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COMMUNITY PHARMACISTS' COMMITMENT TO PREVENTIVE MEASURES DURING THE COVID-19 PANDEMIC IN LIGHT OF THE ECONOMIC CRISIS IN BEIRUT, LEBANON: A SIMULATED CLIENT STUDY

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COMMUNITY PHARMACISTS' COMMITMENT TO PREVENTIVE MEASURES DURING THE COVID-19 PANDEMIC IN LIGHT OF THE ECONOMIC CRISIS IN BEIRUT, LEBANON: A SIMULATED CLIENT STUDY

Abstract

The burden on community pharmacists has dramatically increased since the COVID-19 pandemic, where the increased number of clients demands adhering to optimal infection protective measures. We aimed to investigate the level of adopted COVID-19 preventative measures by Lebanese community pharmacies and the influencing factors. One hundred community pharmacies in Beirut, were randomly selected and inspected by a simulated client. Signs of face-mask use, declaration of COVID-19 infection, and social distancing were observed in 62%, 48%, and 35% of pharmacies, respectively. Body temperature screening was absent. Only 20% of the pharmacies had limitations for the number of clients, and only 31% offered free disinfectants. Direct pharmacist-patient encounters were observed in 25% of pharmacies. Social distancing among pharmacists was practiced in only 8% of the pharmacies and 37% of pharmacists were not wearing facemasks. Female pharmacists, pharmacists > 40 years, and large pharmacies were associated with a significantly higher score than male pharmacists, younger pharmacists, and smaller pharmacies (6.13 ± 1.73 vs. 4.21 ± 1.70 , $P = 0.004$; 6.27 ± 1.55 vs. 4.40 ± 1.75 , $P = 0.03$; and 6.73 ± 1.66 vs. 4.1 ± 1.74 , $P = 0.01$; respectively). The adherence level of Lebanese community pharmacies to COVID-19 preventive measures is unsatisfactory. The economic crisis in addition to poor pharmacy education about infection control could be behind this level. The authorities are advised to wisely allocate the available resources, strengthen the monitoring process, and revise the pharmacy curriculum to include infection control.

Keywords

COVID-19; prevention and control; community pharmacy; Lebanon.

1. INTRODUCTION

COVID-19 infection transmission occurs mainly through respiratory droplets, and to a lesser extent via direct contact with contaminated surfaces (Centers for Disease Control and Prevention (CDC), 2021; Leung, 2021; Zhou et al., 2021). Infected people can spread the virus two days preceding any clinical symptoms of infection and throughout the infection period, which highlights the importance of preventing the spread of COVID-19 infection to tackle the pandemic (Dhama et al., 2020). In addition, patients with respiratory symptoms suggestive of COVID-19 consistently address available healthcare facilities such as community pharmacies (Bragazzi et al., 2020).

In Lebanon, community pharmacists have a pivotal role in providing evidence-based information, patient counseling, directing patients to the hospital when needed, and dispensing medical prescriptions. During the COVID-19 pandemic, community pharmacists' responsibilities were extremely heightened since they presented at the frontline in fighting the pandemic. Hence, the community pharmacists were at the uttermost extent of exposure to COVID-19 infection, which provokes sufficient implementation of protective measures to reduce the exposure to infection.

It is warranted to adhere to the preventive measures in community pharmacies to minimize the dissemination of COVID-19 (Itani et al., 2021a; Khojah et al., 2021). These measures include complying with personal protective equipment (PPE), disinfecting the exposed surfaces, and adhering to social distancing (Karout et al., 2022; Khojah, 2020). In addition, community pharmacies should apply restrictions to the allowed customer capacity in the pharmacy, advise them to wear facial masks, check their body temperature before getting into the pharmacy, and communicate with them through glass or Plexi barrier (Hasan et al., 2021; Hoti et al., 2020). Moreover, the use of telepharmacy care; which includes patient counseling, medication therapy management, and response to drug information requests, should be promoted to reduce customer encounters, which may help in controlling the spread of the infection (Moulaei et al., 2022; Poudel & Nissen, 2016).

The study aimed to investigate the extent of the implementation of COVID-19 preventative measures in the community pharmacy setting in addition to the influencing factors during the pandemic.

2. METHODOLOGY

2.1. Study Design

This cross-sectional study took place in Beirut, Lebanon, in February 2021. A simulated client, who was a research assistant in the Faculty of Pharmacy at Beirut Arab University, visited the pharmacies covertly as an unrevealed simulated client (SC). The SC method was used to determine the community pharmacists' degree of implementation of infection control measures during the COVID-19 pandemic. The SC was trained on role-playing a well-structured scenario, completing a standardized data collection form, and always maintaining neutrality in order not to influence the behavior of the pharmacists. The SC completed the data collection form right away after exiting each pharmacy to avoid recall bias.

2.2. Selection of Pharmacies

The target population consists of community pharmacies in Beirut. The total number of community pharmacies in Beirut, which is considered the population size for the study sampling frame, is 235, as documented by the Order of Pharmacists of Lebanon (OPL). The sample size was calculated through The OpenEpi[®] software. Assuming that 50% of the community pharmacies adequately implemented the infection control measures with 95% confidence interval (CI), the calculated sample size was 100. Microsoft Excel was used to generate a random sample of 150 pharmacies using the RAND function. The SC visited, only once, all the first 100 pharmacies in this sequence. The remaining 50 pharmacies were used as a reserve for possible dropouts when the identity of the SC is revealed or if a pharmacy is

unreachable or found closed. In any of these situations, the pharmacy was replaced by a nearby pharmacy from the backup list.

2.3. Data Collection

A standardized form was developed by the investigators. In addition, the proposed form was validated by two experienced researchers. The form consisted of two main sections, with 20 different items, varying between close-ended questions with predefined answers and open-ended questions.

The first section addressed information about the visited pharmacy, including the pharmacy code, the number of staff, perceived overall pharmacy workload at the time of the visit (determined by the number of customers), the estimated size of the pharmacy, the gender and the estimated age of the encountered pharmacist, date, time, and duration of the visit. The second section collected the observed protective measures applied in the pharmacy.

2.4. The Preventive Measures Score

A scoring system was created to measure the extent of compliance of the encountered pharmacists to infection preventive measures. We used a scale ranging from 0 to 11, where one grade was added for each applied preventive measure of the following: compliance of pharmacy staff with wearing face masks, applying a social distancing strategy among the pharmacy staff, presence of a door sign to advise clients to wear a face mask before the entrance, presence of a door sign to inform patients to warn the staff if they are experiencing COVID-19 symptoms, presence of a visible sign notifying clients to maintain social distancing, availability of free hand sanitizers for clients' use, screening clients' body temperature before the entrance, restricting the number of clients in the pharmacy, compliance of clients with wearing face masks inside the pharmacy or at the outside dispensing window, compliance of clients to social distancing within the pharmacy, and meeting clients through a physical barrier (either a plexiglass barrier or an outside dispensing window).

2.5. The Pilot Test

Before the actual conduction of the survey, the SC visited 10 pharmacies (other than the randomly selected ones) accompanied by one of the researchers (acting as another client) to validate the scenario and ensure the reliability and reproducibility of the standardized data collection form. Accordingly, additional minor amendments were done.

2.6. Ethical Considerations

The World Medical Association Declaration of Helsinki guidance was followed in designing and conducting this study (World Medical Association, 2013). The study protocol was approved by the Institutional Review Board of Beirut Arab University (No. 2020-H-0072-P-M-0438) with a waiver of informed consent because this study was observational, anonymous, and respected the participants' confidentiality. No audio or video recording was made, and data was kept anonymous thus nondisclosure to pharmacists was considered ethically acceptable. The study participants were not contacted for any further questioning or interviewing.

2.7. Data Analysis

Collected data were analyzed using the IBM Statistical Package for Social Sciences (SPSS®) software version 24. The descriptive data were represented by frequencies and percentages for categorical variables, while the mean and standard deviation were used for continuous variables. The Shapiro-Wilk test was used for testing all continuous variables for normality before statistical comparisons. Pearson's chi-square test was used to assess the associations between different independent variables. In addition, the association between the applied preventive measures score with different independent variables was tested by Kruskal-Wallis and Mann-Whitney

U tests. The significance level was set at $P \leq 0.05$ with a confidence interval (CI) of 95%.

3. RESULTS

3.1 Pharmacists' Socio-Demographics and Overall Pharmacy Characteristics

As seen in **Table 1**, 41% of the encountered pharmacists were young (22–29) and almost half of them were females (53%). More than half of the visited pharmacies (54%) were medium-sized. The average ratio of the number of pharmacy staff to the number of clients at the time of the visit was 2:1.

Table 1. Sociodemographic data of the participants and pharmacy characteristics (N = 100)

Observation	n (or %)*
Sex	
<i>Male</i>	47
<i>Female</i>	53
Pharmacist's estimated Age	
<i>23–29 years</i>	41
<i>30–39 years</i>	28
<i>40–49 years</i>	17
<i>50–59 years</i>	10
<i>≥ 60 years</i>	4
Estimated average size of the pharmacy	
<i>Small (32m²–70m²)</i>	31
<i>Medium (71m²–100m²)</i>	54
<i>Large (> 100m²)</i>	15
Number of staff at the time of visit	
Mean (standard deviation)	1.92 (0.861)
Range	1–4
Estimated dispensing load	
<i>Busy (> 5 customers waiting)</i>	2
<i>Moderate (2–5 customers waiting)</i>	26
<i>Low (1–2 customers waiting)</i>	38
<i>Quiet (nil costumers)</i>	34

*Since the number of pharmacists is 100, the result indicates the percentage too.

3.2 Infection Control Measures Adopted by Pharmacies

As depicted in **Table 2A**, customers were adherent to face masks in 87% of the pharmacies although a related door sign was observed in 62% of them. In addition, a door sign that instructs customers, who are experiencing symptoms of COVID-19, to alert the staff was seen in 48% of the pharmacies. However, none of the visited pharmacies offered body temperature screening. Moreover, it was observed that in only 35% of the pharmacies there was a sign that requests customers to keep a social distance within themselves. Surprisingly, this strategy was practiced by clients in 52% of the visited pharmacy.

It was also observed that only 20% of the pharmacies were restricting the number of simultaneous clients, and only 31% were offering free disinfectants at the entrance or the dispensing counter. In addition, the method of encountering clients was non-unified among the pharmacies, wherein 68% of them the pharmacist-client communication was through a plexiglass barrier, in 25% of them the process was direct, and in 7% it was through an outside glass dispensing window (**Table 2A**).

Concerning the adherence of pharmacy personnel to infection control, it was noticed that social distancing was practiced in only 8% of the pharmacies. Remarkably,

37% of the encountered pharmacists were not wearing facemasks or using any other PPE during their practice (**Table 2B**).

3.3 The Association between the Implemented Preventive Measures Score and Various Factors

The mean score achieved by the pharmacists was 4.84 ± 1.85 , ranging from 1 to 9, where most of the visited pharmacies (61%) adopted ≤ 5 protective measures (Table 2C). However, as shown in Table 3, female pharmacists were more adherent to the preventive measures than males (6.13 ± 1.73 and 4.21 ± 1.70 , respectively, $P = 0.004$). In addition, pharmacists who were older than 40 years were more adherent than younger ones (6.27 ± 1.55 and 4.40 ± 1.75 , respectively, $P = 0.03$). Moreover, a significant increase in the number of adopted protective measures was noticed in large-sized community pharmacies compared with small-sized ones (6.73 ± 1.66 and 4.1 ± 1.74 , respectively, $P = 0.01$).

It was also observed that larger pharmacies were more likely to provide free hand sanitizers to their clients (OR = 3.56, CI = 1.09 – 11.67, $P = 0.03$), to request their clients to wear facemask prior entrance (OR = 3.79, CI = 1.27 – 11.25, $P = 0.01$), and to mandate the adherence to social distancing (OR = 4.25, CI = 1.25 – 14.51, $P = 0.02$) compared with small-sized pharmacies.

4. DISCUSSION

The main findings of our study revealed that measures taken to control COVID-19 transmission inside community pharmacies in Lebanon were unsatisfactory. This highlights the massive task ahead of us in addressing the transmission of COVID-19 in the context of low baseline compliance with infection prevention and control practices.

Our findings were quite similar to other studies. More than 50% of pharmacy staff in Madinah, Kingdom of Saudi Arabia (KSA), did not adhere to wearing facial masks and gloves during their duty (Khojah, 2020). Similarly, measuring customers' body temperature was 0% compared with 1% in KSA, a country with a strong economy, indicating a very low level of adherence to the protective measures against the infection regardless of the economic situation. On the other hand, almost 60% of community pharmacies in Kosovo did not offer sanitizers to their clients (Hoti et al., 2020). In addition, a multinational study conducted in Lebanon, Jordan, and KSA assessing community pharmacists' preparedness for the COVID-19 pandemic showed that 59% of the pharmacies in Lebanon did not have hand sanitizer placed at the entrance and counter areas (Itani et al., 2021b). Furthermore, in Australia, only 45% of pharmacies provided hand sanitizers around the pharmacy premises for public use (Sum & Ow, 2021). It is interesting to mention that more than 40% of the community pharmacies in KSA, Lebanon, and Jordan did not adhere to restricting the number of clients present at one time in each pharmacy (Itani et al., 2021b). Although this is far from the findings reported in our study, plexiglass, as a physical barrier, was present in 68% of the pharmacies whereas 70% of the pharmacies in a previously conducted survey in Lebanon and 39% of the pharmacies in Kosovo reported the use of plexiglass protective shields (Hoti et al., 2020; Zeenny et al., 2021).

Table 2. Observed preventive measures implemented in the pharmacies (N = 100)

Factors	n or (%)*
A. Client-directed infection control measures	
Method of encountering patients	
<i>Direct contact inside the pharmacy</i>	25
<i>Through plexiglass inside the pharmacy</i>	68
<i>Through dispensing window outside the pharmacy</i>	7
Visible door sign requesting clients to wear facemasks prior to entrance	
<i>No</i>	35
<i>Yes</i>	62
Visible door sign instructing patients to alert staff if they have COVID-19 symptoms	
<i>No</i>	52
<i>Yes</i>	48
A visible sign requesting customers to maintain social distancing	
<i>No</i>	65
<i>Yes</i>	35
Free hand sanitizers at the pharmacy entrance	
<i>No</i>	69
<i>Yes</i>	31
Clients' entry at one time is limited to a certain number	
<i>No</i>	50
<i>Yes</i>	20
<i>Not sure</i>	30
Clients' body temperature is screened at the entrance	
<i>No</i>	100
<i>Yes</i>	0
All clients were wearing face masks inside pharmacy or at the dispensing window	
<i>No</i>	13
<i>Yes</i>	87
Clients' adherence to social distancing	
<i>No</i>	14
<i>Yes</i>	52
<i>Not sure</i>	34
B. Self-directed infection control measures	
Pharmacist's use of personal protective equipment	
<i>No</i>	37
<i>Yes</i>	63
<i>Surgical facemask</i>	60
<i>N-95 facemask</i>	3
<i>Fabric facemask</i>	0
<i>Face shield</i>	0
<i>Gloves</i>	0
Pharmacist's use of personal protective equipment	
<i>No</i>	53
<i>Yes</i>	8
<i>Not sure</i>	39
C. Implemented Preventive Measures Score (out of 11)	
Mean (standard deviation)	4.84 ± 1.85
Range	1–9

*Since the number of pharmacists is 100, the result indicates the percentage too.

Table 3. The implemented preventive measures score and its association with different factors

Variable	Applied preventive measures score (Mean ± SD)	Mann-Whitney U Test	Kruskal-Wallis Test	P-value
Sex		250.5		0.04*
<i>Male</i>	4.21 ± 1.70			
<i>Female</i>	6.13 ± 1.73			
Pharmacist's estimated age		974		0.03*
< 40 years	4.40 ± 1.75			
≥ 40 years	6.27 ± 1.55			
The average size of the Pharmacy			3.69	0.01*
<i>Small (32m²–70m²)</i>	4.1 ± 1.74			
<i>Medium (71m²–100m²)</i>	5.0 ± 1.83			
<i>Large (> 100m²)</i>	6.73 ± 1.66			
Number of Staff per shift		821.500		0.04*
1–2 staff per shift	4.12 ± 1.61			
> 2 staff per shift	5.71 ± 1.97			
Estimated dispensing load			25.62	< 0.001*
<i>Busy (> 5 costumers waiting)</i>	7.0 ± 1.41			
<i>Moderate (2–5 costumers waiting)</i>	5.5 ± 1.74			
<i>Low (1–2 costumers waiting)</i>	5.34 ± 1.65			
<i>Quiet (nil costumers)</i>	3.58 ± 1.47			

*Statistically significant (P ≤ 0.05).

The findings of the current study were also comparable to the previous survey in Lebanon where 45% of community pharmacists reported their inability to maintain social distancing of at least 1.5 meters (Zeenny et al., 2021). This was also found in the multinational study where approximately half the pharmacists did not adhere to social distancing (Itani et al., 2021b). Furthermore, almost half the pharmacies in KSA did not place signs for customers to keep suitable distancing (Khojah, 2020). Moreover, a snapshot survey performed in the United Kingdom showed that 94% and 40% of pharmacists were unable to maintain a physical distance of 2 m from their colleagues and patients, respectively (Sum & Ow, 2021). These findings suggest that strategies recommended by international guidelines such as the American Society of Health-System Pharmacists (ASHP) and The International Pharmaceutical Federation (FIP) were not implemented in Lebanese community pharmacies as required (American Society of Health-System Pharmacists, 2020; Ortmann et al., 2021; Sousa Pinto et al., 2021).

This could be explained by the lack of national support, guidance, and awareness from the Lebanese healthcare parties to adopt international guidance on preventive measures for the sake of protecting pharmacists and patients from exposure to SARS-CoV-2. This can also be linked with the economic crisis and poor government resources and health support, including poor monitoring of adherence to the guidelines (Martins, 2021; Zeenny et al., 2021). In Lebanon, there have been 1,122,146 infections and 10,475 coronavirus-related deaths since the pandemic began. Lebanon has administered at least 5,673,326 doses of COVID vaccines which is enough to have vaccinated about 41.4% of the country's population, assuming every person needs 2 doses (Reuters COVID-19 TRACKER, 2022).

Our study also revealed that compliance to certain preventative strategies was strongly correlated with female pharmacists, pharmacists who are older than 40 years, pharmacies of large size, and pharmacies having more than two staff members. Recent studies have found that adherence to preventive measures against SARS-CoV-2 infection is

more frequently implemented by experienced pharmacists and pharmacies having more staff (Jovičić-Bata et al., 2021; Tsao et al., 2020). These variabilities in the adoption of preventive strategies point towards modifiable interventions to improve the response of community pharmacists to outbreaks (Liu et al., 2020). For example, these findings lead us to believe that increasing the number of pharmacy staff, distributing tasks, and relieving time pressures may significantly improve adherence to preventive measures and consequently community transmission (Bresciani et al., 2009). Moreover, more emphasis should be applied to pharmacy staff education on COVID-19- related preventative measures; particularly younger pharmacists should receive more intensive guidance in this regard (Austin & Gregory, 2021; Liu et al., 2020).

It is worth mentioning that community pharmacists are expected to have additional workloads related to the pandemic such as frequent interruptions and time pressure. Some studies have already indicated an association between a high workload and a low quality of pharmaceutical services during the pandemic (Hoti et al., 2020; Jovičić-Bata et al., 2021). Finally, it has been proven that judicious use of resources, especially in countries with economic weakness, has a strong impact on dealing with the epidemic optimally (Abi-Rached & Diwan, 2020; Fotiou & Lagerborg, 2021).

Our findings necessitate the conduction of follow-up research identifying the lessons learnt by the Lebanese pharmacists during the COVID-19 pandemic, and exploring how they are planning to improve their pattern of practice in future pandemics or natural disasters.

4.1 Study Limitations

This study was limited by its small sample size. One hundred community pharmacies were selected, and all pharmacies were visited only once. This sample size, while modest is comparable to other simulated client studies (Khojah, 2020). In addition, the study was conducted in Beirut only. Although it is the capital city, which is supposed to be superior to other cities in compliance with the health regulations, however, we cannot extrapolate our results to the rest of the country's pharmacies. Furthermore, only one simulated patient was recruited for the assessment of the compliance of community pharmacists to the protective measures. Therefore, the study may be subjected to recall bias. Only certain preventive measures could be observed by the SC, which might not reflect the actual adherence to different measures. However, the SC was instructed to immediately fill in the observation checklist to reduce underreporting of important events.

5. CONCLUSIONS

The study demonstrated that most Lebanese community pharmacists are not cautious enough about the appropriate measures required to limit infection spread in community pharmacies. Pharmacists must play an indispensable role in combating infections and guaranteeing staff and population safety. The main focus of attention should be to maintain a correct educational strategy for health personnel to promote adherence to protective measures against infections. Moreover, health authorities are advised to enhance surveillance and implementation of health-related regulations.

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Declaration of Conflicting Interests

The authors declare that there is no potential conflict of interest in this study.

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