The rise of telepharmacy services during the COVID-19 pandemic: A comprehensive assessment of services in the United Arab Emirates

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Abstract
Objective: The study aimed to explore changes in community pharmacies’ processes in response to the pandemic in the United Arab Emirates (UAE) and factors affecting the adoption of these changes. Method: A cross-sectional study was conducted using a self-administered questionnaire that was distributed to licensed community pharmacists in the UAE. The survey used to collect information on the type of telepharmacy services and related topics such as constraints and supports. The evaluation of services was done for three periods: before, during and after lockdown. Results: The number of completed surveys was 391. The majority of the participants were under 35 years old (79.5%), female (65.0%), with a bachelor’s degree (82.6%), and working in a pharmacy group (70.6%). Pharmacies provided the services by phone (95.6%) and/or messaging applications (80.0%) such as WhatsApp and Messenger. The community pharmacies provided a variety of services using telepharmacy tools such as managing of mild diseases, dispensing and delivering prescribed and OTC medications, general health information, and services for patients with chronic disease. The main factors that had significant effects on several telepharmacy services were pharmacies’ type (group/chain vs. individual) and the number of pharmacists in the pharmacy (p < 0.05). Lack of time, training and financial support were the main barriers associated with telepharmacy services among individual pharmacies. Conclusion: Telepharmacy supported the work of community pharmacies during the COVID-19 pandemic by facilitating the provision of pharmaceutical services. Although the occurrence of several financial and technical problems, it appeared less frequently in pharmacy chains with a large number of pharmacists.

Keywords: Telepharmacy; Community pharmacy; UAE; COVID-19

INTRODUCTION
The ongoing global pandemic of coronavirus disease (COVID-19) was recognized in December 2019 and spread rapidly across the world within months. The World Health Organization (WHO) declared a public health emergency of international concern at the end of January 2020 and a pandemic in March 2020. This situation put tremendous pressure on health systems around the world and forced them to adapt by adjusting health facility procedures to help contain the spread of the virus while still operating.

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The pharmacy sector was particularly affected due to an increased demand for pharmaceutical products and services, along with a pre-existing shortage of health personnel. During the COVID-19 pandemic, community pharmacists have proven themselves to be the most accessible healthcare practitioners, as they have played various roles supporting and alleviating the burden on the healthcare system. Their work has diverted the flow of patients away from hospitals by providing medicines, evaluating patients for replenishing chronic medications, conducting consultations on minor illnesses, clarifying misconceptions about COVID-19 treatments, and contributing to COVID-19 screening. This deviation benefitted many patients, including those with chronic diseases who have not been able to access healthcare facilities for their routine care and medication management. Most importantly, they elevated a load of non-COVID related illnesses on already strained healthcare systems.

The use of telephone to provide patient care in community pharmacies has been around for a long time. However, applying internet teleservices such as smartphone applications, messaging software and online purchasing has only appeared into spot in the last years. The use of these tools is varied between countries. Many factors affect the adoption of these services in community pharmacies since not all pharmacies offer these services and many people are still not familiar with them. However, the impact of the pandemic has revealed an increased interest in delivering telepharmacy services and increased their usage. Pharmacies rapidly shifted their practices to provide patient medication counselling, drug...
therapy monitoring, COVID-19 clarification and screening and medication home delivery, all of which have enhanced patients’ life and made it easier to reach pharmacists during the COVID-19 period.

Community pharmacy and telepharmacy services in the UAE

The UAE is a federation of seven states (emirates) and classified as a high-income developing economy with a population of around 9.3 million marked in 2020.9 Community pharmacies in the UAE are either small independent pharmacies or franchised chain pharmacies located on streets or in shopping malls. The number of community pharmacies in the UAE was 2801 in 2020.10 The pharmaceutical law dictates that a community pharmacy must hold a license under the direction of a licensed pharmacist.11 Although the pharmaceutical law prohibits the sale of all prescription medicines without prescriptions, in practice, strict enforcement of the law in the UAE only applies to controlled and semi-controlled drugs.12 A wide range of prescription-only medications, including antibiotics, antidiabetics, and antihypertensive drugs, are usually purchased over the counter (OTC) from community pharmacies. Dispensing is mostly done by licensed pharmacists and pharmacy technicians, while most administrative and organizational duties are the responsibility of licensed pharmacists. Most community pharmacies in the UAE do not keep patient medication records.12

The UAE has an efficient telecommunication network essential to offer remote healthcare services. It has the fastest fixed broadband speed and connectivity in the Middle East region and is ranked 25th in the world. In addition, the number of active internet users was reported to be 99% of the total population in 2020.13 The developed infrastructure, telecommunications and internet network in the UAE have enabled the shift to remote working and learning during the COVID-19 pandemic.

The country’s regulations related to telehealth and healthcare delivery services were issued in 2019.14 According to standards for telehealth services in the UAE, telepharmacy is defined as the delivery of pharmaceutical care through telehealth technology and includes prescribing and dispensing of medications, medical products, herbal, food supplements, cosmetic products, formulary compliance, patient counselling, medication therapy management, automated packaging and labelling systems. Pharmacies in the UAE can provide telepharmacy services after gaining approval from the designated health authority.15 Currently, most pharmacies in the UAE offer online services. Several pharmaceutical services were provided via telepharmacy in the UAE before the COVID-19 pandemic.

COVID-19 in the UAE

The first confirmed case in the UAE was announced at the end of January 2020. It was the first country in the Middle East to report a confirmed case.16 The number of cases increased thereafter considerably. Because of the national disinfection programme, a partial curfew was imposed for several weeks. In addition, a complete lockdown in some areas was mandated for several weeks in some areas in April 2020 to contain the COVID-19 pandemic.17 In March 2020, the UAE implemented distance learning and working in all UAE states as a precautionary measure to protect people from the COVID-19 infection. Some sectors opened during that period with restrictions such as supermarkets, restaurants (delivery only), hospitals and community pharmacies. In addition, there was a closure of shopping malls and public areas, general restriction on numbers of people in some places and travel restriction. For healthcare sectors, many healthcare providers adapted by providing telehealth services. Likewise, many governmental hospitals activated medications home delivery services. Due to the recommendations from the WHO and global and national health authorities to avoid unnecessary contact with others, most people preferred to stay at home during the first months of the pandemic. Therefore, most works were carried out from home, including those in the health domain. The curfew was eased, and movement restrictions were gradually lifted at the end of June 2020, followed by established safety instructions to avoid COVID-19 infection.17

Aim of the study

The study aimed to explore the change of procedures in community pharmacies in response to the COVID-19 pandemic while measuring the quality, frequency, and barriers in providing telepharmacy services in the UAE.

METHOD

Study design and tools

A cross-sectional study was done by using a self-administered questionnaire distributed to pharmacists working in community pharmacies in the UAE. The general principles of good survey design were utilized when preparing the survey. The survey is in English and contains 20 close-ended and open-ended comprehensive questions, completable within an average of 10 minutes. The design of the questions was to gather pharmacists’ demographic data. The second part of the questions aimed to collect information on the type of telepharmacy services offered in the community pharmacy and related topics such as constraints and supports. Finally, pharmacies were asked about the challenges faced while providing these services. The questionnaires were distributed from the 1st to the 31st of October 2020.

Survey development

The questionnaire was developed by the authors after an extensive review of literature.24 Then, the online survey was designed by the researchers on Google Forms. The survey was tested by three academics and five community pharmacists during a week pilot study to ensure comprehension, clarity, and readability. Refinements were made as needed, confirming all questions were uniformly understood, with no ambiguities present before its implementation.

Periods of study

The evaluation of telepharmacy services in this study was
The total number of surveys was 423. There were 391 (92.34%) complete surveys and 32 incomplete surveys, either due to missing information or participants refusing to participate.

Table 1. Demographic data of the participants (n=391)

| Variables                  | No. (%) |
|----------------------------|---------|
| Age (years)                |         |
| 21 – 25                    | 53 (13.55) |
| 26 – 30                    | 133 (34.01) |
| 31 – 35                    | 125 (31.97) |
| 36 – 40                    | 39 (9.97) |
| 41 – 45                    | 29 (7.42) |
| 46 – 50                    | 6 (1.53) |
| Above 50                   | 6 (1.53) |
| Gender                     |         |
| Female                     | 254 (64.96) |
| Male                       | 137 (35.04) |
| Education level            |         |
| Bachelor                   | 323 (82.61) |
| Master                     | 49 (12.53) |
| Pharm D                    | 19 (4.86) |
| Experience period (years)  |         |
| Less than 1 year           | 31 (7.93) |
| 2 - 5 years                | 179 (45.78) |
| 6 - 10 years               | 108 (27.62) |
| 11 – 15 years              | 59 (15.09) |
| More than 15 years         | 14 (3.58) |
| Position                   |         |
| Pharmacist-in-charge       | 315 (80.56) |
| Manager of the pharmacy    | 63 (16.11) |
| Owner of the pharmacy      | 13 (3.32) |
| No. of licensed staff per shift in the pharmacy |         |
| Less than 3                | 268 (68.54) |
| 3 or more                  | 123 (31.4) |
| Type of pharmacy           |         |
| Individual pharmacy        | 115 (29.41) |
| Group/Chain Pharmacy       | 276 (70.59) |

The majority of the participants (79.54%) were under 35 years old. Nearly two-thirds of the participants (64.96%) were female. Most of the participants (82.61%) hold a bachelor’s in pharmacy, and 45.78% have 2 to 5 years of experience. Table 1 shows the demographic data of the participants.
were not associated with home delivery services or online services.

Offering home delivery service was also associated with the number of staff, 95.1% (n=117) of pharmacies with three or more employees had home delivery, compared with 87.7% (n=235) of the pharmacies with less than three employees (P=0.023). On the other hand, a statistically significant association was noticed for the use of messaging applications, which were used by 67.5% (n=83) of pharmacies with staff 3 or more, compared with 85.8% (n=230) for smaller pharmacies (P<0.001).

Results showed that Individual pharmacies used e-mail services less than group/chain pharmacies (P=0.007). Furthermore, group/chain pharmacies used website, online shopping and Messaging applications more than individual pharmacies (P=0.001 and P=0.027).

Types of telepharmacy services offered at the community pharmacies

Community pharmacies provided a variety of services during the three study periods. Figure 1 shows the types of services with administration percentage during the three periods.

The use of telepharmacy tools witnessed a reduction in practice during the second and third periods. Table 3 shows changes in services offered during the three periods according to the type of pharmacy (Group/chain pharmacies and Individual pharmacies). Statistically significant associations were found between some services based on the type of pharmacy and the lockdown period. For managing mild diseases, there was an obvious reduction in individual pharmacies compared with group pharmacies during and after lockdown periods. For dispensing OTC medications, selling cosmetics and other health products and providing services for patients with chronic diseases, the reduction in individual pharmacies was significant compared to group pharmacies. Moreover, all services declined after the lockdown period, with further declines in most services provided by the community pharmacies that participated in the study.

Barriers pharmacists faced during the lockdown period

Table 4 indicates the obstacles related to the number of staff, the type of pharmacy, technical support issues, staff training and work hours during the lockdown period.

Lack of available time was perceived as a statistically significant barrier associated with implementing telepharmacy services among small pharmacies (<3 licensed pharmacist), with a lower association in large pharmacies (≥3 licensed pharmacist) (66.5% vs 52.7%, P=0.001). A similar trend was also noticed concerning training and lack of financial support (Table 4).

The challenges faced were statistically and significantly associated with the type of pharmacies (i.e., Individual vs Group/Chain), as seen in Table 4. For example, 38% of workers in group/chain pharmacies evaluates that there were no plans for implementing telepharmacy services, while almost double the percentage (68.8%) within individual pharmacies confirmed this barrier (P<0.001).

Pharmacy managements’ support during the lockdown period

Table 5 describes the support pharmacies received from the management during the lockdown period related to telepharmacy services and its association with staff number and pharmacy type. The support from the management offered during the lockdown period related to telepharmacy services was neither strongly associated with the number of staff nor type of pharmacy, except in the few following cases: Policy to offer telepharmacy services was more available in larger pharmacies (n≥3) compared with small pharmacies (n<3): 76.7% vs 59.5%, P=0.003. However, an incentive for workers operating the telepharmacy services was reported more in individual pharmacies compared with chain pharmacies (50.0% vs 31.8%, P=0.004). Increased working hours also showed a similar trend (55.3% vs 38.0%, P=0.008).

Table 2. Characteristics of telepharmacy services offered in the community pharmacies (n=391)

| Main tools or applications used to offer Telepharmacy services | No. (%)<br>≥ 3<br>The number of pharmacies offering each service in the three periods | Association with number of staff | Association with pharmacy type |
|---|---|---|---|
| Phone | 374 258 116 | 0.38 | 263 111 0.59 |
| Email | 193 124 69 | 0.71 | 124 69 0.007 |
| Website (Online shopping) | 198 134 64 | 0.71 | 155 43 0.001 |
| Social Media (e.g. Facebook, Instagram) | 204 135 69 | 0.5 | 135 69 0.12 |
| Messaging applications | 313 230 82 | <0.001 | 213 100 0.027 |

Fonts in Bold indicate statistically significant values, i.e., P < 0.05
Table 3. Changes in services provided by community pharmacies using telepharmacy tools during the three periods according to the type of pharmacy: Group/chain pharmacy (n=276) and individual pharmacy (n=115)

| Services                               | Type of Pharmacy | Before the lockdown period | During the lockdown period | After the lockdown period | P value |
|----------------------------------------|------------------|-----------------------------|---------------------------|---------------------------|---------|
| Managing of mild diseases              | Group            | 136                         | 140                       | 113                       | 0.019   |
|                                        | Individual       | 81                          | 45                        | 51                        |         |
| Dispensing and delivering prescribed medications | Group            | 146                         | 152                       | 124                       | 0.054   |
|                                        | Individual       | 80                          | 52                        | 46                        |         |
| Dispensing and delivering OTC medications | Group            | 182                         | 181                       | 156                       | 0.029   |
|                                        | Individual       | 95                          | 57                        | 58                        |         |
| Advising about medications             | Group            | 180                         | 164                       | 145                       | 0.29    |
|                                        | Individual       | 91                          | 62                        | 59                        |         |
| General health information             | Group            | 186                         | 159                       | 151                       | 0.084   |
|                                        | Individual       | 95                          | 56                        | 53                        |         |
| Providing herbs and supplements        | Group            | 169                         | 153                       | 140                       | 0.097   |
|                                        | Individual       | 94                          | 59                        | 54                        |         |
| Selling cosmetic and other health products | Group            | 175                         | 149                       | 131                       | 0.049   |
|                                        | Individual       | 97                          | 54                        | 48                        |         |
| Services for patients with chronic diseases | Group            | 135                         | 128                       | 119                       | 0.026   |
|                                        | Individual       | 71                          | 42                        | 35                        |         |

Fonts in Bold indicate statistically significant values, i.e., P < 0.05

Figure 1. The services offered by community pharmacies (n=391) using telepharmacy tools: before, during and after the lockdown periods.
The impact of lockdown period on the number of patients/customers per day

Table 6 shows the impact of lockdown and post-lockdown periods on services provided in community pharmacies compared with services provided pre-lockdown period. Pharmacies with less than 50 patients/customers per day have slight or no change in both number of visits during the lockdown and post-lockdown periods. The same was shown for services provided using telepharmacy tools during these two periods. Hence, a change in the number of customers for both face-to-face and telepharmacy services was not associated with the lockdown period for small pharmacies, as seen in Table 6.

Meanwhile, pharmacies with several patients/customers between 50 to 100 per day witnessed a decreased number of patients/customers during and post-lockdown periods. However, there was an increase in demand by around 36% of services via telepharmacy tools, specifically during the lockdown period. This increase in telepharmacy services for
medium-sized pharmacies was statistically significant and associated with the lockdown period (Fisher Exact P=0.002).

Lastly, for pharmacies with many patients/customers above 100 per day, there was a reduction in the number of patients/customers per day who visited the pharmacies during the lockdown period, followed by a rise in the number of patients/customers post-lockdown period. Additionally, elevated demand for services via telepharmacy tools was demonstrated in both periods compared with the pre-lockdown period. The differences in face-to-face services demand was statistically significant (P=0.001), while differences in telepharmacy services were not statistically significant.

Table 5. Support from the management offered during the lockdown period related to telepharmacy services and the association with number of staff and pharmacy type

| Support Items from the management | Association with number of staff | Association with pharmacy type |
|----------------------------------|----------------------------------|--------------------------------|
|                                  | Subgroup, N staff | No (n) | Yes (n) | Total (n) | P | No (n) | Yes (n) | Total (n) | P |
| Training on using telecommunication technologies to provide telepharmacy services | < 3 | 89 (41.8) | 124 (58.2) | 213 (100) | 0.17 | 123 | 191 (58.2) | 314 (100) | 0.41 |
|                                  | ≥ 3 | 34 (33.7) | 67 (66.3) | 101 (100) | 0.003 | Group/ Chain | 91 (40.6) | 133 (59.4) | 224 (100) |
| Available policy on telepharmacy services (e.g. written materials or guidelines) | < 3 | 81 (40.5) | 119 (59.5) | 200 (100) | 0.003 | Group/ Chain | 77 (35.3) | 141 (64.7) | 218 (100) |
|                                  | ≥ 3 | 24 (23.3) | 79 (76.7) | 103 (100) | Individual | 28 (32.9) | 57 (67.1) | 85 (100) || 0.003 |
| Regular assessment of the offered telepharmacy service | < 3 | 82 (42.5) | 111 (57.5) | 193 (100) | 0.59 | Group/ Chain | 90 (42.9) | 120 (57.1) | 210 (100) |
|                                  | ≥ 3 | 40 (39.2) | 62 (60.8) | 102 (100) | Individual | 32 (36.7) | 53 (62.4) | 85 (100) | 0.003 |
| Incentive for workers operating the telepharmacy services | < 3 | 123 (63.7) | 70 (36.3) | 193 (100) | 0.69 | Group/ Chain | 135 (68.2) | 63 (31.8) | 198 (100) |
|                                  | ≥ 3 | 52 (61.2) | 33 (38.8) | 85 (100) | Individual | 40 (50) | 40 (50) | 80 (100) | 0.004 |
| Extra staff (e.g. recruit more staff) | < 3 | 132 (65.0) | 71 (35.0) | 203 (100) | 0.81 | Group/ Chain | 130 (63.1) | 76 (36.9) | 206 (100) |
|                                  | ≥ 3 | 50 (54.3) | 42 (45.7) | 92 (100) | Individual | 52 (58.4) | 37 (41.6) | 89 (100) | 0.45 |
| Bought or developed tools and/or applications that help in telepharmacy services | < 3 | 77 (40.3) | 114 (59.7) | 191 (100) | 0.69 | Group/ Chain | 75 (38.5) | 120 (61.5) | 195 (100) |
|                                  | ≥ 3 | 34 (37.8) | 56 (62.2) | 90 (100) | Individual | 36 (41.9) | 50 (58.1) | 86 (100) | 0.59 |
| Advertisement using telepharmacy services [e.g. using social media] | < 3 | 63 (30.3) | 145 (69.7) | 208 (100) | 0.24 | Group/ Chain | 60 (27.9) | 155 (72.1) | 215 (100) |
|                                  | ≥ 3 | 22 (23.7) | 71 (76.3) | 93 (100) | Individual | 25 (29.1) | 61 (70.9) | 86 (100) | 0.84 |
| Increased working hours | < 3 | 107 (59.4) | 73 (40.6) | 180 (100) | 0.15 | Group/ Chain | 111 (62.0) | 68 (38.0) | 179 (100) |
|                                  | ≥ 3 | 42 (50.0) | 42 (50.0) | 84 (100) | Individual | 38 (44.7) | 47 (55.3) | 85 (100) | 0.008 |

Fonts in Bold indicate statistically significant values, i.e., P < 0.05
DISCUSSION

The study assessed telepharmacy services among community pharmacies (n=391) provided in three periods: before, during and after the lockdown in the UAE. The main factors significantly affecting these services were the type of pharmacies (group/chain vs individual) and the number of pharmacists in the pharmacy. Furthermore, the main barriers faced by the participants were lack of time, training, and financial support.

Telepharmacy is a method in which a pharmacist uses telecommunication technology to oversee aspects of pharmacy operations or provide patient care services.24 Pharmacies, similar to most healthcare practices, found rescue in technological provided services, particularly when the COVID-19 pandemic started in the early months of 2020, rendering telepharmacy a highly demanded tool by both pharmacists and patients. The use of telepharmacy is becoming more and more popular to maintain, and perhaps even improve, standard care processes.25

Although telepharmacy had been introduced in the UAE before the COVID-19 pandemic, a surge of extra demand and application was seen during and after the lockdown period. Telepharmacy was seen as an opportunity to reduce direct contact with patients and continue providing the common pharmacy services patients require from the comfort of their homes. Despite the promising solutions of telepharmacy, it is sometimes challenging to put into practice as many limitations hinder the greater diffusion of telepharmacy. To begin with, the startup of providing services via telepharmacy may take considerable time, staff, effort, and money.26 Pharmacies with limited resources cannot easily apply telepharmacy services (technological infrastructure, technical support, financial issues, reimbursement, training of workers, etc.).21 The disadvantage was especially shown in individual pharmacies when compared to chain/group pharmacies. Another setback in some countries is that their health authorities lack the interest to support the integration of this technology. Resulting in limited supportive regulations, which could be due to the novelty and unfamiliarity of these services with specific laws yet to be developed.22

Group/chain community pharmacies had better performance providing services using technology than individual pharmacies. They had an advantage when it came to having a telepharmacy foundation. The higher number of licensed pharmacists, bigger budget and well-developed technologies allowed group/chain pharmacies to overcome most of the initial challenges associated with telepharmacy, facilitating the adoption of the practice compared to individual pharmacies. In addition, their plans to develop their services such as implementing home delivery services were earlier and reported more than in the individual pharmacies where there is a limited resource and number of pharmacy workers during the periods of the study. Furthermore, younger licensed pharmacists working in group pharmacies (< 35 years old) were more than in individual pharmacies. This may be related to the job nature in Pharmacy chains/groups.23 Other factors such as the closure of some shopping centers affected group pharmacies more, as this type of pharmacy predominates in these places, which led to the presence more pharmacists in providing services using telepharmacy tools, while not proving face-to-face services. In addition, people tended to avoid crowded places at the beginning of the pandemic and regulations were set to limit the number of people in shopping centers for health safety reasons.

The need to access pharmaceutical services by telepharmacy were high during the lockdown period. Nonetheless, the use of telepharmacy tools has seen a decline in some practices during the lockdown period and beyond. Services depending on the type of pharmacy and the closing period were significantly affected, such as managing mild illnesses, distributing non-prescription medicines, selling cosmetics and other health products and providing services to patients with chronic diseases. The reduced need for these types of services was due to the change in the populations' needs during these periods, the impact of the pandemic on life in general and future uncertainty among the population. Nonetheless, it is noteworthy that some barriers were patient-related, including but not limited to their inability to use technology, illiteracy and absence of assistance from others.24

Although the usage of technology to provide pharmacy services is not relatively new, its use has drastically increased due to

### Table 6. Impact of lockdown period on number of patients/customers per day (n=277)

| Number of patients/customers per day | < 50 (n=45) | 50 – 100 (n=95) | > 100 (n=137) |
|-------------------------------------|-------------|----------------|---------------|
|                                     | During lockdown period (%) | After lockdown period (%) | During lockdown period (%) | After lockdown period (%) | During lockdown period (%) | After lockdown period (%) |
| Face-to-Face services               |             |                |               |                        |                        |                        |
| Increased                            | 2 (4.44%)   | 0              | 10 (10.52%)   | 19 (20.00%)            | 43 (31.39%)            | 58 (42.34%)            |
| No change                            | 43 (95.56%) | 43 (95.56%)    | 45 (47.37%)   | 50 (52.63%)            | 45 (32.85%)            | 57 (41.61%)            |
| Decreased                            | 2 (4.44%)   | 0              | 40 (42.11%)   | 26 (27.37%)            | 49 (35.77%)            | 22 (16.06%)            |
| Fisher Exact P=0.24                  |             |                | P=0.09        |                        |                        |                        |

| Telepharmacy services               |             |                |               |                        |                        |                        |
| Increased                            | 0           | 0              | 34 (35.79%)   | 14 (14.74%)            | 68 (49.63%)            | 73 (53.28%)            |
| No change                            | 45 (100%)   | 45 (100%)      | 58 (61.05%)   | 75 (78.95%)            | 60 (43.80%)            | 56 (40.88%)            |
| Decreased                            | 0           | 0              | 3 (3.16%)     | 6 (6.32%)              | 9 (6.57%)              | 8 (5.84%)              |
| Fisher Exact P=1                     |             |                | Fisher Exact P=0.002 |                      |                        |                        |

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the inaccessibility of face-to-face pharmacy services, especially during the lockdown period of the COVID-19 pandemic. This was noted in the current study and it related to areas with restricted movement where some group/chain pharmacies operate, such as shopping malls and public areas. Individual pharmacies, on the other hand, operate more in residual areas. It was seen as a viable solution for the challenges faced by the management of community pharmacies and a way to increase the number of provided services, giving economic relief during a time of discord.25 In addition, it allowed effective patient counselling and easy access to healthcare services in remote locations that had previously been deprived of it.26

The rising popularity of telepharmacy in the UAE and facilitated adoption has been made possible due to the essential foundation elements, which are but not limited to: the developed internet infrastructure services in the UAE, policy related to the application and practice of telepharmacy issued by health authorities,6,11 availability and familiarity of social media sites and messaging applications that made it simple for pharmacies to easily create accounts and connect with their patients, and a large number of mobile phone users and easy access to the internet in the UAE.11 Although the pandemic forced pharmacy managements to initiate alterations with a short-term plan, the modified system rendered benefits that prove to remain.27

Telepharmacy will likely continue to expand and develop, increasing patients’ access to pharmacy services.28 Hence, it is crucial to formulate a well-developed telepharmacy system that is clear and beneficial to the community. Further conduction of research is essential to study the present opportunities and challenges of telepharmacy in the UAE. During the COVID-19 pandemic and especially the lockdown period, telepharmacy benefits were able to shine bright. This paradigm allowed patients to communicate with pharmacies, whether for acute or chronic conditions, lessening the sudden burden on hospitals and reducing patients’ risk of infection. The shift to online purchases additionally allowed pharmacies to keep running during a time of economic difficulties. On the other hand, it is important to note that although many issues were solved using telepharmacy, it is not without consequences. Some studies have found telepharmacy to have medication errors similar or higher than traditional pharmacies.28,29

Finally, several issues must be addressed in the community pharmacy sector in the UAE to provide tele-technology services more efficiently and effectively. These recommendations include developing an electronic prescription system with patient medication records in the community pharmacy, developing a network among all healthcare providers in the country, and making pharmacists more accessible to patients’ health data.

Strengths and weaknesses

This study provides meaningful insights regarding the use of telepharmacy services in community pharmacies in a developing country. To the best of our knowledge, majority of studies that assessed telepharmacy services were for clinical services in hospital, hospital discharge patients and rural pharmacies. On the other hand, the cross-sectional design of the study is not without limitations since causality cannot be established. Additionally, questionnaire related issues such as difficulty in distributing the surveys and level of participants’ understanding of the questions. In addition to the obstacles accompanied by the pandemic. Moreover, participants might not feel comfortable providing answers that presents themselves in an unfavorable manner, which creates a source of bias as they are evaluating services provided by them. Finally, since the survey was conducted after a short period of time out of the three study periods, there is an expectation of bias due to confusion or forgetting of some information while filling the questionnaire.

CONCLUSION

Most of the community pharmacies were offering online sales prior to the lockdown and a majority of them had home delivery service. Almost all participants confirmed that the staff responsible for the online services were the licensed pharmacists themselves. Moreover, providing pharmaceutical services by telepharmacy services was more common in group/chain pharmacies than individual pharmacies.

Regarding barriers that the pharmacists faced, it was perceived that small individual pharmacies struggled more than group/chain pharmacies when it came to time, training and financial support. Although group/chain pharmacies had a larger availability of set policies regarding telepharmacy, individual pharmacies reported more working hours and incentive for their employees.

Telepharmacy can be used as a tool to reduce the burden on the healthcare system and enhance pharmaceutical services provided by the community pharmacies.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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AUTHOR’S CONTRIBUTIONS

Conceptualization: F.J. and H.A., Methodology: F.J., H.A., K.A., Z.K. and M.O., Data curation: M.O. and F.J., Writing—original draft preparation F.J., L.A., and O.D., Writing—review and editing: F.J., Z.K, L.A., K.A, and H.A. All authors have read and agreed to the published version of the manuscript.

KEY FINDINGS

A demand for pharmacy services using telepharmacy tools was observed during the lockdown period related to COVID-19
Jirjees F, Odeh M, Aloum L, Kharaba Z, Alzoubi KH, Obaidi HA. The rise of telepharmacy services during the COVID-19 pandemic: A comprehensive assessment of services in the United Arab Emirates. Pharmacy Practice 2022 Apr-Jun;20(2):2634. https://doi.org/10.18549/PharmPract.2022.2.2634

Using telepharmacy to provide pharmaceutical services in community pharmacies has been beneficial during the COVID-19 pandemic, including the lockdown period. The lack of time, training, workers, and financial support were the main obstacles in providing pharmaceutical services via telepharmacy. Yet, these barriers were reported less in pharmacy group/chain.

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