ORIGINAL PAPER
Primary Care

Community pharmacists’ needs, education, and readiness in facing COVID-19: Actions & recommendations in Egypt

Amira B. Kassem1 | Asser I. Ghoneim2 | Mohamed I. Nounou3 | Noha A. El-Bassiouny1

1Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, Damanhour University, Damanhour, Egypt
2Department of Pharmacology, Faculty of Pharmacy, Damanhour University, Damanhour, Egypt
3Department of Pharmaceutical Sciences, School of Pharmacy, University of Saint Joseph (USJ), Hartford, CT, USA

Correspondence
Amira B. Kassem, Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, Damanhour University, Egypt.
Email: amira.kassem@pharm.dmu.edu.eg

Abstract

Introduction: Coronavirus disease 2019 (COVID-19) outbreak is considered one of the most important public health crises all over the world and in Egypt. Community pharmacists represent the third largest health care professional group after physicians and nurses. Community pharmacists are expected to be fully prepared at the frontline of defending their community needs by limiting the spread of COVID-19 via different pharmaceutical care services.

Aim: This study aimed to evaluate the sources of knowledge and readiness of community pharmacists in facing COVID-19 early outbreak in Egypt.

Methods: A descriptive cross-sectional study was performed via a self-administered online google form questionnaire during the early period from 14 April to 3 June 2020. The questionnaire focused on; evaluating education level, sources of information, and readiness of Egyptian community pharmacists in the COVID-19 pandemic crisis.

Results: A total of 318 community pharmacists from Egypt participated in this questionnaire. About half of the surveyed pharmacists reported that they were frequently consulted and that their patients were seeking consultation regarding COVID-19 management more than 10 times per day. More than half of the pharmacists reported using social media as a source of information and knew the right social distancing recommendations. Regarding protective measures, only a quarter of pharmacists disclosed the availability of personal protective equipment (PPE). Nevertheless, the majority of pharmacists significantly reported some initial lack of support either in form of recommendations or PPE supply.

Conclusion: The study revealed the dependence of community pharmacists on social media as the main source of information and the lack of early awareness of evidence-based practice resources. Community pharmacists were in need of more initial support to achieve better satisfaction, patient counselling and infection control. Corrective measures were promptly undertaken to support and satisfy the Egyptian community pharmacists’ initial awareness and readiness facing COVID-19.

1 | INTRODUCTION

Coronavirus disease 2019 (COVID-19) outbreak is considered one of the most important public health crises all over the world. The first case of the novel COVID-19 was identified in China’s Wuhan City in December 2019. At the end of January 2020, the World Health Organization (WHO) declared the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as a pandemic disease. In Egypt, COVID-19 first emerged in March 2020. The Egyptian government and the ministry of health advocated several measures aimed to limit...
the spreading of the disease and increase public awareness. These measures include hand hygiene, environmental hygiene, social distancing, travel limitation, and quarantine.

According to a global perspective, community pharmacists represent the third largest health care professional group after physicians and nurses. Community pharmacists are considered the nearest & easiest health care provider for those with health-related concerns. Community pharmacists have played an important role in limiting the spread of COVID-19 via different provided pharmaceutical care services like producing reliable information on the disease and its preventive measures, referring to suspected cases and ensuring continuous supply of medicine. The types of patient care services that community-based pharmacists providing are extremely variable by country, pharmacists knowledge, population awareness & economical issue. So, International Pharmaceutical Federation (FIP) published in February 2020 "Coronavirus 2019-nCoV outbreak: Information and interim guidelines for pharmacists and the pharmacy workforce" to provide pharmacists with relevant information and guidelines on coronavirus outbreaks.

Community pharmacists are required to protect themselves and their pharmacy's staff by promoting protective measures and regulations in their pharmacy such as keeping the social distance encouraged pharmacy's staff to wear a facial mask, wipe and disinfect the counter after each customer/patient, proper sanitisation, encourage telemedicine services and facilitate home delivery services. At the beginning of the crisis, the community pharmacists were confused about precautionary measures which should be done in their pharmacy to limit infection spread. In addition to face obstacles in supplying the personnel protective equipment (PPE) and sensitisers.

The study aimed to explore community pharmacists' sources of information in Egypt during the COVID-19 outbreak. In addition, to know how far precautionary measures were applied in community pharmacies and if the community pharmacists were in need of meaningful support from competent authorities.

2 | METHODOLOGY

A descriptive cross-sectional self-administered questionnaire was performed among Egyptian community pharmacists. The questionnaire was distributed online from 14 April to 3 June 2020. It was validated by a face-to-face sample of three community pharmacists other than authors, and independent psychological professor, Dr Alhousini Mansour Alwan, Professor of Psychology at the Faculty of Education Damanhum University concerning relevancy and accuracy. The questionnaire was formulated in Arabic to match the currently used native language. The questionnaire consisted of 27 questions divided into four sections. The 1st section included the important role of the community during the COVID-19 pandemic. The 2nd part covered sources of information used by a community pharmacist, 3rd part include community pharmacists' knowledge concerning infection control measurements and 4th part covered the need for governmental support to community pharmacists concerning COVID-19 pandemic (Supporting Material 1). The targeted population was mainly Egyptian community pharmacists. Hospital pharmacists, foreign community pharmacists and under graduated pharmacists were excluded.

The questionnaire was distributed in different governances in Egypt (El Behira, Alexandria, Cairo & Kafar El Shikh). Posting online at the electronic sites and social media of the Behira Pharmacists Syndicate at Behira Governorate also took place (Available from: https://www.facebook.com/groups/122413404514689/permalink/2996281860461148/).

2.1 | Statistical analysis

Data were analysed, processed and illustrated using IBM SPSS software package version 25, MiniTab Version 19.1 (MacOS Version) and GraphPad Prism 8.4.1 (GraphPad Software).
RESULTS

3.1 Characteristics and demographic data of participating pharmacists

A total of 318 community pharmacists from Egypt participated in this questionnaire. 251, 55 and 77 participants located in cities, towns and villages (65.8%, 14.43% and 19.68%), respectively (Table 1). The highest responses were recorded from pharmacists aged from 23 to 30 (56.9%) followed by 31 to 40 (33.33%) and 41 to 50 (7.87%) with only seven pharmacists older than 50 years (2.2%). Female pharmacists’ participation in this questionnaire was 86.2%.

3.2 Are the pharmacists needed by the community during the COVID-19 pandemic?

When asked about the need for pharmacists’ consultation to patients regarding COVID-19 management, 51%, 39%, 4% and 1% of the pharmacists reported that they either frequently, sometimes, rarely, and never consulted by patients, respectively. Also, 40.4% of pharmacists reported that patients were seeking consultation regarding COVID-19 management more than 10 times per day while 23.9% of pharmacists reported that they had never been requested for any consultation related to COVID-19. As reported by the questionnaire, 41.73%, 38.8% and 6.8% of participated community pharmacists were used social media, face to face patient’s interaction and printed materials, respectively, to offer COVID-19 awareness. However, 12.6% of participated pharmacists reported that they had never offered any awareness (Table 1).

3.3 The community pharmacists’ sources of information

In response to COVID-19 information resources used by community pharmacists, 58.01%, 19.16%, 13.12% and 8.14% of the pharmacists used social media, media like newspaper and television, WHO website, and the Egyptian ministry of health, respectively, while 1.57% of pharmacists reported not getting information at all (Figure 1A). Concerning the frequency of information updates, 58.79%, 37.01% and 2.62% of pharmacists access information daily, weekly and monthly, respectively (Figure 1B).

3.4 The community pharmacists’ knowledge concerning infection control measurements

When asked about the knowledge of community pharmacists regarding ethanol concentration, 97.11% of pharmacists reported that 70% ethanol concentration is an effective concentration (Figure 1C) and 90.81% of pharmacists discouraged the use of methanol instead of ethanol (Figure 1D). Concerning cloth handling, 51.7% of pharmacists washed their clothes after each use daily, 21.52% of pharmacists wore their white lab coats in their pharmacies while 26.77% of pharmacists never altered their normal habits during the COVID-19 pandemic with respect to cleaning and cloth management (Figure 1E). Concerning the knowledge of face masks and gloves usage, 55.12% of pharmacists wore their face mask all the time in their pharmacies, 26.77% of pharmacists wore face masks during contact only, while 18.11% did not wear face masks at all (Figure 1F). 63.78% and 19.95% of the pharmacists wore gloves either all the time or during contact, respectively, while 16.27% of pharmacists did not use gloves (Figure 1G). 19.03%, 19.03%, 15.78%, 10.91%, 7.67%, 2.8%, 2.8% and 7.23% of surveyed pharmacists suggested that Chloroquine, Tamiflu, vitamin c, Azithromycin, Favipiravir, Remedesvir, Ivermectin and plasma of recovered COVID-19 patients could aid in treating COVID-19, respectively (Figure 1H). 72.18% of surveyed pharmacists recommended calling hotlines, 14 days home quarantine, and immediate hospitalisation, respectively (Figure 1P).

3.5 The community pharmacists’ knowledge regarding commonly used medications

Concerning the community pharmacists’ knowledge of using Ibuprofen as a non-steroidal anti-inflammatory in COVID-19 patients, 77.43% of surveyed pharmacists discouraged the use of Ibuprofen (Figure 1K). Furthermore, 84.25% of the surveyed pharmacists reported the ineffectiveness of vaccines such as BCG or seasonal influenza vaccines in COVID-19 protection (Figure 1L). 33.78%, 19.03%, 15.78%, 10.91%, 7.67%, 2.8%, 2.8% and 7.23% of surveyed pharmacists suggested that Chloroquine, Tamiflu, vitamin c, Azithromycin, Favipiravir, Remedesvir, Ivermectin and plasma of recovered COVID-19 patients could aid in treating COVID-19, respectively (Figure 1M). 14.44% of surveyed pharmacists dispensed unreported prophylactic therapy for COVID-19 (Figure 1N). 72.18% of surveyed pharmacists communicated proper questions to their patients (Figure 1O). Finally concerning community pharmacists’ recommendations regarding dealing with the suspicious COVID-19 cases, 23.36%, 71.39% and 5.25% of surveyed pharmacists suggested calling hotlines, 14 days home quarantine, and immediate hospitalisation, respectively (Figure 1P).

3.6 How far community pharmacists applied infection control measurements in their pharmacies

Concerning the availability of PPE, only 25.2% of surveyed pharmacists reported that PPE was currently available. 40.03% of them reported that PPE was only available for only 50% of the demand,
| Questionnaire's results                  | Objective                                                                 | Sum  |
|----------------------------------------|---------------------------------------------------------------------------|------|
| **Age (y)**                            | General demographics & population statistics                              | 381  |
| 20-30                                  |                                                                           | 217  |
| 31-40                                  |                                                                           | 127  |
| 41-50                                  |                                                                           | 30   |
| >50                                    |                                                                           | 7    |
| **Gender**                             |                                                                           | 381  |
| Male                                   |                                                                           | 107  |
| Female                                 |                                                                           | 274  |
| **Demographics**                       |                                                                           | 381  |
| City                                   |                                                                           | 251  |
| Town                                   |                                                                           | 55   |
| Village                                |                                                                           | 75   |
| **Patients' consultation**             | Are the pharmacists needed by the community during the COVID19 pandemic? | 381  |
| Frequently                             |                                                                           | 213  |
| Sometimes                              |                                                                           | 149  |
| Rarely                                 |                                                                           | 15   |
| Never                                  |                                                                           | 4    |
| **Patients requesting COVID19 remedies and advice?** | | 381 |
| >20/day                                |                                                                           | 74   |
| >10/day                                |                                                                           | 154  |
| <3/day                                 |                                                                           | 62   |
| None                                   |                                                                           | 91   |
| **Participation in community awareness**|                                                                           | 381  |
| Via social media                       |                                                                           | 159  |
| Via printed material in Pharmacy       |                                                                           | 26   |
| Only patients' consultation            |                                                                           | 148  |
| Never participated                     |                                                                           | 48   |
| **Information source**                 | Are the pharmacist well informed and educated?                           | 381  |
| Egyptian Ministry of Health            |                                                                           | 31   |
| Media                                  |                                                                           | 73   |
| Social media                           |                                                                           | 221  |
| WHO                                    |                                                                           | 50   |
| Not getting Information                |                                                                           | 6    |
| **Frequency of information search**    |                                                                           | 381  |
| Daily                                  |                                                                           | 224  |
| Weekly                                 |                                                                           | 141  |
| Monthly                                |                                                                           | 10   |
| Not getting Information                |                                                                           | 6    |
| **What is Ethanol effective Conc.?**   |                                                                           | 381  |
| 50%                                    |                                                                           | 7    |
| 70%                                    |                                                                           | 370  |
| 90%                                    |                                                                           | 2    |
| 95%                                    |                                                                           | 2    |
| **Can methanol be used instead?**      |                                                                           | 381  |
| Yes                                    |                                                                           | 35   |
| No                                     |                                                                           | 346  |
| **How you handle your cloth daily?**   |                                                                           | 381  |
| Wash after single use                  |                                                                           | 197  |
| Wear PPE (Coat)                        |                                                                           | 82   |
| No change in normal pattern            |                                                                           | 102  |
| **Do you wear face mask?**             |                                                                           | 381  |
| All of the time                        |                                                                           | 210  |
| Only during contact                    |                                                                           | 102  |
| Never                                  |                                                                           | 69   |

(Continues)
| Questionnaire's results | Objective | Sum  |
|-------------------------|-----------|------|
| **Do you wear gloves?** | All of the time | 243 |
| | Only during contact | 76 |
| | Never | 62 |
| **When do you change gloves, if any?** | One/patient | 61 |
| | One/hour | 35 |
| | One/2 hours | 55 |
| | One/4 hours | 67 |
| | One/day | 101 |
| | Never | 62 |
| **Agents used to clean surfaces** | Dettol | 13 |
| | Clorox (Diluted) | 344 |
| | Water | 8 |
| | Others | 16 |
| **What is proper social distancing?** | < 1 m | 2 |
| | - 2 m | 223 |
| | - 4 m | 22 |
| | - 6 m | 9 |
| | I don't know | 125 |
| **Can we use Ibuprofen for fever?** | Yes | 86 |
| | No | 295 |
| **Can current vaccines work for COVID19?** | Yes | 6 |
| | No | 321 |
| | I don't know | 54 |
| **What therapy you would recommend?** | Hydroxychloroquine/ chloroquine | 229 |
| | Tamiflu | 129 |
| | Vitamin C | 107 |
| | Azithromycin | 74 |
| | Favipiravir | 52 |
| | Remedesvir | 19 |
| | Ivermectin | 19 |
| | Recovered patient’s plasma | 49 |

**TABLE 1 Continued**

| **Do you sell prophylactic therapy for COVID19?** | Yes | 55 |
| | No | 326 |
| **Are Pharmacist asking proper questions?** | Yes | 275 |
| | No | 106 |
| **Recommendations for suspected COVID19 patients** | Call hotline for 14 days | 89 |
| | Home Quarantine | 272 |
| | Immediate hospitalisation | 20 |
while 26.77% reported complete nonavailability (Figure 2A). 75.85% of surveyed pharmacists reported a complete lack of counter shield in their retail sites (Figure 2B). For pharmacists’ adopted strategies to combat the COVID-19 pandemic spread, 35.43%, 26.25%, 19.95% and 9.97% of pharmacists adopted daily sanitisation, decreased labour, home delivery and social distancing, respectively. 8.4% of pharmacists adopted no new policies in response to COVID-19 (Figure 2C).

3.7 | Are competent authorities provided meaningful support to community pharmacists?

94.5% of surveyed pharmacists significantly reported that there were no meaningful support provided from competent authorities like the government, Ministry of Health and pharmacy syndicate either in the form of information, regulations or PPE supplies (Figure 2D).

4 | DISCUSSION

In Egypt, and most Middle East countries, community pharmacies are favoured by patients as primary consultation sites over primary care centres, because of its ease to access, always open even in restricted hours, and no waiting list.\textsuperscript{11} Our study revealed that the Egyptian community needed community pharmacists either in consultation or medication counselling during COVID-19. So, the community pharmacists should be updated with evidence knowledge to provide their patients with the right information regarding COVID-19. Our results showed that 77.17% of pharmacists depend on media & social media as a source of information.

The dependence of social media as a source of information in our study may regard young age participants as 57% of participants aged from 23 to 30 years old with less experience while 43% of participants were above 31 years old. Our results were matched with a cross-sectional study concerning COVID-19 awareness among pharmacists from the Middle East and North Africa (MENA) which, reported that 60.8% of participants pharmacists (40.8% of participants were from Egypt) get their information from social media. On the other hand, another study by Hoti et al\textsuperscript{12} reported that most of the Kosovo pharmacists get their information from translated FIP guidelines.

The study revealed a lack of evidence-based resources among Egyptian pharmacists and their need for educational support on how to get evidence-based information to empower them in consulting and educating patients and customers. According to Basheti et al, MENA pharmacists strongly agreed with their need for training programs and continuous education for ideal health supporting during the COVID-19 outbreak focusing on the role of faculties/educational institutes in this area.\textsuperscript{13}

More than half of community pharmacists were well informed of infection control measures and applied them in their pharmacies like
PPE usages such as masks and gloves and clean surface with diluted Clorox. By asking about proper social distance about 58% of participants had correct answers while the rest had either wrong or did not know. More than 75% of community pharmacists did not support the usage of Ibuprofen, although there was no supporting evidence. Neither WHO nor the FDA declares withholding ibuprofen in patients with COVID-19.14,15

Finally, the study assessed the extent of infection control measures and availability of PPE in community pharmacies during the beginning of the crisis in Egypt. The limited supply and availability of PPE in Egyptian pharmacies at the beginning of the crisis was considered one of the obstacles facing community pharmacists. A cross-sectional study by Bahlol and Dewey, focusing on the Pandemic preparedness of community pharmacies for COVID-19 in Egypt during the same period of our study in April 2020 revealed a shortage of PPE and alcohol in Egyptian pharmacies which support our finding.11 About 75% of community pharmacists did not have a counter shield in their pharmacies which increased the risk of infection. On the other hand, more than 90% applied new policies in their pharmacies to limit the infection spreading. Keeping a social distance is one of these policies. Only 9.97% of pharmacists applied the social distance regulation in their pharmacies. This may be because of either the shortage of pharmacists’ knowledge or the size limitation of most pharmacies as the minimum allowed area for pharmacy approval was 25 m² according to Egyptian regulation.11 The issue of keeping social distance in community pharmacies is considered an obstacle not only in Egypt but also, in the United Kingdom according to surveyed questionnaire among pharmacists who indicated that most of them were unable to keep social distancing either between pharmacy worker or patients.16

94.5% of community pharmacists significantly suffered from lack of provided support either in supplying PPE or getting information

**FIGURE 1 Are pharmacist well informed and educated?** (A). Information source. (B). Frequency of information search. (C). What is the Ethanol effective conc. (D). Can methanol be used instead? (E). Handling of cloths daily. (F). Wear face mask. (G). Wear Gloves. (H). When do you change gloves? (I). Agents used to clean surfaces. (J). Proper social distancing? (K). Can we use Ibuprofen for fever? (L). Can current vaccines work for COVID19? (M). What therapy you would recommend? (N). Do you sell prophylactic therapy for COVID19? (O). Are Pharmacist asking proper questions. (P). Recommendations for suspected COVID19 patients

**FIGURE 2 Are pharmacists well prepared?** (A). PPE availability. (B). Do you have counter. (C). New polices to combat COVID-19. D. Is meaningful support provided
from competent authorities. So, the ministry of health, pharmacists syndicate, and pharmaceutical companies should cooperate, support, and qualify community pharmacists to decrease the load on the governate, control the infection spreading and increase community awareness in facing the COVID-19 crisis. These can be achieved via saving PPE, counter shields, and alcohol to community pharmacies. In addition to legislating regulations and laws such as concisely the number of pharmacy staff and clients according to the size of the pharmacy, bind the community pharmacists and pharmacy staff to wear masks and PPE if possible, allocate special place with protective measures in pharmacy to deal with suspected persons, encourage the telemedicine and electronic prescriptions and finally provide health insurance services to the community pharmacists.

Corrective measures and recommendations were promptly undertaken by the community service sector of the Faculty of Pharmacy at Damanhour University such as improving E-learning and continues education via posting online lectures to better educate pharmacists at the official electronic sites of the Faculty of Pharmacy and the Pharmacists Syndicate at Behera Governorate.

5 | LIMITATIONS

The study was done via an online survey which leads to the collection of data only from pharmacists who were interesting in social media. Such sampling technique leads to selection bias and affecting the validity of our study as the other pharmacists who did not interest in social media lost the chance of participation. This may be explained by the relatively young age of the study participants as elderly pharmacists may either not interesting or unable to use social media. In addition, the study cannot be generalized to all Egyptian community pharmacists, it is mostly covering the west regions in Egypt. The study was done at the beginning of the crisis, so further studies are recommended.

6 | CONCLUSION

The study revealed the dependence of community pharmacists on social media as the main source of information. The community pharmacists should be provided with evidence-based knowledge regarding infection control measures and how to apply them in their pharmacies. In addition, the community pharmacists were in need of meaningful support from competent authorities to achieve the best health care services during the COVID-19 crisis.

ETHICAL APPROVAL AND CONSIDERATION

The authors declare that this work complies with the ethical standards of the Scientific Ethics Committee Board at the University of Pharmacy Damanhour University (Approval Ref. No. 420PP23). This study was approved by the Ethics Committee of Damanhour University (420PP23). The study was registered on the Clinical Trials online database (NCT04374513, https://clinicaltrials.gov/ct2/show/NCT04374513?term=community+pharmacist&cond=Covid 19&draw=2&rank=1). Participation in the study is voluntary. The submission of the answered questionnaire was considered as consent to participate in the study.

CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

All data generated or analysed during this study are included in this published article will be available upon request.

ORCID

Amira B. Kassem  https://orcid.org/0000-0003-4195-6036

REFERENCES

1. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020;382(8):727-733.
2. Sohrabi C, Alsafi Z, O’Neill N, et al. World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19). Int J Surg. 2020;76:71-76.
3. Egypt records new 16 "COVID-19" cases, bringing total of 126: Health Ministry, in Egypt today. 16 Mar 2020.
4. Egyptian government’s anti-virus plan met with mixed reactions, in AL-MONITOR. 27 Mar 2020.
5. Brewster S, Holt R, Portlock J, Price H. The role of community pharmacists and their position in the delivery of diabetes care: an update for medical professionals. Postgrad Med J. 2020;96(1138):473-479.
6. Bennett M, Goode J VR. Recognition of community-based pharmacist practitioners: essential health care providers. J Am Pharm Assoc. 2016;56(5):580-583.
7. Aly M, García-Cárdenas V, Williams K, Benrimoj SI. A review of inflammatory drug use and outcomes of COVID-19 in the ISARIC Critical Care Clinical Characterisation Protocol UK cohort: a matched, prospective cohort study. The Lancet Rheumatology. 2021.
16. Hasan SS, Kow CS, Zaidi STR. Social distancing and the use of PPE by community pharmacy personnel: Does evidence support these measures? Res. Social Adm. Pharm. 2021;17(2):456-459.

SUPPORTING INFORMATION
Additional supporting information may be found in the online version of the article at the publisher’s website.