needs and expectations. So, the aim of the current study was to investigate the awareness, perception and barriers of drive-thru pharmacy services among Pharmacists in Jordan.

2. Methods

2.1. Study design and clinical settings

This study protocol adopts a cross-sectional study design that was conducted in Amman-Jordan between February-May 2017. During the study period, 250 pharmacists (both community and hospital pharmacists) were approached from several hospitals and community pharmacies. Once pharmacists agreed to participate, they were interviewed to assess their perception toward drive-thru services, and to assess their opinions regarding the advantages and disadvantages of this system.

2.2. Sample size calculation

In the absence of literature reporting the prevalence of pharmacists' awareness about drive-thru pharmacy service, the following

parameters were used to calculate the minimum sample size using standard sample size calculation formula: 50% prevalence (P) which is the most conservative proportion, desired precision (d) of 7%, and 95% level of confidence.

A minimal sample size of 196 pharmacists was considered to be representative for the purpose of this study.

2.3. Questionnaire

To achieve the purpose of the study, a questionnaire was developed using several previous studies (Lee and Larson, 1999; Szeinbach et al., 2007). Content validity was done by distributing the initial draft of the questionnaire to six pharmacists. This helped in finalizing the structured questionnaire by eliminating or modifying unnecessary or ambiguous questions. The final version of the questionnaire contained 39 questions other than the demographic data. These questions are fall in five areas of interest, these included: (1) pharmacists' general knowledge and opinions regarding drive-thru pharmacy service, (2) perceived advantages toward drive-thru services, (3) perceived disadvantage of drive-thru services and (4) perceived barriers of drive-thru services. The questionnaire was then delivered by hand to pharmacists to fill it.

A likert scale (strongly agree, agree, neutral, disagree, and strongly disagree) was used to evaluate pharmacist perception toward the advantages and disadvantages toward drive-thru pharmacy service. Accordingly, a perception score out of 5 was calculating by using the following scoring system: for the advantages (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree) and for the disadvantages (1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree). A score out of 65 was calculated for each pharmacists and the final score was divided by the number of statements (13) to find out the mean perception score out of 5. The higher the mean perception score the more positive the pharmacists attitude toward drive-thru pharmacy service.

2.4. Ethical consideration

The study was approved by the Institutional Review Board (IRB) at the Jordan University Hospital (Reference number: 65/2017). The study was conducted following the ethical standards outlined in the World Medical Association Declaration of Helsinki guideline (World Medical Association, 2013). Participant's confidentiality was preserved by using anonymous data collection form. Due to the anonymity of the study protocol, only verbal informed consents were obtained from all pharmacists before the interview.

2.5. Statistical analysis

Data were analyzed using statistical package for social science (SPSS) version 22 (SPSS Inc., Chicago, IL, USA). The descriptive analysis was done using mean and SD for continuous variables and percentage for qualitative variables. Checking for normality was carried out using Shapiro-Wilk test (with P-value \geq 0.05 indicates a normally distributed continuous variable) (Tabachnick and Fidell, 2006). Analysis of variance (ANOVA) was used to evaluate difference between groups (chain community, independent community and hospital pharmacies).

Initial screening of the factors affecting perception score was carried out using simple linear regression. A P-value of less than 0.05 was considered statistically significant and all tests were two tailed. Any variable that had a P-value of \leq 0.05 was a candidate for multiple linear regressions after checking for the absence of multicollinearity.

3. Results

3.1. Socio-demographic characteristics of pharmacists

A total of 280 questionnaires were distributed in Amman-Jordan, of which 226 were filled and returned (response rate = 80.7%). Reasons for not participating were mainly lack of time, lack of interest, or fear of filling related questionnaire. Pharmacists had a mean age of 31.0 years, with an average of 7.2 years of experience. The majority of pharmacists were female (n = 150, 66.4%) and had a BPharm or PharmD degree (n = 200, 89.3%). Most of participating pharmacists were employees rather than owners of pharmacies. About half of the pharmacists were working at independent community pharmacies (n = 103, 45.8%), and most of them were practicing counseling and dispensing as their main current job responsibilities (n = 137, 61.4%). Summary of participating pharmacists is summarized in Table 1.

3.2. Pharmacists' general awareness about drive-thru pharmacy service

The majority of pharmacists reported that they heard about drive-thru pharmacy service (n = 194, 85.5%), with internet being the main source of their awareness about the service (n = 121, 53.5%) (Fig. 1). About half of the pharmacists knew that drive-thru service has been implemented in Jordanian pharmacies since the last year. But only 24.8% (n = 56) knew that are there legal provision that control the introduction of drive-thru services in pharmacies in Jordan.

3.3. Pharmacists' acceptance to the introduction of drive-thru service among their site of work

Around only one quarter of the pharmacists (n = 63, 27.9%) reported that they are willing to register with drive-thru pharmacy service, while the remaining pharmacists were reluctant or disagreed to register with the service. Also pharmacists were asked about the suitability of their pharmacy layout with the introduction of drive-thru pharmacy service, and 23.1% (n = 52) of them

reported that it is highly supportive/supportive, while 41.3% (n = 93) found it to be highly unsupportive/unsupportive. Eighty pharmacist (n = 80, 35.6%) answered by neutral.

3.4. Pharmacists perceived advantages and disadvantages about drive-thru pharmacy service

The most important advantage of drive-thru pharmacy service as perceived by 88.0% of pharmacists (n = 166) was serving sick patients, elderly, disabled people or women with child in the car, followed by the advantage of reducing parking problems (n = 133, 58.8%) (Table 2). Regarding the perceived disadvantages of drive-thru services, most of pharmacists strongly agreed/agreed that drive-thru pharmacy service negatively affect the image of pharmacy profession (n = 168, 74.6%), and it makes pharmacists feel more like a fast food worker than a pharmacist (n = 147, 65.9%). Also 75.5% (n = 170) believed that such service may contribute to dispensing error and 71.2% (n = 161) strongly agreed/agreed that it may lead to communication error between staff. Other disadvantages toward this service are presented in Table 2.

By calculating the overall perception score, pharmacists were found to have a score of 2.4 out of 5 (SD = 0.67).

By stratifying results based on site of work, we found that pharmacists working in chain pharmacies and hospital setting showed better perception score (2.6 (SD = 0.7) and 2.5 (SD = 0.6), respectively) compared to those working in small independent community pharmacies (2.2 (SD = 0.6)) (Fig. 2).

3.5. Socio-demographic factors affecting perception score towards drive-thru pharmacy service among pharmacists

A simple linear regression analysis was applied to determine socio-demographic factors affecting perception score toward drive-thru pharmacy service. Table 3 shows that five predictors were significantly affecting perception score (P-value < 0.05). These were: age, gender, number of years of pharmacy experience, site of work and employment status.

Any predictor whose simple linear regression analysis had a p-value of ≤ 0.05 was a candidate for multivariate modeling, but predictors that should be entered in the multivariate linear regression should be independent. Therefore, multicollinearity was checked for all the five significant predictors, and results indicate a strong correlation between age and years of pharmacy experience ($r = 0.912$, tolerance = 0.123, and VIF = 8.160). Accordingly, number of years of pharmacy experience was excluded from the final multi-linear regression analysis.

Finally the remaining four predictors were entered into multiple linear regression to identify the most important predictors of perception score. The result of the multiple linear regression showed that only site of work was significantly associated with perception score ($r = 0.220$, p-value = 0.004), where pharmacists working in chain community pharmacies showed better perception to drive-thru pharmacy service compared to pharmacists who are working in independent community pharmacies (Table 3).

The R for the regression was significantly different from zero. The highest correlation between the entered independent variables was -0.461 indicating absence of multicollinearity.

3.6. Pharmacists perceived barriers about drive-thru pharmacy service

Results showed that 76.3% (n = 170) of pharmacists believed that it is not practical for hospital setting, 74.4% (n = 166) believed that the current pharmacies layout make it impractical to be introduce drive-thru services, 71.7% (n = 160) thought that it is more expensive to construct a building with a drive-up window and

Table 1
Demographic characteristics of the study sample (n = 226).

Parameters	Mean (SD)	n	%
Age (years)	31.0 (9.0)		
Gender			
• Male		76	33.6%
• Female		150	66.4%
Experience as a pharmacist	7.2 (8.3)		
Educational level			
• BSc (BPharm/PharmD)		200	89.3%
• Graduate studies (MSc/PhD)		24	10.7%
Country of graduation			
• Jordan		205	90.7%
• Others		21	9.3%
Site of work			
• Independent community pharmacy		103	45.8%
• Chain community pharmacy		58	25.8%
• Hospital pharmacy		64	28.4%
Current job responsibilities			
• Managerial		37	16.6%
• Counseling & dispensing		137	61.4%
• Clinical Pharmacy		33	14.8%
• Drug Information		16	7.2%
Employment			
• Owner of the pharmacy		40	17.8%
• Employee		185	82.2%

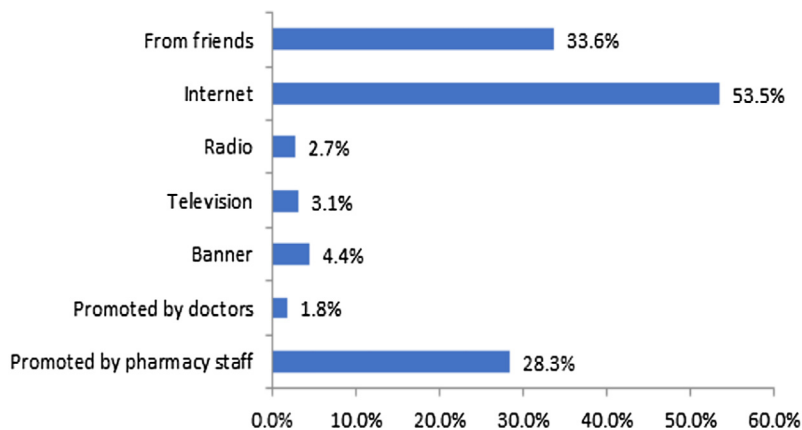


Fig. 1. Sources of information about drive-thru pharmacy service.

Table 2
Pharmacists perceived advantages and disadvantages toward drive-thru pharmacy service.

No.	Statement	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
<i>Perceived advantages of drive-thru services</i>						
1	Drive thru service speeds up the prescription processing	24 (10.6)	70 (31.0)	52 (23.0)	46 (20.4)	34 (15.0)
2	Drive thru services reduce parking problems	33 (14.6)	100 (44.2)	40 (17.7)	36 (15.9)	17 (7.5)
3	Drive-thru services have the advantage of having fewer loud screaming children in the pharmacy	39 (17.3)	91 (40.3)	51 (22.6)	30 (13.3)	15 (6.6)
4	Drive thru has the advantage of serving sick patients, elderly, disabled people or women with child in the car.	59 (40.7)	107 (47.3)	26 (11.5)	20 (8.8)	14 (6.2)
No.	Statement	Strongly agree 1	Agree 2	Neutral 3	Disagree 4	Strongly disagree 5
<i>Perceived disadvantages of drive-thru services</i>						
1	Using this service, it is not easy to build professional relationship with patients	92 (40.7)	85 (37.6)	38 (16.8)	9 (4.0)	2 (0.9)
2	Drive thru services negatively affect the image of pharmacy profession	100 (44.4)	68 (30.2)	37 (16.4)	16 (7.1)	4 (1.8)
3	Drive-thru services may make you feel more like a fast food worker than a pharmacist	99 (44.4)	48 (21.5)	55 (24.7)	18 (8.0)	3 (1.3)
4	Drive thru services may contribute to dispensing errors due to the fast service provided	81 (35.8)	89 (39.4)	43 (19.0)	12 (5.4)	1 (0.4)
5	Drive thru services may contribute to communication errors between staff	74 (32.7)	87 (38.5)	42 (18.6)	19 (8.4)	4 (1.8)
6	Drive-thru services is not convenient in providing drug information/counseling to patients (especially written information)	97 (43.1)	71 (31.6)	32 (14.2)	19 (8.4)	6 (2.7)
7	Drive thru service reduces the ability of patients to check the medications they pick up to confirm they received the right medicine.	96 (42.7)	78 (34.7)	23 (10.2)	26 (11.6)	2 (0.9)
8	Drive-thru windows causes extra distractions to pharmacists that contribute to processing delays	68 (30.4)	96 (42.9)	36 (16.1)	21 (9.4)	3 (1.3)
9	It's harder to market OTC items using drive-thru service	98 (43.6)	80 (35.6)	33 (14.7)	12 (5.3)	2 (0.9)
Perception score		2.4 (SD = 0.67) [Range = 1–4.46]				

48.0% (n = 107) assumed that registration for drive-thru service is complicated.

4. Discussion

Several previous studies have investigated pharmacists' perception and attitude toward different value-added pharmacy services (Alsultan et al., 2012; Hassali et al., 2009; Olubunmi Afolabi and Oyedepo Oyebisi, 2007; Roberts et al., 2006), but only one study have investigated their perception toward drive-thru service (Lee and Larson, 1999). So, this study highlights, for the first time in the Middle East, pharmacists' awareness about drive-thru pharmacy service and their perception toward the implementation of such relatively new service in pharmacy practice. Also, to examine how do pharmacists' socio-demographic factors contribute to positive or negative perception toward this service.

Even though this study was conducted only in one city (Amman- the capital of Jordan), but this city was estimated to have

the highest community pharmacy density in Jordan (Conesa et al., 2009). In this study, females represent 66.4% of the study sample (n = 150), which is consistent with the percentage of female pharmacists registered at the Jordanian pharmaceutical association record (68%).

Results of this study revealed that the majority of pharmacists were aware of the drive-thru pharmacy service, with internet being the main source for their knowledge, followed by information from friends and from pharmacists' staff. A related study conducted in Malaysia on patients and caregivers showed that pharmacy staff was the main source of awareness of drive-thru pharmacy service, followed by banners and friends (Liana and Hasnah, 2015).

Despite the fact that this service is extensively well established in community pharmacies outside of Jordan (Holt, 1992; Liana and Hasnah, 2015), this service was recently established in Jordan in 2016. This may explain why only around half of the pharmacists recognized that drive-thru service has been implemented in Jordanian pharmacies.

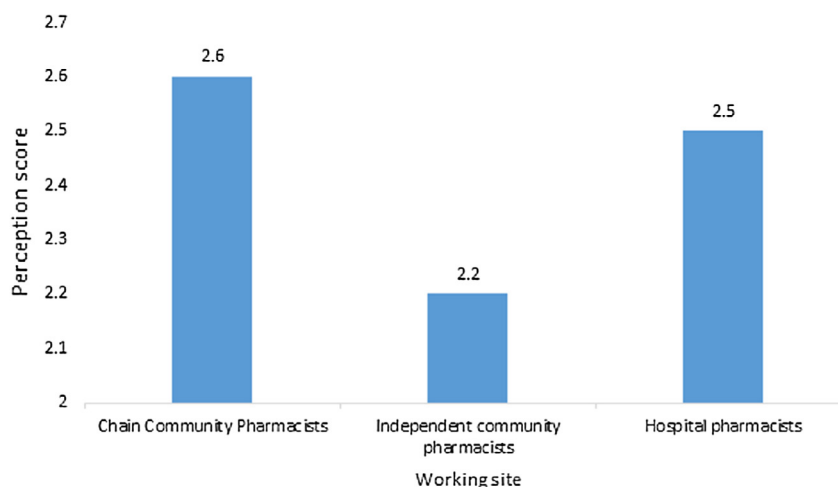


Fig. 2. Pharmacists' perception score stratified by their site of work. Pharmacists working at chain pharmacies and hospital setting showed better perception score compared to those working at small independent pharmacies (p -value < 0.001, using ANOVA test).

Table 3

Simple and multiple linear regression analysis for factors affecting perception scores toward drive-thru pharmacy service among pharmacists.

Variables	Perception score			
	Person correlation coefficient	p-value ^a	Person correlation coefficient	p-value ^b
Age	-0.164	0.016 ^c	-0.005	0.945
Gender [0: males, 1: females]	0.201	0.003 ^c	0.101	0.175
Years of experience	-0.151	0.026 ^c	-	-
Educational level [0: BSc, 1: graduate studies]	0.032	0.643	-	-
<i>Site of work</i>				
[0: Independent community pharmacist, 1: chain community pharmacist]	0.278	<0.001 ^c	0.220	0.004 ^c
[0: Independent community pharmacist, 1: hospital pharmacist]	0.203	0.004 ^c	0.091	0.246
Employment [0: owner of the pharmacy, 1: employee]	0.268	<0.001 ^c	0.158	0.055
Model	$r = 0.351$, $R^2 = 12.3\%$, adjusted $R^2 = 10.2\%$, p -value = <0.001 ^c			

^a Simple linear regression analysis.

^b Stepwise multiple linear regression.

^c Significant at 0.05 level.

Around 28% of the study pharmacists reported that they are willing to register with drive-thru pharmacy service which indicates poor acceptance of the concept of drive-thru pharmacies among Jordanian pharmacists compared with Malaysians where 77.8% of participating pharmacist showed that they were willing to use this service once it offered to them (Liana and Hasnah, 2015). Reason for this low acceptance rate of the service, is the unsupportive pharmacies layout in Jordan that hinder the implementation and construction of drive-thru counters.

According to pharmacists' perceptions, most pharmacists feel that drive-thru provided a valuable service by allowing them to serve sick patients, elderly, disabled people or women with her children in the car. A similar results were obtained from group in central Iowa, where they reported that among the six studied pharmacies, pharmacists believed that this service allows them to have direct contact with the handicapped, elderly, or unhealthy patients that may not be able to visit pharmacy without the presence of drive-thru service (Lee and Larson, 1999). In this study, half of the pharmacists believed that parking problems could be reduced by implementing such service. This was supported by a study at a naval medical center in Virginia-USA that found out that drive-thru service was capable of reducing customer parking demand at the outpatient pharmacy department (Holt, 1992).

On the other hand, the majority of the participating pharmacists believed that drive-thru pharmacy service negatively affects the image of the pharmacy profession by making pharmacists feel more like a fast food worker. Additionally pharmacists perceived that the existence of a drive-thru service may contribute to dis-

persing error, and communication error between staff. These results were similar to what has been reported elsewhere, where pharmacists perceived that drive-thru windows contributed to dispensing errors, errors in communication (Szeinbach et al., 2007), and may reduce interaction between pharmacy staff and patient which may affect counseling process (Chui et al., 2009; Holt, 1992). On the contrary, a study from Malaysia reported that only 4% of patients and caregivers believed that the interaction between pharmacists and patients may be affected when dispensing medications using drive-thru window and only few of them believed that this service has its own disadvantages (Liana and Hasnah, 2015).

Linear regression analysis of factors affecting pharmacists' perceptions toward drive-thru pharmacy service showed that pharmacists working in chain pharmacies showed better perception score compared to those working in small independent pharmacies. As it known, drive-thru service in order to be afforded requires a large area for pharmacy building, which require a lot of finances. So, it is most likely that pharmacists working in small retail pharmacies recognize that such service is not easily to be implemented within their pharmacies. This give a competitive edge in providing this service within chain pharmacies and hospital setting. Finally, no significant differences in perception scores were found based on pharmacists' age, gender, experience and employment.

Moreover, pharmacists assumed several barriers for the implementation of drive-thru service. Drive-thru is believed to be impractical for hospital setting which can be problematic since

many patients rely on hospital pharmacies for their monthly prescription refill in Jordan. Also, it is more expensive to construct a building with a drive-up window, and that registration for drive-thru service is complicated. Overcoming barriers to the implementation of this service is necessary to improve pharmacist perception and attitude toward this service and consequently fully implement this service for the benefit of the patients especially the vulnerable ones.

Finally, this study explored pharmacists' awareness and perception toward drive-thru service for the first time in Jordan and the Middle East. However, we are aware of the main methodological weaknesses of our study; as the questionnaire relied on pharmacists' self-rated assessment of their own awareness and perception, which may have resulted in over estimation of the results. Also, the study did not explore customers' perception toward this service which allow them to obtain prescription much more easily. Thus, further study is recommended to evaluate customers' perceptions and attitude toward drive-thru service.

5. Conclusion

In conclusion, in spite of the great popularity of drive-thru pharmacy services as an important service in patients' health care, this service is still new in Jordan and the Middle East. This study evaluated the perception of pharmacists toward drive-thru pharmacy service, where most of the pharmacists showed relatively poor perception and were unwilling to use this service. Concerns about the image of pharmacists, the quality of service provided, the possibility of having dispensing errors and the complicated registration for drive-thru service were among the main of disadvantages of this service. This study highlights the need to better introduce the concept of drive-thru pharmacy service to pharmacists across Jordan and for the regulatory bodies to revise the requirement to grant approvals for the introduction of this service by pharmacies since the benefit of this service is well established across the world for patients who may otherwise have poor access to medication.

Conflict of interest

None of the authors have any conflict of interest.

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