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Pandemic preparedness of community pharmacies for COVID-19

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\textbf{A B S T R A C T}

\textbf{Background:} Community pharmacies provide an important healthcare service, which is broadly established, and constitutes the preferred and initial contact for members of the community. The significant value of community pharmacies was further highlighted during the COVID-19 pandemic crisis.

\textbf{Objective:} The assessment of community pharmacies preparedness for the COVID-19 pandemic.

\textbf{Methods:} A cross-sectional interview survey of 1018 community pharmacies working in four regions of Egypt (South, East, Centre, and North). Data collection was conducted from 8–19 April 2020.

\textbf{Results:} Availability of personal protective equipment (PPE) and medication was better than alcohol (70% conc.). Home delivery services were available in 49.1% of pharmacies. Infection control measures covering interactions between staff were in place in up to 99.5% of pharmacies. Conversely, there was less frequent availability of contactless payment (29.1%), hand sanitizers (62.1%) or masks (86.5%) for customer use, or a separate area for patients with suspected COVID-19 (64%). Verbal customer education (90.4%) was used preferably to written (81.3%). Despite high clinical knowledge and awareness (97.6%–99.2%), only 8.8% of pharmacists had reported suspected COVID-19 cases, however this varied significantly with pharmacist demographics (geographic region \( P < 0.001 \); pandemic training \( p < 0.001 \); position \( p = 0.019 \); age \( p = 0.046 \)).

\textbf{Conclusions:} Government and policymakers strive to mitigate the shortage of PPE and medication. More attention should be given to infection control measures around interactions between staff and customers to ensure community pharmacists are fit and able to provide continuity in their important role. Educating customers using regularly-updated posters, banners or signs will contribute to decreasing contact with patients, and reducing the number and duration of visits to the pharmacy. Pandemic preparedness of community pharmacists must also extend to reporting procedures. By avoiding under-reporting or over-reporting, community pharmacists will contribute to accurate monitoring of the national spread of infection.

\textbf{Introduction}

On December 31, 2019 in the city of Wuhan, in the Hubei province of China,\textsuperscript{1} an outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was detected. Following the initial outbreak, the virus spread to other countries via asynchronous patterns, a pattern typical for infectious diseases due to the presence of multiple contagion sources. On January 30, 2020, the WHO changed the status of the outbreak to confirm a Public Health Emergency of International Concern. On March 11 COVID-19 was reclassified as a pandemic by the WHO, and impacted over 100 countries over the following number of weeks.\textsuperscript{2,3}

As reported on the 20 March, there were 769 confirmed cases of COVID-19 across 37 countries in Africa, and 15 fatalities.\textsuperscript{4} COVID-19 first appeared in Egypt in the first week of March 2020. As of the evening (20:10) of 21st April 2020, Egypt was ranked 50th out of 212 areas and countries in terms of the number of patients infected; 147th out of all areas and countries reporting infections with regards to the total number of infected individuals reported (with 36 infections per one million population), 106th with regards to the infection recovery rate (26.6% infection recovery), and 34th with regards to the number of deaths per total infected (7.5%). Until 21st April, Egypt was reported to have had a total of 3659 infected, 935 recovered; 1270 negative test results and 276 deaths [ref: https://www.care.gov.eg/EgyptCare/ Index.aspx]. It is challenging for healthcare authorities to publishing accurate figures, reflecting actual totals, and in real time. The reasons for this may well be linked to limited testing capacity and difficulties in identifying the cause of death. A 14-day quarantine period was
implemented and other preventative measures such as a partial curfew; with the Government of Egypt announcing an extension of the nation-wide curfew for two further weeks, until April 23rd 2020. The curfew covered the hours between 6:00 p.m. and 6:00 a.m. All commercial enterprises and shops were prevented from working after 6:00 p.m. except food outlets and pharmacies. From April 24th to May 23rd (during Ramadan) The Presidency of the Council of Egyptian Ministers relaxed some of these preventative measures such as reducing the curfew by 3 h (such that it covered 9:00 p.m. to 6:00 a.m.) and allowed some businesses and government services offices to reopen in order to stimulate the economy and facilitate cultural/social practices during Ramadan.

During the pandemic, medically trained personnel, as the backbone of epidemic prevention and first-line providers of infection control, endured heavy workloads, high risks of infection and unprecedented work pressures. In low- and middle-income countries (LMICs), the role of the private sector has often been neglected in healthcare by international public health communities and governments. Private community pharmacies provide a significant service in healthcare. Further, in most LMICs, private pharmacies are broadly established and provide the initial point and preferred channel through which members of the community are able to obtain medications and healthcare services for the majority of the population in developing countries, including Egypt, as only 23 of 60,000 pharmacies are government owned.

The important value of private pharmacies was further highlighted during the COVID-19 pandemic crisis. However, pharmacies were unable to fulfill their classic role in healthcare as a source of medication, as pharmaceutical measures such as a COVID-19 vaccines and antiviral medicines were not available at time of writing and will not be widely available for a long time. In the current absence of medical treatment and vaccination, the unfolding COVID-19 pandemic can only be brought under control by significant, rapid and widespread behavioral changes. Social and administrative science data could help mitigate the COVID-19 crisis to provide insight into public perceptions of risk, protective behaviors and preparedness measures, public trust and knowledge as well as misinformation. The methods of communication and channels of information used by the populace are changing on a continual basis; it is now of the utmost importance that social science research incorporates information from social media, as many authorities, including the WHO, use this to reach out to people.

The aim of the present study was to investigate the preparedness of private community pharmacies to pandemic COVID-19. This encompasses multiple aspects, in terms of the ability to provide medicinal products, maintain infection control in the pharmacy, and facilitate patient education. In addition, the study investigated as the levels knowledge and awareness community pharmacists had with regard to the pandemic, and the degree to which they had been reporting COVID-19 cases to the responsible healthcare authority. This cross-sectional survey was conducted from 8 to April 19, 2020, where The daily report of the Ministry of health and population in Egypt included a marked increase in the incidence of the infection from 1560 people infected on 8th April (305 recovered, 103 deaths) to 3144 people infected on 19 April (732 recovered, 239 deaths). Geo-locational data for records of COVID-19 cases may play an important role in the communication and evaluation of risk during outbreaks, especially when these data are available in real-time.

**Methods**

Community pharmacies in Egypt were assessed for their preparedness for the COVID-19 pandemic using a cross-sectional survey administered by in-person interview. Approval to perform the study was granted by authors’ institution. Participants had the study confidentiality statement verbally explained to them, with a signed copy of the approved confidentiality policy being provided upon request.

The development of the questionnaire was based on existing literature (specifically that published by the WHO, and Egyptian, New South Wales and UK government public health guidelines as well as The International Pharmaceutical Federation (FIP), The pharmacy Guild of Australia, The British Columbia Pharmacy Association (BCPhA), Pharmaceutical Services Negotiating Committee (PSNC), and National Institute for Health and Care Excellence (NICE)) and exploratory interviews with a purposive sample of seven community pharmacists covering a range of roles and levels of experience. This latter was conducted during the last week of March 2020. The questionnaire included 84 questions divided into three sections. The first section comprised 12 questions covering pharmacists’ demographics (position, years’ experience, and gender), the demographics of the customers with suspected COVID-19 symptoms (age and gender) and the nature and degree of symptoms reported by customers to community pharmacists. The second section contained 69 polar alternative (yes/no answer) questions covering six domains related to the COVID-19 pandemic: (1) the ability to provide products, (2) infection control, (3) practice surrounding patient education, (4) knowledge and awareness, (5) barriers, and (6) facilitators. The final section comprised three open-ended questions pertaining to whether questions should be removed, added or modified, required sentence formatting (composition, terminology), validity of questionnaire content, and seeking any other comments. The first two sections comprised questions that were predominantly closed-ended, although space was provided for expansion. The final section provided the opportunity at the end of the questionnaire for respondents to add any further comments on the topic.

Following development of the questionnaire, a pilot of 92 questions was performed between the 1st and April 6, 2020 on a random sample of 42 pharmacies in demographically similar regions in the North, Centre, South and East of Egypt. As a result of feedback obtained during the pilot, a number of changes were made to the questionnaire; namely the addition and removal of certain questions, and modifications to the formatting.

The final questionnaire comprised 87 questions in two sections; a first section containing 12 demographics questions and a second section of 69 questions covering the domains under investigation. The final section of open-ended questions was removed. Invitations to take part in the research were distributed in printed format to community pharmacies in Egypt. Envelopes were addressed to “the pharmacist” to ensure that respondents were actively working in community pharmacy, and also to maximize the response rate through obtaining the attention of the pharmacist. Data collectors then visited community pharmacists in person, to conduct the interview. One pharmacist was interviewed in each private community pharmacy. All questions had yes/no answers, except those with multiple closed options, e.g. regions (North, Centre, South, or East), position (junior, senior, or manager), and years’ experience (list of numbers). Each questionnaire was assigned a specific data collector (name and ID) to allow the researcher to contact them if necessary. Data collectors were asked to complete the interviews within a two week period and submit the answers electronically using Google forms. Following electronic submission of completed responses, all participant data were anonymized. As such, the survey design had the advantages of capturing responses from individual personnel covering a large geographical range, with great rapidity. The present article covers 4 domains out of the 6 covered in the survey, comprising 45 questions out of the total 69. These 4 domains are: (1) the ability to provide products, (2) infection control, (3) knowledge and awareness, and (4) practices surrounding patient education. The results have been divided into two manuscripts as relevant to the relative directions of the objectives of the study. The present manuscript deals with the four domains covering preparedness of community pharmacies for the COVID-19 pandemic (internal consistency measured by Cronbach’s alpha = 0.773). 24 further questions covering the two remaining domains (barriers and facilitators) relate to a different objective; the development and scaling up of services...
provided through community pharmacies (Cronbach's alpha = 0.744).

Data were analysed in SPSS version 20 using descriptive statistics and comparative analyses between survey items were conducted using Chi-square tests.

Results

1034 questionnaires were sent out to community pharmacists, and 1018 (98.5%) of these were completed within two weeks, therefore comprising the study sample. One pharmacist was interviewed in each private community pharmacy. The formal calculations involved values of population, confidence level, percentage of response distribution, and confidence interval, taken to be 70,000, 95%, 50%, and 3.05 respectively. Due to the presence of a small number of missing values in the data, the results tables presented here show both absolute numbers of respondents and the percentage of valid responses for transparency.

Respondents covered all three levels of community pharmacist position (junior, senior, and manager) working in community pharmacies of three regions South, East, Centre, and North. Respondents had a mean age of 36.1, graduated between 1971 and 2019, and ranged in experience from 1 to 50 years (mean experience = 12.7 years). The majority of respondents had graduated from Government-funded Universities (82.2%). 21.3% of respondents had received pandemic training. Few respondents (8.8%) had reported a suspected COVID-19 case (Table 1a), and most (62.9%) of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a). With regard to the customers presenting with symptoms of COVID-19, 42.8% of cases presented with mild symptoms, while 18% of those who had reported cases did not receive pandemic training (Table 6a).

Table 1a
Respondent demographics – pharmacists.

| Number | Valid % |
|--------|---------|
| Region |
| South  | 93      | 9.2% |
| East   | 75      | 7.4% |
| Centre | 164     | 16.2%|
| North  | 681     | 67.2%|
| Missing| 5       |       |
| Age (mean, range) |
| 36.1 years |       |
| Missing   | 14      | 1.4% |
| Graduation year (mean, range) |
| 2007     | 1971–2019|
| Missing   | 23      | 2.3% |
| Years’ experience (mean, range) |
| 12.7 years | 1–50 years |
| Missing   | 16      | 1.6% |
| Gender |
| Male    | 738     | 73%  |
| Female  | 273     | 27%  |
| Missing | 7       |       |
| Position |
| Junior  | 380     | 37.5%|
| Senior  | 229     | 22.6%|
| Manager | 403     | 39.8%|
| Missing | 6       |       |
| University |
| Government-funded | 833 | 82.2%|
| Private  | 180     | 17.8%|
| Missing  | 5       |       |
| Pandemic training |
| Yes     | 215     | 21.3%|
| No      | 794     | 78.7%|
| Missing | 9       |       |
| Reporter |
| Yes     | 89      | 8.8% |
| No      | 923     | 91.2%|
| Missing | 6       |       |

Table 1b
Demographics of Customer having Suspected Symptoms.

| Number | % |
|--------|---|
| Symptoms |
| Mild   | 428 | 42.8%|
| Moderate | 249 | 24.8%|
| Severe | 24  | 2.4% |
| Three degrees |
| 114 | 11.3%|
| Mild and moderate | 161 | 16.0%|
| Mild and severe | 18  | 1.8% |
| Moderate and severe | 12 | 1.2% |
| Missing | 12 |       |
| Age category |
| Geriatrics | 290 | 28.9%|
| Adults | 247 | 24.6%|
| Pediatrics | 61  | 6.1% |
| Multiple | 407  | 40.5%|
| Missing | 13 |       |
| Gender |
| Male | 283 | 28.2%|
| Female | 28 | 2.8% |
| Multiple | 694 | 69.1%|
| Missing | 13 |       |

Table 6a
Demographics of reporting pharmacists are shown in Table 6a.
and hygiene products during the COVID-19 Pandemic are international problem. Lack of adequate PPE for frontline healthcare workers, together with estimates that countries will need far more face masks and respirators than are currently available highlight problems with the global supply chain. As at January 2020, half the world’s face masks were produced in China, but exports decreased as the infection spread and China’s usage increased. Following the peak of the pandemic passing in China, the export of face masks increased again.

In surveyed pharmacies, necessary products such as hygiene products, antipyretic drugs, cold fomentations or ice packs and PPE (Table 2) were not available at all pharmacies, especially high concentration alcohol. Although community pharmacies strive to continue functioning as a business, it becomes necessary to prioritize maintaining adequate stock of the essential items according to local customer demand. Further, modification of package sizing and imposing customer limits on purchase quantities may be necessary, for example dividing large packets of Paracetamol into smaller ones and limiting the number sold to each customer to meet unprecedented demand.

Recent researches suggest Chloroquine and its derivatives to be effective in the treatment of COVID-19 patients. The present study found such quinine-based antimalarial drugs only to be available in 39.1% of pharmacies, a direct result of panic buying in response to the pandemic. This resulted in a shortage of the drugs for the treatment of other immunological conditions such as rheumatoid arthritis and lupus.

### Availability and distribution of products and medicines

Critical supply shortages of Personal Protective Equipment (PPE)

### Table 3

| Inside the pharmacy | Yes | % | Centre | North | South | East | P-value |
|---------------------|-----|---|--------|-------|-------|------|---------|
| Surfaces cleaning regularly e.g. counter tops | 1011 | 99.5% | 100% | 99.6% | 100% | 97.3% | 0.036 |
| Floor cleaning | 1009 | 99.5% | 100% | 99.3% | 100% | 100% | n.s. |
| Common used tools cleaning regularly e.g. phone | 987 | 97.2% | 96.3% | 97.4% | 96.8% | 98.7% | n.s. |
| Availability of sanitizers for staff use | 989 | 97.6% | 97.0% | 98.2% | 95.6% | 95.9% | n.s. |
| Disposable gloves availability for staff use | 950 | 93.6% | 90.9% | 94.9% | 89.1% | 93.3% | n.s. |
| Use of face masks | 936 | 92.2% | 90.2% | 92.1% | 95.7% | 93.3% | n.s. |
| Staff regularly wash hands with soap | 1010 | 99.4% | 99.4% | 99.6% | 100% | 97.3% | n.s. |
| Decrease unnecessary workers (i.e. decreasing workers density) | 867 | 85.7% | 87.8% | 86.0% | 85.9% | 77.3% | n.s. |
| Vulnerable staff leave (acute conditions) | 969 | 95.7% | 93.3% | 95.9% | 97.8% | 96.0% | n.s. |
| Vulnerable staff leave (chronic disease or age) | 978 | 96.4% | 91.5% | 97.2% | 97.8% | 97.3% | 0.004 |
| Waste management | 816 | 80.4% | 75.0% | 80.8% | 85.7% | 82.7% | n.s. |

#### Interpersonal interactions

| Taking precautions handing/dispensing prescriptions | 947 | 93.6% | 96.3% | 92.8% | 96.8% | 90.7% | n.s. |
| Prevention of customer crowding | 957 | 94.7% | 90.8% | 95.7% | 92.3% | 96.0% | n.s. |
| Physical distance (at least 1 m distance) | 968 | 95.5% | 93.9% | 95.4% | 98.9% | 94.7% | n.s. |
| Contactless payment availability e.g. card payment machines | 286 | 29.1% | 41.2% | 24.5% | 35.5% | 30.7% | < 0.001 |
| Free availability of sanitizers for use by customers during visit | 627 | 62.1% | 56.1% | 63.8% | 64.8% | 54.7% | n.s. |
| Free face masks for customers during visit | 875 | 86.5% | 81.7% | 87.8% | 86.8% | 85.3% | n.s. |
| Define a specific area for customer having suspected symptoms | 649 | 64.0% | 59.8% | 66.0% | 59.8% | 60.0% | n.s. |
Approximately half the pharmacies surveyed reported to offer home delivery services. The need for such delivery services will vary across a region, dependent on the population it serves. Delivery drivers will also need access to the same resources afforded to pharmacy staff, such as PPE, hygiene products and education on behavioral measures to prevent the spread of COVID-19. Moreover, it may be necessary to place a limit on the quantities of certain items that can be ordered by each household. Other additional remote services should be considered to reduce contact between individuals, such as telephoning patients to let them know when their prescription is ready to be collected, as opposed to patients making multiple unnecessary visits to the pharmacy to check on the progress of a prescription.

Governments and policy makers are advised to do everything in their power to ensure availability of medicines and hygiene products. To address the PPE shortage in Egypt, the National Service Projects Organization, a department of the Egyptian Armed Forces intervened to provide alcohol, disposable gloves, sanitizers, disinfectants and face masks directly to the public from one of its owned companies (ElNast Intermediate Chemicals Co.). In the UK, the government announced plans to assist with the funding of a pharmacy delivery service to facilitate timely access to medicines for the most vulnerable patients.37

**Infection control**

In Italy, inadequate access to PPE contributed to high rates of infection and death for healthcare workers.38 It is imperative that all healthcare workers including community pharmacists have access to adequate supplies and equipment.

**Inside the pharmacy**

For the majority, maintenance of a clinical environment in the pharmacy, and hygienic interactions of pharmacy staff were suitably prioritized. This included increasing the frequency of regular cleaning of clinical areas, and paying extra attention to areas known to be implicated in spreading disease (counter tops, door handles, pens, etc.). Planning is required in the implementation of these measures for the protection of patients/customers and staff.39 By way of an example, the National Health Service in England advised community pharmacy staff to order small quantities of gloves, aprons and fluid-repellent face masks for use by staff and not to be sold to the public.40

Unfortunately, the disposal of used PPE and other waste management was only considered in 80.4% of the pharmacies surveyed. Adequate provision of waste bins is a necessity. Any waste likely to carry COVID-19 must be double-bagged and/or separated from general waste for 72 h disposal41 to decrease the risk of transmission outside the pharmacy.

While some individuals do not meet the requirements for shielding, they may still be at higher risk if they contract COVID-19. If these individuals are members of pharmacy teams, plans must be made to ensure their safety while working. 85.7% of the pharmacies surveyed decreased the number of unnecessary workers onsite to decrease the likelihood of disease transmission. Vulnerable staff were allowed leave in 95.7% of pharmacies, and those chronic disease were allowed leave in 96.4% of cases, again to prevent infecting staff members who are at higher risk. However, this was not the case in all regions, with the Central region having the lowest incidence of implementing this policy, perhaps containing the capital city (Cairo) and economic centre places additional pressures on the workers. Stringent physical distancing behavior is strongly advises for high-risk individuals,39 i.e. those aged 70 years or over, and those with underlying health conditions, such as heart disease or diabetes.

**Interpersonal interactions**

There is evidence of pre-symptomatic transmission from studies in Singapore and other countries,42,43 suggesting that viral shedding occurs prior to symptom onset. Not all pharmacy workers report the use of PPE.40 In the present study, pharmacists reported paying less attention to infection control when interacting with customers, compared to when interacting with other staff. Despite precautions taken to protect pharmacy staff, it is inevitable that they will interact with patients when dealing with crowds of customers, dispensing prescriptions and taking payments.

Due to the role of respiratory droplets in the transmission of COVID-19, transmission is accelerated by high population densities, such as those in pharmacies and other healthcare and commercial sectors. Customer crowding is important, as customers are dynamic (digital),44 resulting in substantial reductions in the numbers of people infected, and ultimately, deaths.45 The success of these strategies relies on timely implementation, specifically before high levels the virus become present in the community.46,47

In developing countries (including Egypt), prescriptions in community pharmacies are still printed and collected in person rather than using electronic prescription services (EPS) such that are commonplace

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**Table 4**

Awareness and knowledge of pharmacists.

**SOURCE** Analysis of cross-sectional survey of 1018 community pharmacies in Egypt by SPSS version 20.0, April 8–19, 2020.

| Differences Between pharmacists (positions, university type, and training) (chi-square test) |
|---------------------------------------------------------------|
| Yes | Position | University | Pandemic training |
|-----|----------|------------|-------------------|
| n   | %        | Junior %   | Senior %          | Manager % | P-value | Government % | Private % | P-value | Not trained | Trained % | P-value |
|-----|----------|------------|-------------------|-----------|---------|-------------|------------|---------|------------|-----------|---------|
| Hygiene practices | 1000 | 99.2% | 98.7% | 100% | 99.3% | n.s. | 99.2% | 99.4% | n.s. | 99.2% | 99.1% | n.s. |
| The risk of infection due to recent travels abroad (14 days)* | 1001 | 98.8% | 98.9% | 96.9% | 99.8% | 0.007 | 98.8% | 98.9% | n.s. | 98.9% | 98.6% | n.s. |
| One case control is making huge difference | 996 | 97.8% | 97.4% | 97.4% | 98.5% | n.s. | 97.7% | 98.3% | n.s. | 98.0% | 97.7% | n.s. |
| Familiarity with common symptoms1 | 993 | 97.6% | 96.8% | 98.7% | 97.8% | n.s. | 97.7% | 97.2% | n.s. | 97.5% | 98.1% | n.s. |
| Familiarity with 10 symptoms2 | 923 | 91.0% | 89.7% | 93.4% | 90.7% | n.s. | 91.0% | 91.1% | n.s. | 91.0% | 90.7% | n.s. |

**NOTES**1 New South Wales Government. Health. Tell staff immediately if .... 2020; https://www.health.nsw.gov.au/Infectious/diseases/Documents/covid-19-ed-poster.pdf. Accessed March 2020.

2 Health Department of Australian Government. covid–19: Identifying the symptoms. 2020; https://www.health.gov.au/sites/default/files/documents/2020/03/coronavirus-covid-19-identifying-the-symptoms.pdf. Accessed March 2020.
in developed countries (including the UK). Efficient planning is required to ensure that prescriptions are collected while minimizing contact, including provision for general practitioners to send paper prescriptions directly to pharmacies. Interactions around payments can also be implemented, including the widespread use of contactless payment where possible. Unfortunately, card payment machines were only available 29.1% of the pharmacies surveyed. Use of these machines would help reduce the role of cash as a source of disease transmission, and further reduce physical contact. Availability of card payment was also significantly different across regions, with the Central region again as the country’s capital having a more developed infrastructure and wider availability of

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**Table 5**

Patient education by pharmacists.

| SOURCE: Analysis of cross-sectional survey of 1018 community pharmacies in Egypt by SPSS version 20.0, April 8–19, 2020. |

| Reporter Differences Between Pharmacists and Non-reporters (chi-square test) | n | % |
|---|---|---|
| Position (n = 88) | 44.3% | p = 0.019 |
| Junior | 44.3% | |
| Senior | 29.5% | |
| Manager | 26.1% | |
| University (n = 89) | n.s. | |
| Government | 86.5% | |
| State | 13.5% | |
| Pandemic training (n = 89) | p < 0.001 |
| Yes | 62.9% | |
| No | 37.1% | |
| Region (n = 89) | p < 0.001 |
| Centre | 22.5% | |
| North | 50.6% | |
| South | 6.7% | |
| East | 20.2% | |
| Age (n = 89) | p = 0.046 |
| Geriatrics | n.s. | |
| Adults | n.s. | |
| Pediatric | 74.2% | |
| Female | 25.8% | |
| Graduation year (n = 86) | n.s. | |
| Years' experience (n = 89) | n.s. | |

**Table 6b**

Case reporting - characteristics of cases reported.

| Reporter Differences Between Cases Reported (chi-square test) | n | % |
|---|---|---|
| Symptoms (n = 89) | p < 0.001 |
| Mild | 21.3% | |
| Moderate | 31.5% | |
| Severe | 5.6% | |
| Three degrees | 24.7% | |
| Mild or moderate | 14.6% | |
| Mild or severe | 2.2% | |
| Age category (n = 89) | p = 0.004 |
| Geriatrics | 13.5% | |
| Adults | 36.0% | |
| Pediatric | 6.7% | |
| Multiple | 43.8% | |
| Gender (n = 89) | n.s. | |
| Male | 23.6% | |
| Female | 1.1% | |
| Multiple | 75.3% | |
card payment.

Pharmacy staff working in any national crisis endure risks in fulfilling their role and all possible measures must be taken to ensure their continued safety. Free sanitizers (62.1%) and masks (86.5%) were provided for customer use in surveyed pharmacies, to provide some protection from transmission. A high degree of anxiety will be experienced by staff about their patient-facing role and it is important to address these concerns and to advise pharmacy staff to adopt risk-minimizing behaviors. It is also important to mitigate staff exhaustion where possible.

Another measure often employed is to define a specific area within the pharmacy for customers with suspected COVID-19 symptoms so as to reduce infection transmission. This practice was implemented by 64% of pharmacies surveyed, however not all pharmacies have such a space available inside the pharmacy, with some pharmacies having a total area as small as 25 m² (29.89 sq yd) according to Egyptian regulations. In such a small pharmacy, staff may need to reconsider the use of space. It may be necessary to rearrange the working area to allow more space between employees, for example to expand a small dispensary area into part of the pharmacy store. This further may reduce the total number of customers who can enter the store at once, resulting in queues out of the door. Although not ideal, these temporary measures may be crucial in protecting pharmacy staff and customers.

However, it is appreciated that such physical distancing measures are not practical in all pharmacies, the next line of defense is to use PPE. Public Health England (PHE) regularly updates guidance on PPE use for healthcare professionals. Most recently (as at April 10, 2020) the recommendation was that for pharmacy staff, fluid-resistant masks should only be worn when in “contact with possible or confirmed cases of COVID-19”.[50]

Customer education

Due to measures in place during the pandemic, a pharmacy may need to decrease their focus on retail and increase the focus on education and the dispensing of information. Pharmacists surveyed reported educating customers in behaviors such as avoiding touching the face, avoiding sneezing or coughing near people, sneezing or coughing into the elbow, avoiding unnecessary travel, staying at home and communicating where possible by telephone, and accessing healthcare services in the event of a suspected infection.

Pharmacists preferentially used oral communication (90.4%), rather than written (81.3%) in educating costumers. Further, managers, were less likely to use written communications than more junior grades of staff, and more likely to use oral communications. In the contrary, the opposite is recommended; written communication may be more adequate in the current pandemic situation; decreasing the time a customer spends in the pharmacy, and as such decreasing overcrowding and decreasing contact time between customers and pharmacists. Therefore, such communication can be assisted and reinforced using posters, banners or signs on display in a prominent position, for example on the door as they enter, to inform patients about services the pharmacy can provide at this time as well as educating them as to best practice behaviors. This will also assist in limiting the number of people entering the store at one time and ensuring people only shop when it is essential to do so. Attention can be drawn specifically to these information posters by temporarily removing any other posters that may distract customers from information related to COVID-19. Further, any information presented must be reviewed daily to ensure that it is current and correct.[51]

Early figures from the U.S. reported 80% of deaths to be in people over the age of 65, with the risk significantly increasing in individuals from around 80 years of age with underlying conditions.[52] Pharmacists surveyed showed high consideration for the education of vulnerable people, for example geriatrics and patients with chronic diseases. This is necessary to reduce suffering at the end of life, and help people with serious or life-limiting illness to maintain autonomy and dignity.[3] To neglect to pay close attention when educating these groups results in costly, ineffective and inefficient care.

Awareness and reporting

It is difficult for healthcare practitioners to keep up to date with constantly changing guidance, but lessons from previous pandemics are available. Authority in epidemic response must be evidence based. Similar to a community pharmacist’s preparedness to perform their important role in the spontaneous reporting of adverse drug reactions, the reporting of suspected COVID-19 cases is equally crucial.

Pharmacists reported high clinical knowledge and awareness of practicing good hygiene, the risk of recent travel abroad, and both common and uncommon symptoms that differentiate a COVID-19 infection. Similarly, pharmacists understood the importance of controlling contact with infected patients, but only 8.8% had the courage to report symptomatic cases to the healthcare authority. However, partial reporting of cases suspected cases in such conditions is better than not reporting at all, as it contributes to simultaneous surveillance studies, epidemiological field investigations and case series[54] in helping to develop national reports about disease incidence.

Significant differences in the demographics of pharmacists were found between non-reporters and reporters; namely geographic region (p < 0.001), whether or not COVID-19 training had been completed (p < 0.001; surprisingly, most of those to have reported cases had not been trained for the COVID-19 pandemic), their position (p = 0.019), and age (p = 0.046; Table 6a). These are in line with similar findings of the CDC COVID-19 Response Team published in their Morbidity and Mortality Weekly Report entitled “Geographic Differences in COVID-19 Cases, Deaths, and Incidence — United States”. The number of reported cases was seen as likely to be an underestimate due to incomplete detection of cases and delays in case reporting. A geographical variation in reporting completeness was attributed to differing testing and reporting practices across jurisdictions, and differing capacities across jurisdictions to cope with the sudden high demand on health department infrastructure. Further, transmission rates, incidence and death rates may genuinely differ on a regional basis. There may be “hot spots” and also areas of extremely low transmission due to highly efficacious community mitigation efforts which are not reflected in this scale of analysis.[50]

The preparedness of community pharmacists for a pandemic outbreak such as COVID-19 is not limited to the classic role in the pharmacy, but should also be considered to cover the role of adequately reporting suspected COVID-19 cases to healthcare authorities, hence monitoring disease spread and contributing to the reliability and validity of national figures. A parallel should be drawn with the pharmacist’s role of reporting adverse drug reactions, especially at the current time of pandemic. As such, it is beneficial to avoid under-reporting or over reporting that affect the accuracy of reports. It is also beneficial to keep up to date with reliable information sources about pandemic progress and with published guidelines.[56,57] Efficient and effective routine reporting of suspected cases benefits healthcare workers and the general population in enduring COVID-19 pandemic.

Conclusions

In the current absence of medical treatment, social science data provides an invaluable addition to clinical data in mitigating the crisis. With a significant increase in demand for the supply of information and medicines, community pharmacies will continue to serve local communities, unlike many other services and businesses. As a result, community pharmacies preparedness for this role is crucial. There are global shortages of PPE and medicines. As a result, governments and policymakers are doing all they can to address this shortage. Community pharmacists are exposed to high infection risks, and are
especially vulnerable due to frequent contact with patients. Accordingly, infection control measures should be considered during all staff interactions with each other (maintaining workplace hygiene and waste management) and with customers (maintaining physical distance, taking care handling prescriptions, use of contactless payment methods, and providing suspected COVID-19 patients with their own definite area and free masks and hand sanitizers). It is paramount to ensure the health and safety of frontline pharmacists amongst other healthcare professionals to ensure continuity and functionality of their roles in the community. Educating customers, especially those at high risk, is essential during a pandemic. Posters, banners or signs must include regularly updated information so as to decrease patient contact and reduce crowding in-store. Pharmacists’ own awareness and up-to-date knowledge are also essential. Accordingly, pandemic preparedness of pharmacists must not be overlooked, and should be extended to knowledge of accurate reporting procedures. Avoidance of under-reporting and over-reporting is important in order that pharmacists’ reports of suspected infected cases contribute constructively to national reports of the spread of infection.

Limitations

The manuscript concerns a global pandemic, however, in designing the study and writing the manuscript, the authors consulted existing literature published in English and Arabic languages, in addition to translated published literature from other languages, into English and Arabic, such as translated WHO reports and publications, or research originally published in Chinese (please see the list of references).

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Ethical approvals

1. Approval of study protocol by the institute of authors
2. Copy of the confidentiality of information and its use for study purpose

CRediT authorship contribution statement

Mohamed Bahlol: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Visualization, Project administration
Rebecca Susan Dewey: Writing - original draft, Writing - review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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