

# Public perceptions about home delivery of medications service in Lebanon: A cross-sectional survey

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## ABSTRACT

**Objectives:** To investigate the public's perception of home delivery of medication service offered by community pharmacies in Lebanon and to assess factors affecting the use of this service.

**Methods:** The present study represents a cross-sectional online survey study that took place in April-May 2022. The survey was uploaded on the google form platform and was distributed on popular social media platforms (Facebook and WhatsApp). Participants were asked to fill out the questionnaire to evaluate their awareness and perception of home delivery of medication service. Statistical analyses were performed using SPSS version 22.

**Results:** During the study period, 517 participants agreed to fill out the study questionnaire. Only 18.4% of the study's participants (n=95) had previously utilized home delivery of medications service. The majority of the participants believed that home delivery service made pharmacists less accessible to answer questions (n=332, 64.2%), and prevented pharmacists from explaining important points about prescriptions (n=322, 62.3%) compared to in-store refills. The main disadvantage of the service as perceived by the participants that home delivery of medications services is associated with the excessive cost of transporting medication (n=385, 74.5%), while the main advantage of this service is its ability to serve sick patients, elderly, disabled people (n=460, 88.9%). Finally, being female, being a university graduate or above, or having a monthly income of more than 500\$/month are significantly associated with utilizing home delivery of medication service (p≤0.05).

**Conclusion:** The majority of the Lebanese participants reported not utilizing the home delivery of medication service before, however, they have positively perceived medication home delivery service as an efficient pharmaceutical service. Serious efforts are needed by health policymakers to facilitate the implementation of this service in Lebanon.

**Keywords:** home delivery of medication, perception, public, Lebanon

## INTRODUCTION

In recent years, pharmacists' role has substantially increased as first-line health care providers and specialized pharmaceutical care providers [1]. Community pharmacists provide health and medical provision by dispensing prescription and over-the-counter (OTC) medicines. In addition, they bridge the gap between physicians and patients for the best benefit and rationale of medication use [2]. Pharmacists' services do not stop at this limit but also include procurement of drugs, patient counseling and education, health promotion, drug information and recently, home delivery of medication service [3, 4]. Since community pharmacies offer a wide range of services, pharmacists were rated as one of the top three professionals serving society in some countries. This recognition of pharmacists is due to the professional services entrusted by them to augment public health in the community [5]. For instance, an Indian study

assessed the role of a pharmacist in a community setting and the consumer's perception showed that many respondents were unaware of the difference between a pharmacist and a doctor, stating that the pharmacy was the most convenient and best place for advice about staying healthy [6].

Unfortunately, COVID-19 has distressed the whole world and imposed new challenges on the healthcare systems of both developed and developing nations [7]. On the other hand, significant improvements in pharmaceutical services were recognized, using an innovative approach to improve the quality of community pharmacy services, which was an essential trace in the development of up-to-date patient care [2]. The main goal of pharmacists' innovative problem-solving ways was that patients could connect virtually with the pharmacists to restock their prescriptions and/or ask questions concerning their medication management. Some home-delivery pharmacy initiatives were implemented successfully, as reported in many countries [8]. For example, in

Jordan, the government regulatory authorities released special regulations to implement home delivery services and internet-based pharmacy during COVID-19, although it was not permitted in standard practice [9]. In the USA, home delivery of medication service was launched via mail order, accounting for at least at a quarter of pharmacy sales [10].

The initiatives of home delivery of medication have a crucial impact on reducing patient overcrowding and excessive visits to health care centers, thus, it allows the patients to obtain their medications effectively [11]. A recent study revealed that such services were associated with better medication adherence and compliance in diabetes patients and among many other chronic conditions [12]. On the contrary, others reported that it contributes to medication errors if not appropriately implemented through an organized system with tight monitoring [10]. Such misleading, inappropriate implementation of the delivery process may contribute to errors, including patients receiving the wrong medication, delivering packages with wrong labels, incorrect patient counseling, and sub-optimal medication therapy management [10, 13]. And so, further research is needed to evaluate this service and optimize its benefit from it by recognizing the public perspective. Hence, this study aims to investigate the public's perception of the home delivery of medication service that was offered by community pharmacies in Lebanon and to assess factors affecting the use of this service.

## METHODS

This was a cross-sectional survey study. Data collection was done in April-May 2022. An online survey via the Google Form platform was used. The survey link was distributed through different social media platforms (Facebook and WhatsApp). Included in the study were adults (18 years old or above) who are residents of Lebanon.

The questionnaire of the study was based on previous studies that evaluated public perceptions towards home delivery of medication and derive through pharmacy services [14]. The questionnaire was initially drafted in English. Then, face and content validation were carried out by three independent pharmacy academics. Comments of the evaluators were included in the final version of the study questionnaire. Using the forward-backward translation protocol, the study questionnaire was translated into Arabic. Both the Arabic and English versions were distributed, and the participants had the option to select their preferred language.

The finalized study questionnaire consisted of five sections. Firstly, information about the sociodemographic variables including age, gender, education level, marital status, income, place of residence, number of children, presence of chronic diseases, and monthly frequency of visiting community pharmacies, was collected from the participants. Secondly, the awareness of the public about home delivery of medication service, and whether they support such service was assessed (four questions). The third section was about the perception of public about the difference between home delivery of medication service versus medication refill in-store (six statements). The fourth and fifth sections were, respectively, about the perceptions of the public about the disadvantages and advantages for the use of home delivery of medication service (seven statements and five statements).

Responses of participants in the third, fourth, and last sections were assessed via the 5-Likert scale, as follows: "1: strongly disagree", "2: disagree", "3: neutral", "4: agree", or "5: strongly agree". For the last three domains, Cronbach's alpha values were derived to assess the reliability and internal consistency the items of the questionnaire. Values of 0.667, 0.889, and 0.789 were obtained, respectively, which indicates an acceptable internal consistency.

The sample size of the study was calculated using the following formula:

$$n = P \times (1 - P) \times \frac{z^2}{d^2} \quad (1)$$

The confidence level was set at 0.95, and the precision at 5%. and P at 50% i.e., the most conservative proportion of the public who utilize the service. The minimum sample size was 385.

The Declaration of Helsinki guideline along with all its amendments and revisions was followed [15]. Before being granted access to the questionnaire, potential participants were required to give their electronic consent by selecting "agree to participate". Otherwise, if they selected "disagree to participate", they were not granted access to the study questionnaire, and the response was automatically submitted and counted as a non-response item.

The statistical package for social science (SPSS, version 22, SPSS Inc., Chicago, IL, the USA) was used to analyze data. For continuous variables, the data were presented as the median/interquartile range (IQR), whereas for qualitative variables the data were presented as frequency/percentage. Nine factors affecting the use of home delivery of medication service were assessed during the multiple linear regression, utilizing 20 participants for each factor would require 180 participants. Thus, the study's sample size is representative after considering that 5-20 participants were required for each factor.

## RESULTS

### Demographic Characteristics of the Study Participants

During the study period, 517 participants agreed to fill out the study questionnaire. The median age of the study's participants was 20.0 (IQR=2.0). Most of the participants were females (n=376, 72.7%), while only 9.1% were married (n=47). In terms of participants' educational level, most of them were university students or held a university degree (n=414, 85.3%). The majority of the participants (n=333, 64.4%) reported having a monthly income of 500\$/month or less, and about one-third of the study's participants (n=162, 31.3%) were residing in Beirut (the capital). The majority of the participants reported that they have no children (n=478, 92.5), and 10.4% (n=54) reported having a chronic disease. Regarding pharmacy visits, about 63.0% of the participants (n=325, 62.9%) documented that they visit the pharmacy 0-1 time per month, while 37.1% (n=192) reported visiting the pharmacy more than twice per month.

**Table 1** shows the detailed demographic characteristics of the study's participants.

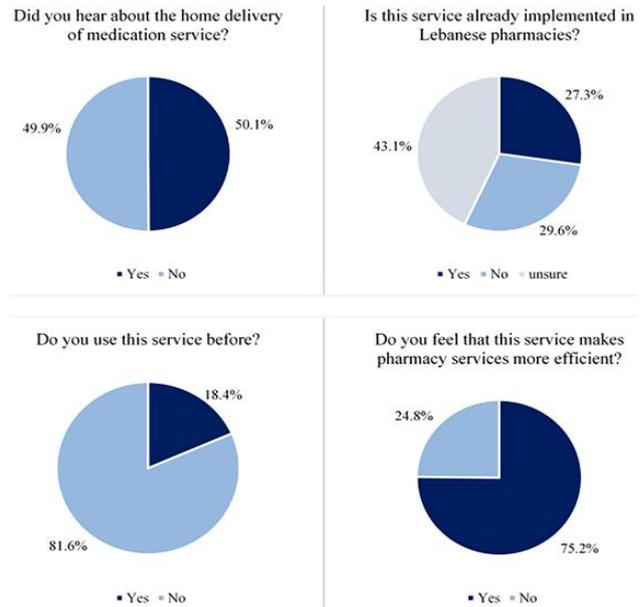
**Table 1.** Socio-demographic characteristics of the participants (n=517)

Parameters	Median (IQR)	n (%)
Age (years)	20.0 (2.0)	
Gender		
Female		376 (72.7)
Male		141 (27.3)
Marital status		
Married		47 (9.1)
Others (single, divorced, or widowed)		470 (90.09)
Educational level		
Not educated		1 (0.2)
School level		37 (7.2)
University students		385 (74.5)
University graduate		56 (10.8)
Post-graduate		38 (7.4)
Monthly income		
<500\$/month		333 (64.4)
501-1,000\$/month		95 (18.4)
>1,000\$/month		89 (17.2)
Place of residence		
Beirut		162 (31.3)
Mount Lebanon		188 (36.4)
South of Lebanon		119 (23.0)
North of Lebanon		24 (4.6)
Bekaa		24 (4.6)
Do you have children?		
No		478 (92.5)
Yes		39 (7.5)
Do you suffer from chronic diseases?		
No		463 (89.6)
Yes		54 (10.4)
Frequency of visiting a community pharmacy per month		
0-1 time/month		325 (62.9)
≥2 times/month		192 (37.1)

Note. IQR: Interquartile range

**Awareness of the Home Delivery of Medication Service**

About half of the study participants (n=258, 49.9%) reported that they had heard previously about home delivery of medication service. When participants were asked whether this service is already implemented in Lebanon, 27.3% (n=141) answered “Yes”. Only 18.4% of the study’s participants (n=95) had previously utilized this service. With regards to the impact of this service on the pharmacy services efficiency, about three-quarters of the participants (n=389, 75.2%) documented that the home delivery of medication service would improve the efficiency of pharmacy services (Figure 1).



**Figure 1.** Study’s participants’ awareness of the home delivery of medication service (n=517) (Source: Authors’ own elaboration)

**Differences Between Home Delivery of Medication Service and In-Store Drug Refill**

Participants were questioned about their opinions regarding home delivery of medication service and how it differs from in-store medication refills. All of the survey items were agreed/strongly agreed by at least 53.0% of the study’s participants (Table 2).

The majority of the participants believed that home delivery service made pharmacists less accessible to answer questions (n=332, 64.2%), prevented pharmacists from explaining important points about prescriptions through this service (n=322, 62.3%), provides convenience to customers (n=312, 60.3%), and reduced the written counseling information (n=278, 53.7%). Moreover, more than half of the participants agreed/strongly agreed that home delivery is appropriate only for refill prescriptions but not for new prescriptions (n=301, 58.2%) and that it is suitable only for OTC but not for prescriptions drugs (n=295, 57.1%).

**Advantages and Disadvantages of Home Delivery of Medication Service Compared to In-Store Drug Refill**

The response of the participants regarding the advantages and disadvantages of home delivery of medication service are represented in Table 3.

**Table 2.** Participants opinions regarding how home delivery of medication service differs from in-store medication refill (n=517)

Statement	SA [n (%)]	A [n (%)]	N [n (%)]	D [n (%)]	SD [n (%)]
Home delivery of medication makes pharmacist less available to answer questions compared to in-store refill.	105 (20.3)	227 (43.9)	122 (23.6)	57 (11.0)	6 (1.2)
Home delivery of medication makes written counseling information less supplied compared to in-store refill.	69 (13.3)	209 (40.4)	166 (32.1)	69 (13.3)	4 (0.8)
Pharmacist cannot explain important points about prescription while providing this service (home delivery) compared to in-store refill.	135 (26.1)	187 (36.2)	101 (19.5)	83 (16.1)	11 (2.1)
Home delivery of medication provides convenience to customers compared to in-store service.	103 (19.9)	209 (40.4)	151 (29.2)	47 (9.1)	7 (1.4)
Home delivery of medication is suitable only for refill prescriptions but not for new prescriptions.	126 (24.4)	175 (33.8)	137 (26.5)	74 (14.3)	5 (1.0)
Home delivery of medication is suitable only for OTC but not for prescriptions drugs.	121 (23.4)	174 (33.7)	136 (26.3)	75 (14.5)	11 (2.1)

Note. SA: Strongly agree; A: Agree; N: Neutral; D: Disagree; & SD: Strongly disagree

**Table 3.** Perception towards advantages and disadvantages of home delivery of medication service compared to in-store drug refill reported by the participants (n=517)

Statement	SA [n (%)]	A [n (%)]	N [n (%)]	D [n (%)]	SD [n (%)]
<b>Disadvantages</b>					
1. Patients might be unable to build a professional relationship with pharmacist using home delivery of medication service	117 (22.6)	226 (43.7)	111 (21.5)	53 (10.3)	10 (1.9)
2. Home delivery of medication service may lead to communication errors between the patient and pharmacist	118 (22.8)	239 (46.2)	107 (20.7)	46 (8.9)	7 (1.4)
3. Home delivery of medication service may contribute to medication errors due to the nature of remote interaction	106 (20.5)	213 (41.2)	122 (23.6)	66 (12.8)	10 (1.9)
4. Home delivery of medication service is not convenient in providing drug information/counseling to patients	110 (21.3)	215 (41.6)	113 (21.9)	71 (13.7)	8 (1.5)
5. Using home delivery of medication service may be associated with incorrect medication dispensed or delivered to patient	106 (20.5)	219 (42.4)	121 (23.4)	62 (12.0)	9 (1.7)
6. Home delivery of medication service restrict the opportunity for interaction with the pharmacist	129 (25.0)	241 (46.6)	97 (18.8)	46 (8.9)	4 (0.8)
7. Home delivery of medication service are associated with excessive cost of transporting medication	136 (26.3)	249 (48.2)	103 (19.9)	24 (4.6)	5 (1.0)
<b>Advantages</b>					
8. Patients who use home delivery of medication service can continue receiving life-saving medical treatment without risking exposure during pandemics	161 (31.1)	251 (48.5)	87 (16.8)	17 (3.3)	1 (0.2)
9. Patients can significantly reduce their transportation costs by using home delivery service	98 (19.0)	236 (45.6)	128 (24.8)	50 (9.7)	5 (1.0)
10. Home delivery of medication service have the advantage of serving sick patients, elderly, disabled people	223 (43.1)	237 (45.8)	49 (9.5)	8 (1.5)	0 (0.0)
11. Home delivery of medication service are more comfortable for parents with children at home.	189 (36.6)	246 (47.6)	70 (13.5)	12 (2.3)	0 (0.0)
12. There will be less congestion at health facilities if home delivery of medication is widely implemented.	159 (30.8)	252 (48.7)	85 (16.4)	19 (3.7)	2 (0.4)

**Table 4.** Assessment of factors affecting use of home delivery of medication service among study participants (n=517)

Parameters	Use of home delivery of medication service [0: No & 1: Yes]			
	OR	p-value <sup>#</sup>	OR	p-value <sup>§</sup>
Age	1.022	0.114 <sup>^</sup>	0.997	0.882
Gender				
Female	Reference:			
Male	2.491	0.003 <sup>^</sup>	3.020	0.001 <sup>*</sup>
Marital status				
Married	Reference:			
Others	0.553	0.088 <sup>^</sup>	0.755	0.579
Educational level				
≤University students	Reference:			
≥University graduate	1.962	0.011 <sup>^</sup>	2.198	0.021 <sup>*</sup>
Monthly income				
≤500\$/month	Reference:			
>500	2.265	<0.001 <sup>^</sup>	2.254	0.001 <sup>*</sup>
Place of residence				
Beirut	Reference:			
Others	0.308	<0.001 <sup>^</sup>	0.293	<0.001 <sup>*</sup>
Do you have children?				
No	Reference:			
Yes	1.160	0.720	-	-
Do you suffer from chronic diseases?				
No	Reference:			
Yes	1.154	0.689	-	-
Frequency of visiting a community pharmacy per month				
0-1 time/month	Reference:			
≥2 times/month	1.224	0.382	-	-

Note. <sup>#</sup>Using simple logistic regression; <sup>§</sup>Using multiple logistic regression; <sup>^</sup>Eligible for entry in multiple logistic regression (significant at 0.25 significance level); & <sup>\*</sup>Significant at 0.05 significance level

With regards to the disadvantages, all of the items were agreed/strongly agreed on by at least 61.7% of the study's participants. The highest agreement percentage (n=385,

74.5%) was observed in item 7 "home delivery of medication service is associated with the excessive cost of transporting medication," followed by item 6 (n=370, 71.6%) "home delivery of medication service restricts the opportunity for interaction with the pharmacist." Item 3 "home delivery of medication service may contribute to medication errors due to the nature of remote interaction" showed the lowest agreement percentage (n=319, 61.7%).

With regards to the advantages (items 8-12), at least 64.6% of the study's participants agreed/strongly agreed with each of the advantages listed. Item 10 "home delivery of medication service has the advantage of serving sick patients, elderly, disabled people" received the highest percentage of agreed/strongly agreed responses (n=460, 88.9%), followed by item 11 "home delivery of medication service is more comfortable for parents with children at home" (n=435, 84.2%). The item with the lowest overall agreement rate (n= 334, 64.6%) was item 9 "patients can significantly reduce their transportation costs by using home delivery service" (Table 3).

#### Factors Affecting the Use of Home Delivery of Medication Service

Multiple logistic regression analyses of factors affecting the use of home delivery of medication service highlighted that participants' gender, education level, monthly income, and place of residence significantly affected the use of home delivery of medication service (Table 4). Thus, being a female (OR=3.020, p-value=0.001), a university graduate or above (OR=2.198, p-value=0.021), or having a monthly income of more than 500\$/month (OR=2.254, p-value=0.001) are significantly associated with utilizing home delivery of medication service. On the other hand, residing in Lebanon's cities other than the capital, Beirut (OR=0.293, p-value=<0.001), is significantly associated with not using home delivery of medication service.

## DISCUSSION

The adoption of remote patient care services has become ultimately a common practice. The COVID-19 outbreak has contributed to the expansion of this service, aiming to decongest pharmacies and prevent COVID-19 transmission [16]. In spite of that in Lebanon, this service was further augmented due to fuel shortages, owing currency hyperinflation and economic collapse of historic magnitude [17]. Patients had to rely on home delivery of medication service in order to secure their drugs. Nonetheless, the Order of Pharmacists of Lebanon (OPL), the official national pharmacy association, had imposed a policy that prohibits community pharmacies to deliver medications to patients' homes [18].

In fact, the Lebanese Law of Pharmacy Practice stated that community pharmacies are the only authorized source of drug dispensing, where they should directly handle the medications to patients or their caregivers [18]. Yet the medication delivery service is commonly practiced by many community pharmacies, particularly during the pandemic and Lebanon's economic crises. Nevertheless, yet, no study has investigated the prevalence of the Lebanese public's utilization of medication delivery service. Highlighting this important aspect will assist the national health authorities to identify the mechanisms that should be adopted in order to draft an effective scheme and policy to facilitate patients' welfare.

The majority of the study participants reported not utilizing the home delivery of medication service before. This finding is in line with a previous Jordanian study, where only 30% of the public revealed using remote home dispensing services [10]. However, this finding may not represent the actual prevalence of the utilization of home delivery service in Lebanon, owing to the fact that most of the study participants are adults having no comorbid conditions, who reported scarce visits to the community pharmacies. Thus, the elderly and those suffering from medical conditions are underrepresented in the current study, where this population is more likely to utilize and benefit from the remote dispensing of medications. Meanwhile, most of the participants have positively perceived medication home delivery service as an efficient pharmaceutical service that assists patients, the elderly and disabled individuals. This finding corroborates with previous studies where the majority of the participants believed that this contemporary service expands the traditional role of community pharmacists making it more convenient and efficient for patients [10, 13].

As a matter of fact, medication delivery service is associated with improved medication adherence. A review article has revealed that patients who used mail-order pharmacies were more likely to have higher adherence behavior than patients using retail pharmacies [19]. For instance, a longitudinal multicenter study conducted among discharged patients with ischemic stroke who were receiving multiple medications revealed that mail-order pharmacy use was significantly associated with enhanced adherence and lower hospital readmission rate when compared to in-person refill use ( $p < 0.001$ ) [20]. Yet, evidence regarding the association of home drug delivery with dispensing errors is still contradictory [21]. This mandates the conduction of cohort studies with strong methodological rigors to investigate the association of remote drug dispensing with medication errors.

Despite the several advantages that might be associated with the implementation of home delivery service, such as

enhancing medication adherence, avoiding transportation expenses, saving patients' time, protecting vulnerable patients, and improving health-related quality of life, there are disadvantages that should be emphasized [22].

Most of the study participants were concerned that remote drug dispensing might restrict the opportunity for interaction with pharmacists and deprive patients of receiving adequate medication counseling. This concern was previously raised by the Jordanian public, who reported that remote drug dispensing might negatively impact pharmacist-patient communication [10]. In fact, home delivery of medication service should be integrated within the telepharmacy system, to ensure the provision of optimal patient care and avoidance of drug-therapy related problems [23].

It was not surprising that female participants were more likely to use the home delivery of medication service, since it is more convenient for females to receive their medications while staying at home. Moreover, this study showed that participants living in Beirut, those who are university graduates or above, or those having a monthly income of more than 500\$/month showed higher utilization of the home delivery of medication service. It is worth mentioning that Lebanon is a low-income country that is experiencing a multifaceted crisis, economic meltdown, and fuel and power shortage [17].

The applicability of medication delivery service in this financially collapsed country is still primitive and lacks the resources for adequate implementation of such service. The concept of telepharmacy and remote medical assistance is not yet established in Lebanese community pharmacies [24]. For instance, Lebanese community pharmacists have no access to patients' electronic medical files, which might hinder them from assessing the appropriateness of the prescribed medications, thus jeopardizing patients' health, and increasing the risk of drug-therapy related problems [25]. As such, the adequate employment of drug delivery services requires a combination of serious efforts of the health policymakers, incorporating a strategic plan, and releasing a national declaration to permit its execution.

This study has provided a primordial image of the Lebanese current situation, and the public's utilization of the drug delivery service, however, it was associated with several limitations. First, the web-based nature of this study, using a convenience sampling approach, has introduced selection bias. This was reflected by the low participation of the elderly and patients with medical comorbidities. Second, the national health authorities prohibit community pharmacists from practicing this service, which might limit its development and hinder its optimal execution.

## CONCLUSION

In conclusion, this study showed that the majority of the Lebanese participants reported not utilizing the home delivery of medication service before, however, they have positively perceived home delivery of medication service as an efficient pharmaceutical service that assists patients, elderly, and disabled individuals. The applicability of medication delivery service in Lebanon requires serious efforts of the health policymakers, incorporating a strategic plan, and releasing a national declaration to permit its execution.

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**Ethical statement:** Ethics approval for the study was obtained from the Ethical Research Board of the Faculty of Pharmacy at the Applied Science Private University, Amman-Jordan (Approval Number: 2022-PHA-4).

**Declaration of interest:** No conflict of interest is declared by authors.

**Data sharing statement:** Data supporting the findings and conclusions are available upon request from the corresponding author.

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