



## THE IMPACT OF COVID-19 PANDEMIC ON ADMINISTRATION AND ECONOMICS OF COMMUNITY PHARMACIES IN EGYPT

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**Background:** The COVID-19 pandemic is a global public health crisis that affected human beings, businesses and the economy negatively. Community pharmacies are the frontline of health care, and pharmacists are considered as the first point of care. However, the pandemic of COVID-19 has posed a great danger to the public health and pharmaceutical markets. **Aim:** To investigate the impact of the COVID-19 pandemic on the community pharmacies administratively and economically. **Methods:** An online cross-sectional survey was conducted from 1 to 30 November 2020 among pharmacy employees in independent and chain community pharmacies. The questionnaire covered the areas of changes in different pharmaceutical business functions as pharmacy administration and management, supply chain, sales and training programs. **Results:** A total of 1154 respondents have participated in the survey study from different Egyptian regions. The majority of responses were from independent pharmacies 916(79.4%). Most pharmacies 1119(97%) reported an increase in the demand for pharmaceutical products. During the COVID-19 outbreak, the sales of chain pharmacies were increased compared to independent pharmacies. Several community pharmacies workforce 923(80%) were shifted towards home delivery business. Most pharmacies cancelled the training programs during the COVID-19 and only a small percentage 28(2.4%) shifted to online programs. COVID-19 pandemic resulted in a negative psychological impact on the pharmacy employees with about two-third (68.1%) of participants were seeking career shifts. **Conclusion:** This study identified particular influences of COVID-19 on community pharmacies services from administrative and economic perspectives. The findings of this study may help decision-makers and pharmacy professionals to impart suitable preparedness for community pharmacists and handle future pandemic waves to keep business maintenance of community pharmacies and foster pharmacy employees' satisfaction.

**Keywords:** COVID-19, Community pharmacies, Pharmacy employees, Administration, Economics, Egypt

### INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) has declared the novel coronavirus (COVID-19) a pandemic worldwide.<sup>1</sup> Globally, as of 10<sup>th</sup> February, there have been 106,555,206 confirmed cases of COVID-19 including 2,333,446 deaths.<sup>2</sup> In Egypt, about 118,014 confirmed cases of

COVID-19 with 6,750 deaths were reported.<sup>2</sup> Since the emerging of the COVID-19 as a life-threatening disease, the whole world community is working collaboratively to address the focal challenges of this pandemic and its consequences.

As the COVID-19 outbreak is still ongoing, the coronavirus has imposed a severe burden on the society and economy; resulting

in straining of most business markets and pandemic-induced economic uncertainty. The COVID-19-related healthcare services around the world have faced several health challenges and sluggish services including hospital and community pharmacies.<sup>3-6</sup> There has been much pressure on healthcare systems in addition to the scarcity of the healthcare personnel (doctors, nurses, pharmacists and other health-allied workers), personnel protective equipment (masks and gloves) and health equipment such as respirators, ventilators and sanitizers<sup>3</sup>. The coronavirus disease outbreak and new health code emergencies have necessitated an expanded role for pharmacists as well as integrated and inter-professional collaboration to face the COVID-19 crisis and compensate the health care needs and societal increasing demands.

Community pharmacies are the frontline of healthcare for any health problem and the nearest point of care to patients. Community pharmacists have been directly involved in the frontier of the pandemic, being part of the emergency teams, to manage the infected cases.<sup>3,7,8</sup> Pharmacists have played an important role in reporting and referring suspected COVID-19 cases as well as facilitating the investigation of novel experimental agents in clinical studies for the prophylaxis and treatment of COVID-19.<sup>9</sup> During the COVID-19 outbreak, community pharmacists have provided public health services and advisory actions, in addition to their professional roles.

The novel coronavirus has brought the economy and business down and changed the financial situation of many industries including the pharmaceutical sector. The economic consequences of COVID-19 have been severe and dramatic concerning business performance and maintenance and economic standpoint. Developing countries were extremely affected by the COVID-19 pandemic because of emergency measures, medicines shortage and business downturn during the pandemic lockdown.<sup>10</sup> On the other hand, the COVID-19 outbreak represents an opportunity for the pharmaceutical industry; as COVID-19 increases the demand for pharmaceutical products include prescription medicines, alternative therapies and protective and medical devices. Short-term impacts of COVID-19 include medicines supply, drug

shortage, panic buying and stocking, changes and shift of communication and technology (tele-communications and tele-medicine); while long-term impacts include changes in drug approval delay, slow supply chain ,the downturn of industry growth.<sup>11</sup>

It has been demonstrated that pharmacists have continued ensuring a stable supply of medicines and providing medicine refill services, such as home delivery of pharmaceuticals and guaranteeing continuity of care during the outbreak in rural and underserved areas.<sup>7&12</sup> More interestingly, the COVID-19 outbreak has revealed new tasks for pharmacists to participate in public health emergencies, preparedness for future crises and inter-professional collaboration to face crises and support the society<sup>3</sup>.

In Egypt during the pandemic, soaring demand for surgical masks, disinfectants, alcohol and medical supplies has resulted in significant price increase and drop in supplies.<sup>13</sup> The Egyptian government has initiated programs to spread awareness among citizens about the risks of COVID-19 and allow enough medicines and medical supplies ensure to cover local needs

Alshammari *et al.* studied the economic impact of COVID-19 on community pharmacy and reported that the Saudi Arabia Ministry of Health should enlighten the public on appropriate health practices and suggested developing financial policies to protect community pharmacies and the private sector from potential losses as well as an expanding role for the community pharmacies to offer home care services.<sup>15</sup> A quantitative survey-based approach from pharmacy professionals across 31/54 Commonwealth countries in Africa, Asia, the Americas, Europe and the Pacific revealed that 90% were being at least somewhat worried and more than 65% were very extremely worried about the impact of COVID-19 on them personally and professionally.<sup>16</sup> Ashiru-Oredope *et al.* have also reported that the majority of the respondents (nearly two-thirds) of 545 respondents found it was somewhat difficult or very difficult to work effectively during the pandemic.<sup>16</sup> Furthermore, most pharmacy professionals had not previously been actively involved in a global health emergency (82%) nor obtained training on global/public health

emergency preparedness (62%). It has been also reported that pharmaceutical services play a key role in the emergency response to the pandemic where the pharmacy workforce has been actively working to manage drug shortages and review drug formularies/protocols to improve safety for patients; and the authors concluded that healthcare professionals should be encouraged to seek improvements in the performance of pharmaceutical services and innovative practices to respond to the pandemic.<sup>17</sup>

The COVID-19 has provided an opportunity to study the psychology of the public and get insights into people behavior and tactics to acquire and over-stocking their homes with unnecessary medication during COVID-19 outbreak. These cases are mainly attributed to the decline in the production capacities of China and India, which are considered to be the largest producers of medical supplies in the world.<sup>14</sup> General anxiety about the impact of COVID-19 on their lives and difficulties in communicating with their co-workers were the most common challenges that faced the pharmacy professionals.<sup>16</sup>

Community pharmacists can play a critical role in serving the society and protecting their people. In a recent paper that examined counseling practices of community pharmacists in Riyadh, Saudi Arabia, the authors recommended the need for policymakers, researchers, and stakeholders to develop interventions that can enhance the existing practices at community pharmacies.<sup>18</sup> It is becoming clear that preparing pharmacists and ensuring members have access to medications and support is a focus during these unprecedented times is a key issue of being prepared and informed during future disasters and disease outbreaks.

The present study aimed to investigate the impact of the COVID-19 pandemic on the administration and economics of community pharmacies in Egypt from different procedural aspects and managerial themes including human resources, medicines availability and supply chain, demand and sales, finance and training programs. This study was also aimed to examine how the COVID-19 pandemic affected the community pharmacists' psychological status and job career satisfaction.

## **Methods**

### **Study questionnaire development**

A structured self-administered questionnaire was developed and revised by a working group from the pharmacy, commerce and business, epidemiology and public health. An online survey portal, Google Form, was created and disseminated among community pharmacy employees. The questionnaire language was developed in English and then translated into the Arabic language; the native language of Egypt. The questionnaire consists of 23-item covered the following areas of concern: demographic characteristics, investigates the changes in pharmacy administration and management as human resources, supply chain, sales, economy and finance (Supplementary data ).

### **Study Design**

The cross-sectional study was conducted among community pharmacies employees from 27 Egyptian governorates between 1 and 30 November 2020. Community pharmacy employees including pharmacists, pharmacy owners, managers, assistants and delivery men) who have worked during the pandemics were the eligible recruitment persons for the survey. The sample size was calculated using Raosoft online program.<sup>19</sup> The calculations were based on the assumption that the probability was 50%, at a 99% confidence interval, with a margin of error of 5%, the study required minimum sample size of 662 participants; therefore, a total number of 1154 persons were recruited in the present study.

### **Study approval**

There was no ethical approval required because this study was a service evaluation study. Participation in this survey was voluntary and informed consent was shown on the initial page of the survey. In addition, the submission of the survey was also considered as an agreement to participate in the study. The confidentiality of personal information was maintained anonymous throughout the study and the participants were asked to provide honest answers.

**Supplementary data : Items of the questionnaire**

Item	Question
1. Demographic characteristics	1.1 Sex 1.2 Age 1.3 Job specification 1.4 Years of experience 1.5 Region of participants 1.6 Type of community pharmacy
2. Supply Chain	2.1 Did you notice any changes in patients' demand and sale of the following products (dispensary medicines, OTC products, masks, sanitizers and gloves)? 2.2 Describe the availability of the following items during the pandemic (dispensary medicines, OTC products, masks, sanitizers and gloves)? 2.3 Was there any delay in orders delivery from the supplier to pharmacy? 2.4 Was there any delay in orders delivery from pharmacy to customer?
3. Sales	3.1 Average number of customers before COVID-19 per day? 3.2 Average number of customers during COVID-19 per day? 3.3 Did the patients ask about any complementary therapies which could be used for the prevention of coronavirus?
4. Financial	4.1 Is the expense in your pharmacy affected during COVID-19 pandemic? 4.2 Was there any change in the salaries for staff? 4.3 How did you manage your pharmacy business during COVID-19 pandemic?
5. Human Resources	5.1 Was there any training programs held in your pharmacy before COVID-19 pandemic? 5.2 Were there any training programs held in your pharmacy during covid-19 pandemic? 5.3 How did you manage delivering your training programs at your pharmacy during COVID-19 pandemic? 5.4 Was there any change in the number of pharmacy employees during COVID-19 pandemic? 5.5 Have you been infected with COVID-19 during working in your pharmacy? 5.6 Describe your feelings as working in your pharmacy during COVID-19 pandemic? 5.7 Has your working experience in your pharmacy during COVID-19 pandemic made you reconsidering career shift?

**Validation and pilot study**

The validity and reliability of the questionnaire were assessed by an expert in the field of epidemiology and public health to ensure the questions items were relevant and correctly phrased. The final questionnaire was piloted on 40 participants; who were excluded later from the study sample to ensure the readability and understandability of the questionnaire.

**Data collection and statistical analysis**

The participants were invited to complete the online survey portal Google Form and submit the form during the period of the study. The process of calling pharmacy employees to participate in the survey was conducted through different social media including LinkedIn, Twitter, and Facebook. The survey portal was closed when the number of

participants exceeded the sample size and the data were collected and analyzed. The Statistical Package for Social Sciences software (SPSS 22.0, Chicago, IL, USA) was used for the analysis. Descriptive statistics as frequencies and percentages were used to present the data.

**RESULTS AND DISCUSSION****Demographic characteristics of respondents**

This study included 1154 respondents with the majority of age range 897(77.7%) between 21 and 30 years old; and more females 720(62.4%) participated in the study. The different job categorization of the participants in the study was pharmacists 883(76.5%), assistants 89(7.7%), pharmacy managers 27 (6.5%), pharmacy owners 36(3.1%), pharmacy trainees 44(3.8%) and delivery men 27 (2.3%).

About the region of the participants; the majority of them 444(38.5%) were from the Upper Egypt region, followed by Cairo region 285 (24.7%), Delta region 219 (18.9%), Alexandria region 112 (9.7%), and Canal region 94 (8.2%). Most of the participants were from independent pharmacies 916 (79.4%) compared to 238 (20.6%) from chain pharmacies. The demographic characteristics of the respondents are shown in Table 1.

**Table 1:** Demographic characteristics of the 1154 respondents

Demographic characteristics	N (%)
<b>Sex</b>	
1. Female	720(62.4)
2. Male	434(37.6)
<b>Age range (years)</b>	
1.<20	13(1.1)
2.21-30	897(77.7)
3.31-40	223(19.3)
4.41-50	16(1.4)
5.51-60	5(0.4)
<b>Job Specification</b>	
1. Assistant	89(7.7)
2. Delivery man	27(2.3)
3. Pharmacy manager	75(6.5)
4. Pharmacist	883(76.5)
5. Pharmacy owner	36(3.1)
6. Pharmacy trainee	44(3.8)
<b>Years of Experience</b>	
1. <1	58(5.0)
2. 1-5	896(77.6)
3. 6-10	174(15.1)
4. 11-20	21(1.8)
5. 21-30	1(0.1)
6. 31+	4(0.3)
<b>Region of Participants</b>	
1. Alex region	112(9.7)
2. Cairo region	285(24.7)
3. Delta region	219(18.9)
4. Canal region	94(8.2)
5. Upper Egypt region	444(38.5)
<b>Type of community pharmacy</b>	
1. Independent pharmacy	916(79.4)
2. Chain pharmacy	238 (20.6)

### Availability and demand of pharmaceutical products and personnel protective equipment during the COVID-19 pandemic

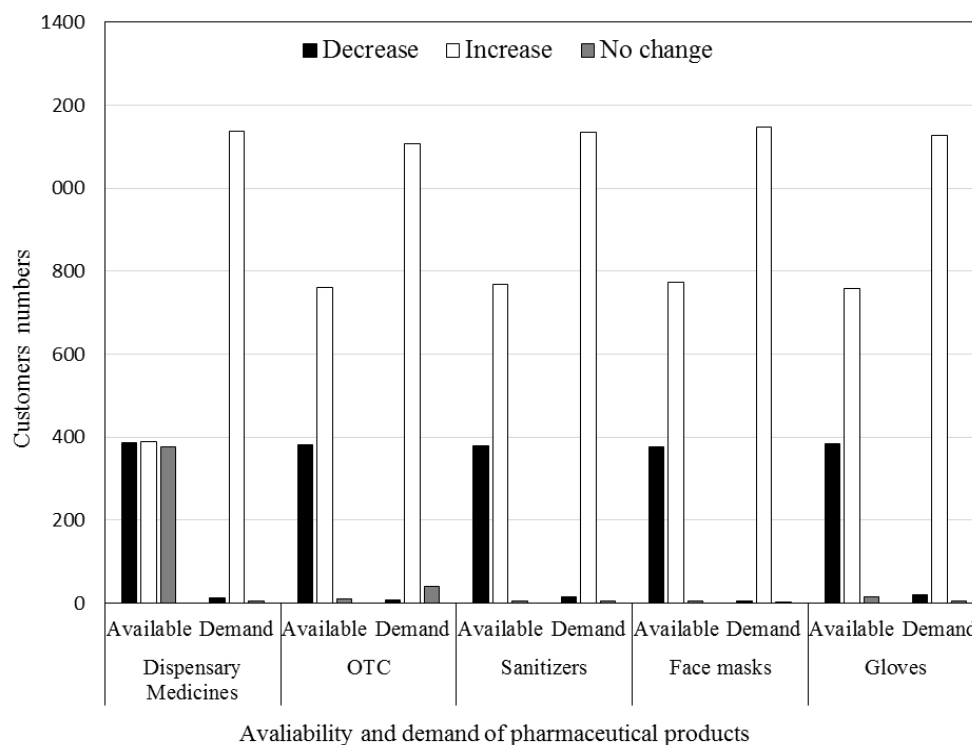
#### A. OTC medicines and dispensary products

Concerning dispensary medicines, 1137(98.53%) of total pharmacies reported an

increase in the demand for dispensary medicines. About 234(98.32%) of chain pharmacies and 910(99.34 %) of independent pharmacies reported an increase in the demand for azithromycin as an example for dispensary medicines. On the other hand, only 390 (33.80%) of total pharmacies reported an increase in the availability of dispensary medicines; with 156(65.5%) of chain pharmacies and 234(25.5%) of independent pharmacies (Figure 1). Regarding OTC products, 237 out of 238 chain pharmacies and 914 out of 916 independent pharmacies reported increased demand for OTC products. Specifically, 1144 (99.1%) of community pharmacies reported an increase in the demand for paracetamol. On the other hand, 761 (65.94%) of community pharmacies reported an increase in OTC products availability; with 198 out of 238 chain pharmacies and 563(61.5%) of independent pharmacies, as shown in Figure 1.

#### Protective personnel equipment (masks, and sanitizers and gloves)

Of total pharmacies 1147(99.39%) reported an increase in the demand of masks; with 237(99.58%) of chain pharmacies and 910(99.34%) of independent pharmacies. About 773(66.98%) of pharmacies reported an increase in the availability of masks; with 200(84%) of chain pharmacies and 573(62.6%) of independent pharmacies. On the other hand, 1135 (98.27 %) of total pharmacies reported an increase in the demand of sanitizers 230(96.22%) of chain pharmacies and 905 (98.80%) of independent pharmacies. About 768 (66.55%) of pharmacies reported an increase in the availability for sanitizers; with 199 (83.6%) of chain pharmacies and 569 (62.1%) of independent pharmacies. Of total pharmacies 1128(97.75%) reported an increase in the demand for gloves 227(95.38%) of chain pharmacies and 901(98.36%) of independent pharmacies; with 757 (65.60%) of them reported an increase in the availability of gloves 196 (82.4%) of chain pharmacies and 561 (61.2%) of independent pharmacies (Figure 1).



**Fig. 1:** Availability and demand of pharmaceutical products during the COVID-19 pandemic

### Impact of COVID-19 on pharmaceutical products orders delivery














The COVID-19 pandemic caused supply chain disruption worldwide including pharmaceutical products as a result of trade restrictions and transportation problems. In this study, 976(84.58%) of the participants reported a delay in orders delivery from the supplier. On the other hand, 1007(87.26%) of total pharmacies have delivered their pharmaceutical orders to the customers on time.

### Impact of COVID-19 on community pharmacies sales: number and distribution of customers before and during COVID-19 per day

The pharmacies reported to have (<50) customers per day before COVID-19 represented 41 (3.6%) of total pharmacies; 35 (3.8%) independent pharmacies and 6 (2.5%) chain pharmacies). The number of pharmacies in this category (< 50 customers) was increased to 443(38.4%) of total pharmacies during COVID-19; 416 (45.4%) independent pharmacies and 27 (11.3%) chain pharmacies. The pharmacies which reported to have (50-100) customers per day before COVID-19

represented 875(75.8%) of total pharmacies; 694(79.31%) independent pharmacies and 81(20.69%) chain pharmacies. The number of pharmacies in this category (50-100 customers) was decreased to 297 (25.7%) of total pharmacies during COVID-19; 275 (30.0%) independent pharmacies and 22 (9.2%) chain pharmacies. The pharmacies reported having (100-200) customers per day before COVID-19 represented 219 (19.0%) of total pharmacies 174(19.0%) independent pharmacies and 45(18.9%) chain pharmacies. The number of pharmacies in this category (100-200 customers) was increased to 229(19.8%) of total pharmacies during COVID -19; 171 (18.7%) independent pharmacies and 58 (24.4%) chain pharmacies. The pharmacies reported to have (> 200) customers per day before COVID-19 represented 19(1.6%) of total pharmacies; 13(1.4%) independent pharmacies and 6 (2.5%) chain pharmacies). The number of pharmacies in this category (> 200 customers) was increased to 185 (16.0%) of total pharmacies; 54 (5.9%) independent pharmacies and 131 (55.0%) chain pharmacies) during COVID-19 (Table 2).

**Table 2:** Status of the number of customers before and during COVID-19 pandemic

<b>(A) Number of customers before and during COVID-19 per day in community pharmacies sales</b>									
Item		<50		50 - 100		100 - 200		>200	
		Before	During	Before	During	Before	During	Before	During
Average number of customers before and during COVID-19 per day	Chain	6 (2.5%)	27 (11.3%)	181 (76.1%)	22 (9.2%)	45 (18.9%)	58 (24.4%)	6 (2.5%)	131 (55.0%)
	Independent	35 (3.8%)	416 (45.4%)	694 (75.8%)	275 (30.0%)	174 (19.0%)	171 (18.7%)	13 (1.4%)	54 (5.9%)
	Total	41 (3.6%)	443 (38.4%)	875 (75.8%)	297 (25.7%)	219 (19.0%)	229 (19.8%)	19 (1.6%)	185 (16.0%)
<b>(B) Distribution of customers before COVID-19 on community pharmacies sales</b>									
Item		Number of customers before COVID-19 per day							
		<50	>200	100-200	50-100				
Average number of customers during COVID-19 per day	Total	41	19	219	875				
	<50	51.2% 	5.3% 	16.4% 	44.0% 				
	> 200	2.4% 	36.8% 	38.8% 	10.5%				
	100 - 200	9.8% 	36.8% 	31.1% 	17.1%				
	50 - 100	36.6% 	21.1% 	13.7% 	28.3%				

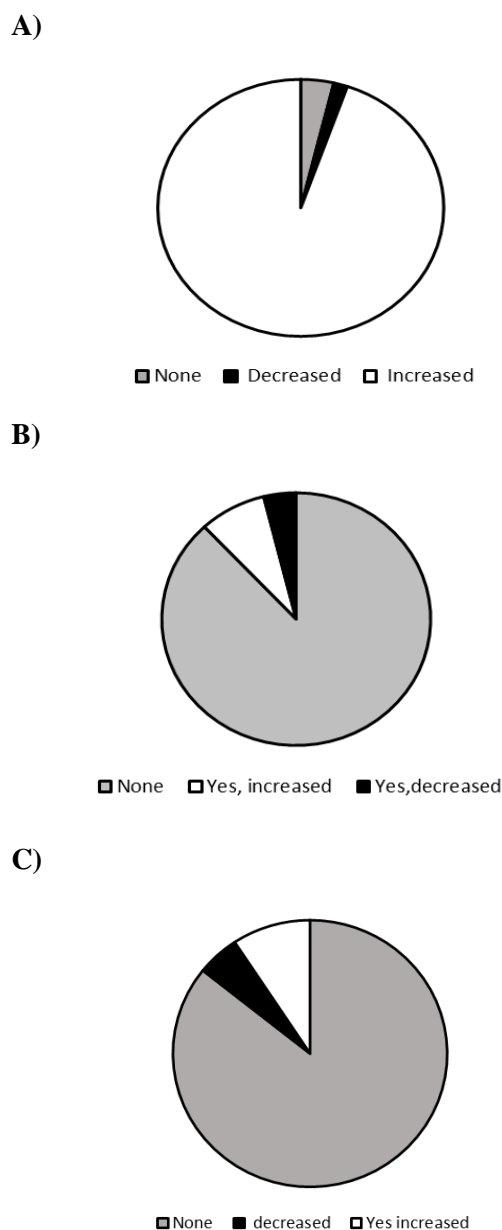
N.B.:  Increase  no change  decrease

We have also examined the pharmacy sales of independent or chain pharmacies before and during COVID-19 pandemic based on the distribution of customers per day among community pharmacies as follows: (<50), (50-100), (100-200) and (>200) customers. The pharmacies which reported to have (<50) customers per day before COVID-19 represented 41(3.6%) of total pharmacies and distributed as follows: 21(51.2%) stayed in the same category (<50 customers), 15(36.6%) shifted to (50-100) category, 4(9.8%) shifted to (100-200) category, and 1(2.4%) shifted to (>200) category. The pharmacies which reported to have (50-100) per day before COVID-19 represented 875(75.8%) of total pharmacies and distributed as follows: 248(28.3%) stayed in the same category (50-100), 385(44.0%) shifted to category (<50), 150(17.1%) shifted to category (100-200) and 92(10.5%) shifted to category (>200). The pharmacies reported to have (100-200) per day before COVID-19 represented 219(19.0%) of total pharmacies as follows: 68(31.1%) stayed in the same category (100-200), 36(16.4%) shifted to (<50) category, 30(13.7%) shifted to (50-100) category and 85(38.8%) shifted to (>200) category. The pharmacies reported to have >200 customers per day before COVID-

19 represented 19(1.6%) of total pharmacies and distributed as follows: 7 (36.8%) stayed in the same category (>200), 1(5.3%) shifted to category (<50), 4(21.1%) shifted to category (50-100) and 7(36.8%) shifted to category (100-200); (Table 2). Concerning the request for complementary or multivitamin products, there were 1081(93.67%) customers who asked for complementary drugs and multivitamins without prescription during the COVID-19 pandemic.

### Impact of COVID-19 on the financial situation in pharmacy

The results showed that 43(3.7%) of community pharmacies had no change in the expense, 18 (1.6%) pharmacies reported a decrease in the expense while 1093(94.7%) suffered from the increase of the expense (Figure 2A). Regarding salaries, about 1016(88%) of pharmacies indicated no change in salaries of their working staff (Figure 2B). Concerning the impact of the COVID-19 pandemic on the number of employees, 989 (85.7%) of pharmacies kept their employees, 58 (5%) decreased the number of employees and 107 (9.3%) increased their employee's number (Figure 2C).



**Fig. 2:** The expense in community pharmacies. (A) Pharmacy expense. (B) Salaries change. (C) Number of employees

### Impact of COVID-19 on pharmacy educational and training programs

Pharmacists are the most accessible health care providers and pharmacists must stay on topmost of the COVID-19 developments and keep up-to-date with the current medical advancements of COVID-19 pandemic prevention and treatment in order to educate the patients and society. By comparing the training programs held before and during the COVID-19 pandemic, our results showed that 996 (86.3%) of pharmacies canceled their training programs during the COVID-19, while

158(13.7%) decided to continue their training programs; 130(82.3%) of these pharmacies used the in-site method to deliver their training and 28(17.7%) preferred online method.

### Pharmacy managerial actions taken during COVID-19 pandemic

During the COVID-19 outbreak, pharmacists continued ensuring medicines dispensing, prescription refills and constant supply of drugs; and this necessitates close contacts with pharmaceutical suppliers when necessary and home delivery of medicines. These activities required skilled pharmacy personnel and essential managerial skills to adapt and modify working hours and staff performance. Our results showed many different managerial actions taken by the community pharmacies managers during the COVID-19 pandemic; where 923(80%) of community pharmacies have shifted towards home delivery and 46(4%) of pharmacies increased the number of employees and about 185(16%) of pharmacies decided to close down their pharmacies.

### Impact of COVID-19 infection and its impact on pharmacy employees' psychological status and career concerns

The spread of COVID-19 has hit healthcare systems seriously and brought new challenges to healthcare workers as well as a negative impact on individuals' psychosocial status. These concerns have forced healthcare workers to rethink quality workforce performance and future career shifts. When the participants were asked about their infectivity by the virus, 375(32.5%) of 1154 respondents were infected with COVID-19. When questioning pharmacy employees about their feelings during the COVID-19 pandemic; their response were variable as 110(9.5%) were depressed, 113(9.8%) discouraged, 265(34%) depressed/discouraged, 128(11.1%) nervous, 194(16.8%) nervous/depressed or 116(10.1%) nervous/depressed/discouraged. About 786(68.1%) of pharmacy employees started to think about changing their career while 368(31.9%) decided to continue their pharmacy career, amongst them 647(73.3%) of pharmacists reconsidered career shift.



## Discussion

The coronavirus pandemic has led to dramatic death worldwide and badly impacted the global economies and businesses. This pandemic has greatly affected the health sector and limited access to healthcare services and pharmacy services. This study was an initial step to investigate the impact of the COVID-19 on different aspects of pharmacy business and workforce performance as well as job reflections of the pharmacy employees from 1154 community pharmacies throughout Egypt during the COVID-19 pandemic. The findings of this study demonstrated a great influence of this pandemic on pharmacy operation and business performance from administrative and economic perspectives. Several studies from underlined the direct and indirect consequences of the COVID-19 pandemic on the pharmacy workforce and business.<sup>15,16,20-24</sup>

As the COVID-19 pandemic spreads worldwide, the magnitude and consequences of the economic downturn were significant and still highly uncertain around the world. There have been supply disruptions of pharmaceutical products and products demands caused by lockdowns and transport bans across various countries. The COVID-19 pandemic has also impeded the growth of pharmaceutical industry by affecting production and demand, supply chain and sales of drug market on short-term and long-term basis around the world.<sup>25-27</sup>

About serving the customers before and during the COVID-19 pandemic, it was noted that there was a change in the number of customers and the independent pharmacies were the most affected pharmacy business compared to chain pharmacies. Independent pharmacies were losing more customers, and this may be because of increasing the demand over the availability of some pharmaceutical products. Furthermore, some independent pharmacies across the country have reduced working hours, staff or closed down operations altogether as they could not sustain the fallouts and consequences of the pandemic and also the costly expenses to maintain the pharmacy business routine. Badreldin *et al.* has proposed recommendations as guidance for COVID-19 pandemic to ensure the continuity of pharmacy business in Saudi Arabia and consider rearranging the schedule staff and resources as well as preparing contingency plans to surge

staff to ensure adequate functionality during emergency preparedness activities.<sup>28</sup> Conversely, pharmacists in Scotland have been urged to do what they can to ensure that pharmacies stay open for seven days per week during the COVID-19 crisis.<sup>29</sup>

The COVID-19 outbreak has affected the health services and pharmaceutical industries badly in various ways including pharmaceutical products, personnel protective products, sales consumption and patient access to medicines. In our study, we have found that most community pharmacies experienced an increase in the demand of dispensary medicines and over-the-counter drugs which paralleled with the shortage of these medicines and delays in products delivered from the suppliers. This has led to the increase of the demand which greatly affected independent pharmacies with losing more customers than chain pharmacies during the pandemic. On the other hand, chain pharmacies appeared clearly that they had their stores and product restocking that enabled them to compensate for the shortage and delay from the suppliers so they were succeeded to take over most of the market and their customers were duplicated.

Similarly, during the first weeks of the COVID-19 pandemic, McConachie *et al.* have found that the operational and clinical requirements of a community pharmacy department shifted considerably with the reduction of the number of new order verifications and pharmacokinetic consultation whilst the dispensing of drugs such as hydroxychloroquine, azithromycin, enoxaparin and sedative medications was increased during the COVID-19 pandemic.<sup>8</sup> Concerning personal protective equipment, the COVID-19 related shortage affected the supply and sales of protective gloves, masks and sanitizers, there was a great demand for most of the personal protective equipment. This viral panic caused many pharmacies to run out of personnel protective items such as masks, gloves and sanitizers; as well as a shortage of medicines and over-the-counter drugs that could be used to treat symptoms of the virus.<sup>12</sup>

Obviously, Sales are the most important step of the business process and it is also a very complicated process that depends on many other aspects such as supply chain and medicines availability. Drug shortages can

occur for many reasons including manufacturing, quality problems and delivery delays. The FDA has published a shortage list of medicines included the anti-COVID-19 potential therapy hydroxychloroquine and frequently prescribed medications for COVID-19 patients with respiratory signs in intensive care units such as azithromycin, dopamine, dobutamine, fentanyl, heparin, midazolam, propofol and dexmedetomidine.<sup>30</sup> The American Society of Health-System Pharmacists (ASHP) also has announced an 11-medicine list of drug shortages which included meropenem, ceftazidime, ampicillin and doxycycline as hospitalized patient's antibiotics and vecuronium and rocuronium as anesthetic medications.<sup>31</sup>

The COVID-19 pandemic brought a great harm not only to peoples' health state, but also affected the economy. There was also increased spending by many families on healthcare services against the coronavirus pandemic which has led to dramatic negative economic impacts on families and societies. The shadow economy, also called informal/underground/black market, persists in all nations of the world with variations in its scope.<sup>32&33</sup> During COVID-19, there was an increase in some pharmaceutical drugs and personal protective equipment on one hand and a shortage of them on the other hand; this was due to the illegal monopoly for these critical products and goods. This shadow economy is challenging for governments because it undermines tax and manipulates regulations and laws.

The COVID-19 pandemic had considerable impacts on the health services and pharmaceutical markets on a short- and long-term basis. Short-term impacts included demand change, supply shortages, panic buying and stocking, regulation changes and shift of communication to remote interactions. Whereas long-term impacts involved approval delays and industry growth slow.<sup>11</sup> Particularly, the use of medicines in hospitals for COVID-19 including respiratory treatment, sedatives and pain treatment underwent an increase of 100% to 700% since the beginning of the pandemic crisis. The shift of communications and promotions to remote interactions through tele-communication and tele-health: because of the social distancing and

Protective measurements taken by the government, marketing and promotion of healthcare products to providers are being shifted from face-to-face towards remote interactions and tele-communications. In the USA, the number of patients who have visited ambulatory practices, physician offices or clinics reduced by 60 to 80%.<sup>2&11</sup>

Tele-health and tele-medicine are increasingly utilized in the COVID-19 landscape, community pharmacies have to adapt telecommunication and services to maintain effective communication with patients and delivery of health services. Several procedures have been implemented to minimize the spread and contraction of COVID-19 such as minimized patient contact and altered visitor policies with obtaining of patient' medication history before the arrival to the hospital. Many pharmacy care services in hospitals have been shifted to electronic, mail order and other delivery services to limit patient contact in outpatient pharmacies.<sup>21</sup> Koster *et al.* have found that more than two-thirds (76.7%) of the surveyed pharmacy employees have expressed a great concern towards delivering the pharmaceutical care for vulnerable patients and 47% of pharmacies implemented home delivery of medications to minimize direct patient-provider contact, however, only a small number of community pharmacies used tele-pharmacy such as video calling during patient education and counseling.<sup>22</sup>

In Egypt, pharmacist consultation is free; therefore, the public can easily access the pharmacy for medical consultation and management of minor ailments. Community pharmacies are the frontline of health care delivery around the world in the wake of pandemics and pharmacists had an important role to play in the management of this COVID19 pandemic.<sup>35&36</sup> Similarly, during the H1N1 pandemic in 2009, community pharmacies were involved in the delivery of public health education and vaccinations in many communities.<sup>37</sup> A study by Hoti *et al.* revealed that the majority of community pharmacies (87.9%) were actively implemented various precautionary measures to mitigate the spread of COVID-19 infection and over two-thirds of pharmacists agreed/strongly agreed that their pharmacies were sufficiently prepared with protective equipment.<sup>38</sup> In this

regard, WHO has published a document that highlights the rights and responsibilities of health workers, including key considerations and specific measures for occupational safety and health.<sup>39</sup>

The pharmacy is regularly visited by the public for medical advice and prescription dispensing which put the pharmacy personnel at a greater risk of contracting the virus. In this study, about one-third (32.5%) of the pharmacy employees were infected with COVID-19 that affected their work performance. Since pharmacies are the first point of contact in healthcare, it is important that the whole pharmacy workforce is well informed and prepared for any health catastrophe. On February 6<sup>th</sup> 2020, the International Pharmaceutical Federation (FIP) has published a guidance for pharmacists around the world entitled “Coronavirus 2019-nCoV outbreak: Information and interim guidelines for pharmacists and the pharmacy workforce”.<sup>40</sup> the FIP has published a document to provide guidelines on the COVID-19 pandemic for pharmacists and the pharmacy workforce, both in a primary care context (i.e. community pharmacies and primary healthcare facilities) and hospital settings.<sup>41</sup>

The exposure of pharmacy employees to COVID-19 infection and getting infected during their daily practice harmed mental and psychological behavior including depression, anxiety, discouragement and fear. This upshot outcome due to the coronavirus made many pharmacy employees started thinking about the closure of their pharmacy business and considering a career shift. Similarly, recent studies have reported that health workers and students experienced COVID-19-related psychological effects and suggested that the government and schools should collaborate to resolve this problem.<sup>32&42</sup>

Managerial actions in community pharmacy are necessary for routine and administrative competence and pharmacy business success. Essential managerial skills for pharmacists are needed to manage the day-to-day challenges in this changing health environment. Community pharmacies as a business with limited resources can face business failure because of inadequate management of these resources. Pharmacy managers should have specific managerial

abilities and skills as well as having the strategic foresight to detect changes in the health environment and tailor sustainable responses from time to time regarding working hours and organizing training programs to ensure optimum productivity.<sup>43&44</sup> The skills of pharmacy managers may vary because of the lack of professional and managerial skills as well as formalized management training programs.<sup>45</sup> About training programs in our study, many pharmacies cancelled their training programs during the COVID-19 pandemic and only a small percentage of pharmacies decided to shift to online training, which highlights the need for a logistic future plan to formulate the training programs during this pandemic.

### Conclusions

The COVID-19 pandemic caused a great challenge on healthcare systems all over the world. Despite the national restriction and lockdown during the COVID-19 outbreak, community pharmacists kept working to provide primary healthcare services and pharmaceutical consultations helping the sick people and society during this pandemic crisis. Pharmacists have also continued ensuring a stable supply of medicines and providing prescription refill services as well as home delivery of pharmaceuticals. This study gave insights into the current situation of community pharmacies as frontline healthcare provider without proper preparedness to cope with the coronavirus outbreak. , The COVID-19 greatly affected community pharmacies from an administrative and economic perspective. On a particular note, we have found that independent pharmacies were greatly affected during this crisis compared to chain pharmacies; moving towards closure of their business as a result of the decrease of customers' number and trying to cut down the salaries and/or decrease the expenses of their employees to cope with the urgency of the situation. The coronavirus outbreak had also pushed people to stock the necessary healthcare needs and pharmaceutical products and obviously, most pharmacies businesses moved to online ordering and home delivery throughout the pandemic to maximize their profit and decrease the losses.

The COVID-19 pandemic resulted in significant changes in pharmacy personnel deployment and delivery of pharmacy

operations and services. Therefore, community pharmacies and pharmacists must be prepared to deliver appropriate pharmacy services without risks and business closure. We also need to rethink to equip the community pharmacies with emergency and public health preparedness, and also get the pharmacists ready for any future disease pandemic outbreaks to maintain their pharmacy business running as usual without losing their competence. This study also highlights that community pharmacies must consider seriously the implementation of protective measures and regulations to reduce the infection risks and economic burden posed by COVID-19 and give community pharmacies clear steps to take actions when handling potential cases of COVID-19.

#### Author statement

This research paper is submitted to SPJ has not been considered for publication elsewhere.

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## نشرة العلوم الصيدلانية جامعة أسيوط



### تأثير الكورونا علي الاقتصاد والادارة في الصيدليات المجتمعية في مصر

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في عام ٢٠١٩ واجه العالم ازمة صحية واقتصادية حينما اعلنت منظمة الصحة العالمية ظهور وباء جديد باسم كورونا فيروس المستجد مما تسبب فيما يزيد عن ١٠٦ مليون حالة اصابة وما يقرب ال ٢ مليون حالة وفاة حتي الان في مصر قارب عدد الاصابات ١١٦ الف حالة واكثر من ٧ الاف حالة وفاة.

كان لهذا الوباء اضرار اقتصادية وصحية مدمرة وباعتبار ان الصيدليات المجتمعية تمثل ركن من اركان المجتمع وان الصيادلة هم خط الدفاع الاول واول وجهة للمريض لذا واجهت ازمة اقتصادية كبيرة.

حاولنا في هذه الورقة البحثية ان نسلط الضوء علي اغلب التأثيرات علي الصيدليات المجتمعية من حيث التأثير الاقتصادي والتاثير علي المبيعات وتوافر المنتجات الصيدلية والادوية والصحة النفسية للعاملين بالصيدليات.