An-Najah National University

Faculty of Graduate Studies

PERCEPTIONS, CONCERNS AND PRACTICES OF COMMUNITY PHARMACISTS REGARDING COVID-19

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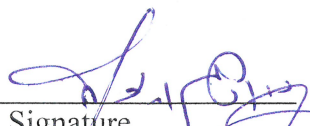
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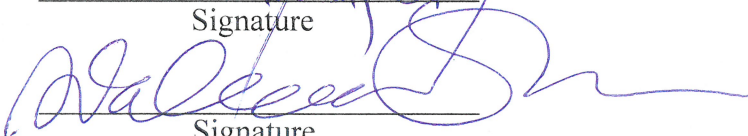This Thesis\Dissertation was Defended Successfully on 31/8/2022 and approved by
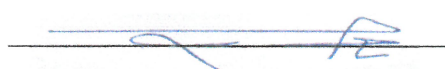
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Dedication

إلى من علمني ان الدنيا كفاح وسلاحها العلم والمعرفة

إلى من حصد الاشواك عن دربي ليمهد لي طريق العلم

(والدي العزيز الدكتور عدنان النجار رحمه الله)

***

الى من ساندتني في صلاتها ودعائها

إلى من سهرت الليالي تنير دربي

إلى أجمل ابتسامة في حياتي

إلى اروع امرأة في الوجود

(أمي الغالية)

***

إلى رفيق دربي وشريك حياتي

إلى من انار طريقي

إلى منبع الحب والعطاء

(زوجي العزيز)

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إلى القلوب الطاهرة والرقيقة

إلى النفوس البريئة

إلى من حبهم يجري في عروقي ويلهج بذكراهم فؤادي

(أولادي وفلذات كبدي – الين وجوري–)

الاء عدنان قاسم نجار

Acknowledgements

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

PERCEPTIONS, CONCERNS AND PRACTICES OF COMMUNITY PHARMACISTS REGARDING COVID-19

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: أسماء عبد ربه عاطف الني

Signature: أسماء

Date: 31/8/2022

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PERCEPTIONS, CONCERNS AND PRACTICES OF COMMUNITY PHARMACISTS REGARDING COVID-19

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Abstract

Background: To date, COVID-19 is believed to be one of the most serious and challenging public health hazards. Like other health professionals, community pharmacists were on the front line of health care working hard during the pandemic and playing a critical role in preventing its widespread.

Objective: The purpose of this study was twofold: to assess perceptions, and practices of community pharmacists in Palestine during COVID-19 pandemic and to evaluate their concerns about its consequences.

Methods: A cross-sectional survey was conducted on community pharmacists in the occupied West Bank from February 1 to April 30, 2021. The study participants, selected randomly, were 314 community pharmacists. A self-administered questionnaire was administered to the participants for data collection. All ethical consideration were taken into consideration.

Results: The results showed that 18.2% of the participants had a high-level of knowledge about COVID-19, 69.1% had a moderate level and 12.7% had a low level. The result also showed that 87.3% of the participants had a high level of COVID-19 practice, as opposed 12.7% who had a low level. Moreover, the result showed that 30.3% of the participants experienced a high level of anxiety, 41.4% had a moderate level and 28.3% had a low level. The logistic regression showed that knowledge had an effect on gender. The female pharmacists had higher knowledge . Pertaining to the practice, it was found that it had an effect on the state of health. The pharmacist whose disease increased the risk of contracting the virus was more likely to have good practice. Female participants, participants aged more than sixty . participants working   morning and

evening shifts , place of work (central areas of the West Bank) , health condition   (
pharmacists whose diseases were likely to increase the risk of contracting the virus) and
pharmacists testing positive for COVID-19 were factors that increased the level of
anxiety at $P<0.05$.

Conclusion: Findings of the study have revealed that the community pharmacists' levels
of knowledge and practices towards COVID-19 were satisfactory. However,   the
community pharmacists' anxiety and concerns   toward COVID-19 were high.

Keywords: COVID-19; perception; practice; concern; community pharmacist.

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Chapter One
Introduction

1.1 Background

In December 2019, a Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) was detected in Wuhan in China has resulted in creating Coronavirus disease -19 (COVID-19) [1], occurred due to a single- stranded RNA virus correlated to Genus Beta Coronavirus [2], signified by varied symptoms from mild symptoms to severe illness and death [1], these symptoms are often fever, sore throat, breathlessness, cough, exhaustion, fatigue among individuals [3].

The novel coronavirus is similar to two previous coronavirus pandemics that occurred in 2003 and 2012: the severe acute respiratory syndrome-coronavirus (SARS-COV) and the Middle East respiratory syndrome-coronavirus (MERS-CoV). On the 30th of January 2020, the World health organization (WHO) issued a statement describing the extremely contagious virus as a "public health emergency of worldwide concern" because of its rapid spread to numerous nations [4].

COVID-19, as well as other RNA viruses, is susceptible to genetic evolution with the emergence of mutations over time, resulting in mutant forms that may have distinct properties from its original strains. This is true even when COVID-19 adapts to its new human hosts. Several COVID-19 variations were identified throughout this pandemic, however only a small number of these are regarded as variants of concern (VOCs) by the World Health Organization due to their effects on public health worldwide. Based on the WHO's most current epidemiological update, five COVID-19 VOCs were discovered since the start of the pandemic on the 11th of December 2021:

- Alpha (B.1.1.7): The 1st variant of concern. Was reported in December 2020, in the United Kingdom (UK).

- Beta (B.1.351): Was firstly detected in South Africa in December 2020.

- Gamma (P.1): Was firstly detected in Brazil in early January 2021.

- Delta (B.1.617.2): Was firstly detected in India in December 2020.

- Omicron (B.1.1.529): Was firstly discovered in South Africa in November 2021 [5].

The statistics of the 10th of March 2020 show that more than 105 countries had more than 114,253 cases and four thousand deaths due to COVID-19 around the world. China declared that the number of cases of this pandemic gradually decreased, however, other countries such as Italy, South Korea and Iran reported increasing numbers of cases employing many doctors in their fight against the pandemic [6]. The 11th of March 2020 signaled the moment when the WHO declared that it is no longer a disease as it has become a pandemic [7].

On August 13, 2022, the global cumulative number of cases was 585,950,085, while the global cumulative number of deaths was 6,425,422 [8]

As for Palestine, the early case of COVID-19 has been discovered on the 5th of March 2020. After that, about 630 cases were confirmed as well as five persons died in Gaza Strip, East Jerusalem and West Bank on the 2nd of June 2020 [9].

On August 13, 2022, the Palestinian cumulative number of cases was 698,384 while the global cumulative number of deaths was 5694 [10].

The health care system of several countries around the world began effective planning to face the COVID-19 pandemic. Pharmacists are a vital sector of the health care system, and it is the first line in the confrontation of COVID-19 and their role is critical in preventing the spread of COVID-19 [11]. On the 19th of March 2020, the International Pharmaceutical Federation (FIP) issued a guideline to simplify the required information about COVID-19 for pharmacists and the pharmacy staff [12]. In this pandemic, their role involves manufacturing, increasing public awareness about the pandemic, supplying preventive products (for example; personal protective equipment and hand sanitizers), and taking part in researches concerning vaccination findings [13]. Therefore, ensuring enough knowledge and awareness about the disease among pharmacists, along with highlighting the key issues configuring their risks in order to prevent the spread of COVID-19 and to control the disease [14].

The spread of disease evokes fear related behaviors among people which increase the possibilities of mental health disorders [15]. The COVID-19 pandemic is considered a stressful event and being a health care provider working in the first line to deal with such serious illness is even more stressful [16]. That is because of an additional stress due to

deal directly with infected patients, this increases the risk of catching disease, so they are afraid from being infected by the disease or transmitting it to their families [17].

Pharmacists are one of the first line health care workers working hard to provide the necessary services needed during the pandemic, community pharmacists dispense COVID-19 medication to maintain care, provide important information related to COVID-19, collaborate closely with other healthcare workers (HCWs) and governmental organizations and medicines delivery to the patient [18]. Unfortunately, community pharmacists face a shortage of personal protective equipment (PPE) spending day long hours in their shifts, and the rising number of patients noticed can result in causing anxiety and depression [19].

Pandemics and natural disasters often have psychological impacts on infected people and those who are in direct contact, such as HCWs.

The experience of medical staff reacting to Severe Acute Respiratory Syndrome (SARS) demonstrates that the consequences on medical staff members' mental health is not only short-term but also long-term effects and that the value of effective support and training is expressive, efficient efforts should be made to preserve their mental health [20].

1.2 Pharmacists' knowledge and Practice towards COVID-19 pandemic

In Jordan, a descriptive cross-sectional survey on hospital and community pharmacies, pharmacy students and academics indicated that more than 50% of the pharmacists and pharmacy students believed that they have sufficient knowledge about epidemics/ pandemics, but still there are gaps in the awareness related to COVID-19 [21]. A different study from Jordan was carried out to assess Pharmacy and Pharm. D students' information and knowledge needed for dealing with COVID-19 and it clearly shown unsatisfactory level of knowledge about COVID-19 among Pharmacy and Pharm. D students. It concluded that additional efforts are required to raise their knowledge about this pandemic [2].

In Lebanon, a cross-sectional study targeted pharmacists working in hospital pharmacies found that they had sufficient information and good practice towards COIVD-19 [22].

In Egypt, across sectional study at the British University was conducted at the faculty of Pharmacy and found that senior pharmacy students have a good knowledge about

COVID-19, but they don't know enough about the clinical manifestations of the disease, and they also lack knowledge about the indication of wearing face masks [23].

A study in Ethiopia demonstrated that there is a high level of knowledge on each certain aspect of COVID-19 amongst the study respondents. However, only about 50% of the respondents had enough knowledge about the pandemic, but the practice associated with COVID-19 was not enough at institutional level [13].

In China, a cross-sectional study intended to evaluate the knowledge, attitudes, and practices of HCWs on COVID-19 showed that more than 85 percent of HCWs were concerned about self-infection with COVID-19, and 89.7 percent followed recommended COVID-19 protocols and had enough knowledge of COVID-19 [24].

In the United Kingdom (UK), a survey was conducted to evaluate the protective practices in the community pharmacy and found that in the UK, community pharmacists are facing significant challenges in the delivery of pharmacy services and terms of personal protection. The study concluded that immediate intervention should be adopted to secure a safe work environment for pharmacists [25].

Another study conducted in Nigeria, demonstrated that there is good knowledge and practice of HCWs about COVID-19. Fear of mortality as well as a lack of personal protective equipment, had a significant impact on attitudes [26].

1.3 Concern and worries of pharmacist and other health care provider due to the COVID-19 pandemic

Ali Elbeddini et al, studied the consequences of pandemic on the mental health of pharmacists and they found that the pharmacist face many stressors needed to be particularly aimed to address pharmacists mental health issues efficiently [19]. Another study was done in Saudi Arabia to evaluate the levels of anxiety and depression amongst HCWs during the pandemic of COVID-19 and found that the symptoms of anxiety and depression occurred in a percentage of 51.4% and 55.2% respectively amongst HCWs in Saudi Arabia with varied severity, as 50% of those had mild conditions and the rest ranged from moderate to severe [16].

In France, a study was done to assess the psychological influence of COVID-19 on healthcare staff and found that dispensary pharmacists who ensured continuity of

healthcare in a climate of widespread teleworking were not spared. Psychotraumatic, anxiety and depression symptoms were observed [27].

On the 27th of January 2020, the National Health Commission of China published a national guideline of psychological crisis intervention for COVID-19. This marks the first time that guidance to provide multifaceted psychological protection of the mental health of medical staff was introduced in China [28].

On the 19th of February 2020, another study was conducted in China to identify the effects of COVID-19 on the mental health of healthcare provider and found there are psychological symptoms among health care staff during COVID-19 as well as the risk aspects for them. The study concluded that the HCWs face lack of acceptable working conditions (such as provision of sufficient and necessary medical protective equipment and arrangement of adequate rest) and health protection [29].

A cross-sectional observational study has been conducted in Wuhan between January and March 2020 to assess the psychological impact of COVID-19 on medical staff and it concluded that the COVID-19 pandemic in Wuhan resulted in rising stress for medical staff, the medical staff aged between 31 to 40 years was more concerned about infecting their families, where as in staff >50 years of age patient's death caused more stress [30].

1.4 Gap in the literature

Many studies have been conducted worldwide to determine pharmacists' awareness and knowledge, however, to our knowledge, there are few studies carried out in Palestine to assess awareness or knowledge level of the Palestinian community pharmacists, and there is limited information about concerns and worries of Palestinian community pharmacists from COVID-19.

1.5 Aims and objectives

General aim

The main aim of this study is to evaluate the perception, concern and practices of community pharmacists regarding COVID-19.

1.6 Rational and significance

There are few reports about the practice and awareness level related to COVID-19 among the pharmacists in Palestinian community. To develop the management of COVID-19 pandemic in Palestine, it is very necessary to assess the practice and awareness of community pharmacists about COVID-19 in current critical circumstances.

This study will help in developing strategies and educational programs to decrease the risk of infection among the pharmacists and it will help to make guidance or support in emergency preparation for community pharmacists on how to manage such a pandemic and to provide baseline data to decide what intervention could be needed to modify misconceptions about COVID-19.

In addition, health authorities will be informed of the pharmacist psychological status, problems and worries of pharmacist to formulate a better and effective strategy to manage this problem.

Chapter Two

Methods

2.1 Study context

The present study was performed on community pharmacists in the West Bank, Palestine. We ask one pharmacist to fill out the questionnaire from each pharmacy. The West Bank is separated into 11 governorate sub-committees. These governorates are Ramallah and EL- Bireh, Jerusalem, Jericho, Jenin, Bethlehem, Tubas, Nablus, Hebron, Tulkarm, Qalqilya and Salfit (Figure 1).

2.2 Study design

A cross-sectional survey has been performed in community pharmacy in West Bank. The study was done from the 1st of February to the end of April 2021. The self-administered questionnaire was introduced to licensed community pharmacists in the West Bank.

2.3 Population

All pharmacists working in the community pharmacies in the West Bank. The overall number of those pharmacies is about 1099 [31].

Figure 1

Map of Palestine
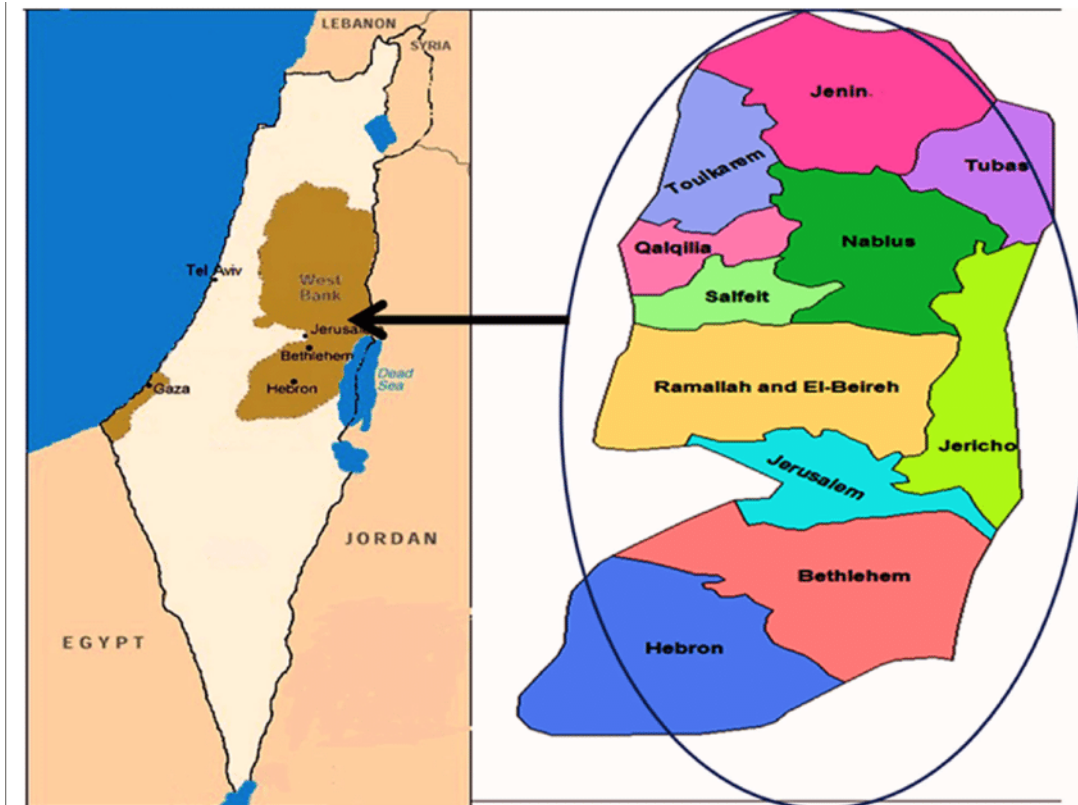
2.4 Inclusion criteria

- Pharmacist who working in community pharmacy in the West Bank.
- Have a diploma or higher degree in pharmacy.

2.5 Exclusion criteria

- Pharmacist working in other sectors including hospitals, industry and academia.
- Community pharmacists who are outside the West Bank region.
- Those who returned incomplete surveys.

2.6 Sample size

The sample size has been determined by utilizing Raosoft sample size calculator. The researcher entered the number of population (community pharmacists in the West Bank), with a confidence level of 95% and a predetermined margin of error of 5%. The recommended sample size is 285 participants. For inappropriate responses, nonresponse,

and error in questionnaire filling, the researcher added 10% on the sample size, this brought the sample size to 314 participants for non-response rate or any missing data [5].

2.7 Sampling method

The researcher selected the sample by complex randomized method, the West Bank is divided into three main districts (northern, central, and southern), and representative random samples of community pharmacists were obtained from cities, villages and refugee camps of each district.

2.8 Study tool

The structured questionnaire was developed from previous studies [13, 21, 22, 32]. The majority of the created questions have been adapted from previously published and validated research in the world and tweaked to fit the local environment and ensure applicability. Some questions have been added, and the questionnaire was adjusted to fit the Palestinian setting.

The final version of the questionnaire was in English (Appendix A), and it was presented to an English language specialist for proofreading and to ensure the correctness of its words and terms. After that, the questionnaire was translated into Arabic (Appendix B), because the Native language of participants is Arabic. Like the English questionnaire, the Arabic questionnaire was presented to an Arabic language specialist for reviewing, proofreading and to ensure the correctness of its words and terms.

The questionnaire consisted of four parts: demographics information, perception, practices associated with COVID-19 and the pharmacists concerns and anxiety because of COVID-19.

 The first section describing participants' demographics involving age, gender, marital status, level of education, experience duration, pattern of working, number of family members and age of the youngest child also asked whether the participant was diagnosed with COVID-19, or if any of the staff members were infected with the COVID-19.

The second section evaluates pharmacist's perception about COVID-19, it had questions about etiology, clinical presentation, mode of transmission, incubation period, diagnostic test, at-risk people, and drug for management of COVID-19. These questions had been filled on a Yes/No basis and some of them were multiple choice.

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Each correct answer scored 1 point and incorrect answer scored 0 points, An arbitrary system was used to classify scores: 0 to < 50% - poor perception, 50 to < 75% - moderate perception and ≥ 75% high perception [33].

The third section assesses the practical pharmacist toward COVID-19 eight items, the respondents have received three points for "Always," two for "Rarely," and one for "Never." The highest score was twenty-four, and the lowest score was eight. A minimum score of 18 points has been considered to identify appropriate or safe practice most of the time [34].

The last section of the questionnaire evaluates the concerns and anxiety in community pharmacists related to COVID-19 by nine questions also the researcher used a four-point Likert scale. The researcher divided the participants into three groups: low anxiety (0-9), moderate anxiety (score 10-15), and severe anxiety (score > 16). The scale has a total score range of 0 to 27 [31].

2.9 Validity and reliability

The questionnaire was constructed and reviewed in the field of pharmacy by a panel of academic experts. And the researcher performed a pilot study to determine the internal consistency by measuring the Cronbach's alpha Coefficient of the questions in each part of the questionnaire.

The results of Cronbach's alpha (Perception: Cronbach's alpha = 0.61, practice: Cronbach's alpha = 0.75 and worries and concerns: Cronbach's alpha = 0.73).

2.10 Statistical analysis

Data has been entered and analyzed utilizing the Statistical Package for Social Sciences program (SPSS) version 21. Data has been presented as percentages and frequencies for categorical variables and as means ± SD for continuous variables. Variables that are not normally distributed were displayed as medians (lower-upper quartiles). The results of the Kolmogorov-Smirnov test showed that the data were nonparametric. The Mann-Whitney U test was used to examine differences between continuous and binary data, while the Kruskal-Wallis test was employed to compare continuous and multicategorical variables. Binary logistic regression analysis was performed to determine the potential predictors associated, good perception, practice, and concern presenting the output as

odds ratios (ORs) and 95% CIs. For all tests when p 0.05, the relationship was considered significant.

Ethical consideration

- Institutional Review Board (IRB) approval was obtained from An-Najah National University (Appendix C).
- Verbal consent was obtained from pharmacist in order to fill in the questionnaire.
- Participation in the study was voluntarily.
- Privately, all data have been saved and only used for scientific purposes.
- Participants have been informed about the research's objectives and its significant.

Chapter Three
Results

3.1. Demographics characteristic of the participants

A cross-sectional study has been carried out on 314 respondents aged between 22 and 30 (35.0%) while 44.3% aged between 31 to 40 years and 12.1% aged between 41 to 60 years. The table showed that 8.6% aged more than 60 years, distributed as males 51% and 49% females. And nearly two-thirds were married (66.9%).

The education level was distributed between bachelor's in pharmacy degree (65.9%), with only (9.6%) having diploma in pharmacy and (24.5%) having pharm D and master's degree. They were living in various governorates of the West Bank, including Northern Governorates 158 (50.3%), Southern Governorates 69 (22%) Central Governorates 87 (27.7%). There are 117 pharmacists (37.3%) had a working experience equal to or less than 5 years, while the percentage who has practical experience between 5-10 years (31.3%), and percentage who has more than ten years of practical experience (31.5%).

There are 122 pharmacists (38.9%) working in the morning shift, and 87 pharmacists (27.7%) working in the evening shift, while 105 pharmacists (33.4%) working in both shifts. The vast majority of participants worked an average of 5-8 hours per a day, and (26.1%) of the participants worked from 9-12 hours, while only 8.3% worked more than 12 hours a day. And for the employment status pharmacy employee were (63.7%) while the rest are pharmacy owner.

About (55.7%) of the participants have children with a mean age of (2.48) years, and the mean number of family members of the participants was 5.16. Overall participants smoker were (24.2%), and 94 pharmacists (29.9%) were previously infected with the COVID-19, while colleagues of 116 pharmacists (36.9%) were infected with the virus at work. The respondents' features are presented in (Table 1).

Table 1

Demographics characteristic of the participants

Variable	N (%)
Gender, n%	
Female	160 (51%)
Male	154 (49%)
Age, (years) n%	
22 - 30	110 (35%)
31 - 40	139 (44.3%)
41 - 60	38 (12.1%)
>60	27 (8.6%)
Material status, n%	
Married	210 (66.9%)
Un- married (single, divorced, widowed)	104 (33.1%)
Educational level	
Diploma	30 (9.6%)
Bachelor	207 (65.9%)
Pharm D	77 (24.5%)
Years of experience	
Less than 5	117 (37.3%)
5-10	98 (31.2%)
>10	99 (31.5 %)
Employment	
Pharmacy owner	114 (36.3%)
Pharmacy employee	200 (63.7%)
Pattern of working	
Morning time	122 (38.9%)
evening time	87 (27.7%)
Morning and evening	105 (33.4%)
Working hours	
5--8	206 (65.6%)
9--12	82 (26.1%)
>12	26 (8.3%)
Address of work	
Northern Governorates	158 (50.3%)
Southern Governorates	69 (22%)
Central Governorates	87 (27.7%)
Have children	
Yes	175 (55.7%)
No	139 (44.3%)
The age of the youngest child	
(mean ±SD)	2.48±3.56
median	1
Number of family members	
(mean ±SD)	5.16± 1.793
median	5
Smoking	
Yes	76 (24.2%)
No	238 (75.8%)
Have you been diagnosed with COVID-19?	
Yes	94 (29.9%)
No	220 (70.1%)
Was any of your staff members tested positive for COVID-19?	
Yes	116 (36.9%)
No	198 (63.1%)
Do you have medical conditions that increase the risk of contracting the virus (diabetes, asthma, COPD, etc.)	
Yes	49 (15.6%)
No	265 (84.4)

3.2. Perception of the participants

Of the 314 participants, 114 participants (36%) expected the source of COVID-19 to be the laboratories, while 174 (55.4%) participants said that the source of COVID-19 was the animal and only 32 (10%) people expected the origin of COVID-19 to be from humans.

About half of the participants (51.9%) knew that the incubation period for COVID-19 is from 2-14 days, and 61 participants (19.4%) said that the incubation period for the COVID-19 is from 2-7 days, and 90 participants (28.7%) expected the incubation period of the virus would be more than 14 days.

The vast majority of participants know that PCR (polymerase chain reaction) test is the diagnostic test for COVID-19, but 48 participants (15.3%) mentioned that CRP (C-reactive protein) test is the diagnostic test for COVID-19, and only 18 participants (5.7%) said that CBC (Complete Blood Count) is the diagnostic test for COVID-19

There was a difference in understanding the transmission method, 92% stated that COVID-19 can be transmitted by sneezing or cough while some respondents stated that it can also be transmitted by contaminated surfaces (13%) or body fluid (2.2%) or by fecal –oral rout (1.9%).

They believe that the weakened Immunity had been the main at-risk category with a percentage of (89.2%), followed by older people (83.1%), chronic diseases (74.5%), and only (18.2%) participants mentioned that pregnant women are the most at-risk group to contracting the disease. Most participants (83.8%) stated that non-steroidal anti-inflammatory drugs such as Ibuprofen doesn't increase the risk of complications when used during viral infections.

Of the 314 participants, 235 (74.8%) stated that COVID-19 symptoms are worse among diabetic patients. Only about (43.9%) expected that consuming steroids does not increase vulnerability to COVID-19 infection. Among the 314 participants, 219 (69.7%) say that the use of autoimmune disease medications raises the susceptibility to contract COVID-19 infection. About half of participants (52.2%) stated that Oseltamivir has been used in the management of COVID-19 patients, and (59.6%) thought hydroxychloroquine could be used as a preventative therapy against COVID-19.The vast majority of participant (91.4%) expected consuming food such as garlic and mushrooms are advantageous for

the immune system. (66.9%) of participants expected Azithromycin has been suggested to treat COVID-19, and (31.8%) of participants stated that Hydroxychloroquine is the drug that was suggested to treat COVID-19, and (19.1%) of participants expected Remdesivir has been suggested to treat COVID-19, and only (4.5%) of participants stated that NSAID is the drug that was suggested to treat COVID-19.

The source of information on COVID-19 for most participants was from social media 210 (66.9%) followed by HCW 153 (48.7%), Journals 49 (15.6%) and television 33 (10.5%) though some participants identified more than one source.

Table 2

Perception of the participants related to COVID-19

Variable	n (%)
COVID-19 Virus Origin	
Laboratories	114 (36.3%)
Animal	174 (55.4%)
Human	32 (10%)
Incubation Period	
2-7 days	61 (19.4%)
2–14 days	163 (51.9%)
More than 14 days	90 (28.7%)
Diagnostic Testing	
CBC	18 (5.7%)
CRP	48 (15.3%)
PCR	248 (79%)
Main method of transmission	
Coughing and Sneezing	289 (92%)
Contaminated surfaces	41 (13%)
Fecal-Oral Rout	6 (1.9%)
Body Fluids	7 (2.2%)
Patients at-Risk for contacting COVID19	
Older Adults	261 (83.12%)
Chronic Diseases	234 (74.5%)
weakened Immunity	280 (89.2%)
Pregnant	57 (18.2%)
Smoker	66 (21%)
Children	18 (5.7%)
Adult Female	10 (3.2%)
Adult Male	9 (2.8%)
COVID-19 symptoms are worse among diabetic patients	
Yes	235 (74.8%)
No	79 (25.2%)
Non-steroidal anti-inflammatory drugs such as Ibuprofen can increase the risk of complications when used during viral infections	
Yes	51 (16.2%)
No	263 (83.8%)
Using steroids do not increase vulnerability to coronavirus infection	
Yes	138 (43.9%)
No	176 (56.1%)
The use of autoimmune disease treatments increases the susceptibility to contract coronavirus infection	
Yes	219 (69.7%)
No	95 (30.3%)
Oseltamivir has not been used in the management of coronavirus infection cases	
Yes	150 (47.8%)
No	164 (52.2%)
Hydroxychloroquine has not been used as a preventative therapy against coronavirus infection	
Yes	127 (40.4%)
No	187 (59.6%)
Eating food like mushrooms and garlic is beneficial for the immune system	
Yes	287 (91.4%)
No	27 (8.6%)
How long does it take to wash hands with soap protect from spreading the infection?	
10 second	29 (9.2%)
15 second	65 (20.7%)
20 second	131 (41.7%)
30 second	89 (28.3%)
Which of the following medicines is suggest as a treatment of COVID-19?	
Azithromycin	210 (66.9%)
NSAID	14 (4.5%)
Hydroxychloroquine	100 (31.8%)
Remdesivir	60 (19.1%)
The source of information you use about the disease	
Journals	49 (15.6%)
Social media	210 (66.9%)
TV	33 (10.5%)
Health staff	153 (48.7%)

Table 3 illustrated the distribution of the study population according to their responses about knowledge. This table showed that 18.2% of the participants have a high knowledge level while 69.1% of them have moderate levels of knowledge and 12.7% of them had a low level of knowledge. Finally, the Median (IQR) of knowledge levels was 11 (10-12) out of 18 points.

Table 3

The perception level proportion of the participants

Knowledge level	N	%	Median (IQR) 11 (10-12)
Low (0-8)	40	12.7	
Medium (8-12)	217	69.1	
High (13-18)	57	18.2	

Table 4 showed the perceptions related to COVID-19 among community pharmacists. The results showed that females had higher knowledge compared to males (31.6% vs. 68.4%). Also, the table showed that high knowledge gradually lowered by age (40.4% for 22 – 30 years, 12.3% for 41 to 60 years, and 5.3% for more than 60 years). Married have higher knowledge compared to unmarried (64.9% vs. and 35.1%).

The results showed that bachelors have higher knowledge compared to pharm D and diploma (1.8% for Diploma, 73.7% for Bachelor, 24.6% for Pharm D). The table showed that lowering with experience have higher knowledge compared to high experience (40.4% for less than 5 years' experience, 33.3% for 5 to 10 years' experience, and 26.3% for more than 10 years' experience).

Pharmacy employees have higher knowledge compared to Pharmacy owners (71.9% vs. 28.1%, respectively). The table showed that morning time has higher knowledge compared to other patterns of working (45.6% for Morning time, 29.8% for Evening time, and 24.6% for Morning and evening).

Regarding work hours, the table showed that those who have 5- 8 work hours have higher knowledge compared to other groups (70.2%for 5 to 8 work hours vs. 29.8% for more than 8 work hours).

The table showed that 50.9% from the north have higher knowledge compared to 19.3% in the south and 29.8% in the center. The level of higher knowledge was increased among those who have children compared to those who haven't (56.1% vs. 43.9%). The higher

knowledge was lowered among smokers compared to those who were nonsmokers (21.1% vs. 78.9%, respectively).

Regarding COVID-19 among community pharmacists, the results showed that the higher knowledge was lowered among those who were infected by COVID compared to those who were not infected (28.1% vs. 71.9%).

On the other hand, the table showed that it is difference in the percentage of high knowledge levels among diseases that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.) was lowering compared to those who haven't (10.5% vs. 89.5%%, respectively).

Table 5 showed the perceptions related to COVID-19 among community pharmacists. The Mann-Whitney test showed that males were lower statistically significant compared to females in knowledge levels among participants (P=.000). Statistical tests by the Kruskal-Wallis test showed that there is a higher statistically significant in knowledge levels among educational levels (P=.014), that bachelors have higher statistically significant compared to pharm D and diploma in knowledge levels among participants.

In contrast, the table showed that it is no statistically significant in knowledge levels among age, material status, years of experience, employment, the pattern of working, working hours, address of work, having children, diagnosis with COVID-19 before, staff members tested, positive for COVID-19, and disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.) P>0.05.

Table 4

Perception related to COVID-19 among community pharmacists

Variable	Total n%	Perception related to COVID-19 among community pharmacists		
		High n%	Median n%	Low n%
Gender,				
Female	160 (51)	39 (68.4)	106 (48.8)	15 (37.5)
Male	154 (49)	18 (31.6)	111 (51.2)	25 (62.5)
Age, n%				
22 - 30	111 (222)	23 (40.4)	75 (34.6)	13 (32.5)
31 - 40	138 (276)	24 (42.1)	92 (42.4)	22 (55)
41 - 60	38 (76)	7 (12.3)	27 (12.4)	4 (10)
>60	27 (54)	3 (5.3)	23 (10.6)	1 (2.5)
Material status,				
Married	210 (66.9)	37 (64.9)	148 (68.2)	25 (62.5)
None- married (single, divorced, widowed)	104 (33.1)	20 (35.1)	69 (31.8)	15 (37.5)
Educational level				
Diploma	30 (60)	1 (1.8)	26 (12)	3 (7.5)
Bachelor	207 (414)	42 (73.7)	139 (64.1)	26 (65)
Pharm D	77 (154)	14 (24.6)	52 (24)	11 (27.5)
Years of experience				
<5	117 (37.3)	23 (40.4)	79 (36.4)	15 (37.5)
5--10	98 (31.2)	19 (33.3)	66 (30.4)	13 (32.5)
>10	99 (31.5)	15 (26.3)	72 (33.2)	12 (30)
Employment				
Pharmacy owner	114 (36.3)	16 (28.1)	81 (37.3)	17 (42.5)
Pharmacy employee	200 (63.7)	41 (71.9)	136 (62.7)	23 (57.5)
Pattern of working				
Morning time	122 (38.9)	26 (45.6)	81 (37.3)	15 (37.5)
Evening time	87 (27.7)	17 (29.8)	60 (27.6)	10 (25)
Morning and evening	105 (33.4)	14 (24.6)	76 (35)	15 (37.5)
Working hours				
5--8	206 (65.6)	40 (70.2)	141 (65)	25 (62.5)
>8	108 (34.4)	17 (29.8)	76 (35)	15 (37.5)
Address of work				
North	158 (50.3)	29 (50.9)	105 (48.4)	24 (60)
South	69 (22)	11 (19.3)	52 (24.0)	6 (15)
Center	87 (27.7)	17 (29.8)	60 (27.6)	10 (25)
Have children?				
Yes	175 (55.7)	32 (56.1)	121 (55.8)	22 (55)
No	139 (44.3)	25 (43.9)	96 (44.2)	18 (45)
Smoking				
Yes	76 (24.2)	12 (21.1)	53 (24.4)	11 (27.5)
No	238 (75.8)	45 (78.9)	164 (75.6)	29 (72.5)
Have you been diagnosed with COVID-19 before?				
Yes	94 (29.9)	16 (28.1)	68 (31.3)	10 (25)
No	220 (70.1)	41 (71.9)	149 (68.7)	30 (75)
Was any of your staff members tested positive for COVID-19?				
Yes	116 (232)	24 (42.1)	79 (36.4)	13 (32.5)
No	198 (396)	33 (57.9)	138 (63.6)	27 (67.5)
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)				
Yes	49 (15.6)	6 (10.5)	36 (16.6)	7 (17.5)
No	265 (84.4)	51 (89.5)	181 (83.4)	33 (82.5)

Table 5

Mann-Whitney test and Kruskal-Wallis test of perceptions related to COVID-19 among community pharmacists

Variable	Total n (%)	Knowledge Median IQR	Mean ranks	Statistical test (p-value)
Gender, n%				
Female	160 (51)	11 (10-12)	177.96	0.000* U
Male	154 (49)	10 (9-12)	136.25	
Age, (years) n%				
22 - 30	110 (35.0)	11 (10-12)	165.34	0.596 U
31 - 40	139 (44.3%)	11 (9-12)	150.39	
41 - 60	38 (12.1%)	11 (10-12)	162.92	
>60	27 (8.6%)	11 (10-12)	154.54	
Material status, n%				
Married	210 (66.9)	11 (10-12)	155.45	0.563 U
None- married (single, divorced, widowed)	104 (33.1)	11 (10-12)	161.65	
Educational level				
Diploma	30 (60)	10 (9-11)	115.20	0.014* K
Bachelor	207 (414)	11 (10-12)	165.38	
Pharm D	77 (154)	11 (10-12)	152.81	
Years of experience				
<5	117 (37.3)	11 (10-12)	164.23	0.590 K
5--10	98 (31.2)	11 (9-12)	153.62	
>10	99 (31.5)	11 (10-12)	153.39	
Employment				
Pharmacy owner	114 (36.3)	11 (9.75-12)	148.33	0.171 U
Pharmacy employee	200 (63.7)	11 (10-12)	162.73	
Pattern of working				
Morning time	122 (38.9)	11 (10-12)	168.16	0.190 K
Evening time	87 (27.7)	11 (10-12)	155.72	
Morning and evening	105 (33.4)	11 (9-12)	146.59	
Working hours				
5--8	206 (65.6)	11 (10-12)	161.83	0.237 U
>8	108 (34.4)	11 (9-12)	149.25	
Address of work				
North	158 (50.3)	11 (10-12)	156.10	0.939 U
South	69 (22)	11 (10-12)	157.17	
Center	87 (27.7)	11 (10-12)	160.31	
Have children?				
Yes	175 (55.7)	11 (9-12)	155.20	0.610 U
No	139 (44.3)	11 (10-12)	160.39	
Smoking				
Yes	76 (24.2)	11 (9-12)	149.07	0.346 U
No	238 (75.8)	11 (10-12)	160.19	
Have you been diagnosed with COVID-19 before?				
Yes	94 (29.9)	11 (10-12)	157.22	0.971 U
No	220 (70.1)	11 (9.25-12)	157.62	
Was any of your staff members tested positive for COVID-19?				
Yes	116 (232)	11 (10-12)	158.53	0.876 U
No	198 (396)	11 (10-12)	156.90	
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)				
Yes	49 (15.6)	11 (10-11.5)	147.03	0.373 U
No	265 (84.4)	11 (10-12)	159.44	

U: Mann-Whitney test and K: Kruskal-Wallis

3.3. Practice among pharmacist regarding COVID-19

Amongst all the respondents, 87.6% stated that they have been complied with suitable infection prevention measurements and control practices most of the time.

The majority of participants had a good practice with each topic, with the highest practice presented in washing hands while working in the pharmacy (94.9%), rubbing hand with a hydro-alcoholic gel (93.8%), wearing a face mask (87%), maintain social distancing of at least 1.5 meter from the patient (79.3%), avoid touching eyes, nose, or mouth (76.4%), A lower percentage of practice has been noticed among pharmacist in wearing eyeglasses to protect their eyes (17.5%) and in wearing gloves while working (34.8%).

The vast majority of pharmacists (91.4%) are continuing to work as usual, with no reduction in timing. Despite this, (36.9%) of pharmacists have tested positive for COVID-19. About 25.4% of participants even if they are not feeling well, they go to work. For wearing masks, 78 participants (24.8%) change it after two hours, 109 participants (34.7%) change it after 4 hour, 107 participants (34.1%) change it after 6 hour and 20 participants (6.4%) do never wear masks. Of 314 participants, 103 (32.4%) change gloves after two hours, 60 participants (19.1%) change gloves after four hours, 27 participants (8.1%) change gloves after six hours and more than third of participants 124 (40.4%) will never wear gloves. About (76.4%) of participants have been made to the decor physical modifications pharmacy to maintain the distance between the pharmacist and the customer. (Table 6).

Table 6

Practice related to COVID-19 among community pharmacists

Question	Always	Rarely	Never
Are you wearing eyeglasses to protect your eyes while performing your job at the pharmacy?	55 (17.5%)	68 (21.7%)	191 (60.8%)
Do you wear a mask during your work shift?	273 (87%)	21 (6.7%)	20 (6.4%)
Do you put gloves during your work shift?	109 (34.8%)	78 (24.8%)	127 (40.4%)
Are you able to wash your hands during your shift?	298 (94.9%)	9 (2.9%)	7 (2.2%)
Are you able to rub your hands with hydro-alcoholic gel during your work shift?	296 (93.8%)	9 (2.9%)	9 (2.9%)
Are you able to maintain social distancing of at least 1.5 m from work colleagues?	249 (79.3%)	38 (12.1%)	27 (8.6%)
Are you able to avoid touching eyes, nose, and mouth?	240 (76.4%)	36 (11.5%)	38 (12.1%)
Are you able to stay at home if not feeling well?	234 (74.5%)	51 (16.2%)	29 (9.2%)

The practice level proportion of the participants

Table 7 illustrated the distribution of the study population according to their responses about practice. This table showed that 87.3% of the participants have a high practice level while 12.7% of them had a low level of practice. Finally, the Median (IQR) of practice levels was 20 (18-22) out of 24 points.

Table 7

The practice level proportion of the participants

Practice level	N	%	Practice Median (IQR) 20 (18-22)
Low (<18)	274	87.3	
Good (>18)	40	12.7	

Table 8 showed the perceptions related to COVID-19 among community pharmacists. The results showed that males had higher practice compared to females (48.2% vs. 51.8%). Also, the table showed that good practice higher in aged between 31 to 40 years compared to others age groups (28.1% for 22 – 30 years, 50.4% for 31 – 40 years, 11.7% for 41 – 60years, 9.9% for more than 60 years).

Married have higher practice compared to unmarried (67.2% vs. 32.8%, respectively). The results showed that bachelors have higher practice compared to pharm D and diploma 8.8% for Diploma, 66.4% for Bachelor, 24.8% for Pharm D).

The table showed that lowering with experience have higher practice compared to good experience 36.5% for less than 5 years' experience, 31% for 5—10 years' experience, 32.5% for more than 10 years' experience). Pharmacy employees have higher practice compared to Pharmacy owners (63.1% vs. 36.9%, respectively).

The table showed that morning time has higher practice compared to other patterns of working 38% for Morning time, 27.7% for Evening time, 34.3% for Morning and evening). Regarding work hours, the table showed that those who have 5- 8 work hours have higher practice compared to other groups (65.3%for 5 to 8 work hours vs. 34.7% for more than 8 work hours).

The table showed that 52.9% from the north have higher practice compared to 16.8 in the south and 30.3% in the center. The level of higher practice was increased among those who have children compared to those who haven't (55.1% vs. 44.9%, respectively). The

higher practice was lowered among smokers compared to those who were nonsmokers (23% vs. 77%, respectively).

Regarding COVID-19 among community pharmacists, the results showed that the good practice was lowered among those who were infected by COVID compared to those who were not infected (28.5% vs. 71.5%, respectively).

On the other hand, the staff members tested positive for COVID-19 have good practice compared to who negative COVID-19 (36.9% vs. 63.1%).

Table 8

Practice related to COVID-19 among community pharmacists

Variable	Total n%	Practice related to COVID-19 among community pharmacists	
		Low n%	Good n%
Gender,			
Female	160 (51)	22 (55)	132 (48.2)
Male	154 (49)	18 (45)	142 (51.8)
Age, n%			
22 - 30	111 (92.5)	34 (85)	77 (28.1)
31 - 40	138 (115)	0 (0)	138 (50.4)
41 - 60	38 (31.7)	6 (15)	32 (11.7)
>60	27 (22.5)	0 (0)	27 (9.9)
Material status,			
Married	210 (66.9)	26 (65)	184 (67.2)
None- married (single, divorced, widowed)	104 (33.1)	14 (35)	90 (32.8)
Educational level			
Diploma	30 (60)	6 (15)	24 (8.8)
Bachelor	207 (414)	25 (62.5)	182 (66.4)
Pharm D	77 (154)	9 (22.5)	68 (24.8)
Years of experience			
<5	117 (37.3)	17 (42.5)	100 (36.5)
5--10	98 (31.2)	13 (32.5)	85 (31)
>10	99 (31.5)	10 (25)	89 (32.5)
Employment			
Pharmacy owner	114 (36.3)	13 (32.5)	101 (36.9)
Pharmacy employee	200 (63.7)	27 (67.5)	173 (63.1)
Pattern of working			
Morning time	122 (38.9)	18 (45)	104 (38)
Evening time	87 (27.7)	11 (27.5)	76 (27.7)
Morning and evening	105 (33.4)	11 (27.5)	94 (34.3)
Working hours			
5--8	206 (65.6)	27 (67.5)	179 (65.3)
>8	108 (34.4)	13 (32.5)	95 (34.7)
Address of work			
North	158 (50.3)	13 (32.5)	145 (52.9)
South	69 (22)	23 (57.5)	46 (16.8)
Center	87 (27.7)	4 (10)	83 (30.3)
Have children?			
Yes	175 (55.7)	24 (60)	151 (55.1)
No	139 (44.3)	16 (40)	123 (44.9)
Smoking			
Yes	76 (24.2)	13 (32.5)	63 (23)
No	238 (75.8)	27 (67.5)	211 (77)
Did you diagnose with COVID-19 before?			
Yes	94 (29.9)	16 (40)	78 (28.5)
No	220 (70.1)	24 (60)	196 (71.5)
Was any of your staff members tested positive for COVID-19?			
Yes	116 (232)	15 (37.5)	101 (36.9)
No	198 (396)	25 (62.5)	173 (63.1)
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)			
Yes	49 (15.6)	1 (2.5)	48 (17.5)
NO	265 (84.4)	39 (97.5)	226 (82.5)

Table 9 showed the practice related to COVID-19 among community pharmacists. Statistical tests by the Kruskal-Wallis test showed that there is statistically significant in practice levels among educational levels (P=.014), that bachelors have higher statistically significant compared to pharm D and diploma in practice levels among participants.

Statistical test showed that elevated in age (more than 60 years) statistically significant associated with increased practice levels (P=.000). Also, the Mann-Whitney test showed that the participants who have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.) are higher statistically significant in practice levels (p=.000) compared to those who haven't. In contrast, the table showed that it is no statistically significant in practice levels among material status, years of experience, employment, the pattern of working, working hours, address of work, having children, diagnosis with COVID-19 before, staff members tested, positive for COVID-19, and (P>0.05).

Table 9

Mann-Whitney test and Kruskal-Wallis test of practice related to COVID-19 among community pharmacists

Variable	Total N (%)	Practice Median IQR	Mean ranks	Statistical test (p-value)
Gender, n%				
Female	160 (51)	20 (19-22)	160.99	0.483 [U]
Male	154 (49)	20 (18-22)	153.87	
Age, (years) n%				
22 - 30	110 (35.0)	18 (17-19)	68.51	**0.000* [U]**
31 - 40	139 (44.3%)	22 (21-22)	216.81	
41 - 60	38 (12.1%)	20 (18-21)	117.86	
>60	27 (8.6%)	23 (22-23)	270.50	
Material status, n%				
Married	210 (66.9)	20 (19-22)	161.39	0.276 [U]
None- married (single, divorced, widowed)	104 (33.1)	20 (18-22)	149.64	
Educational level				
Diploma	30 (60)	21 (18.75-22)	115.20	**0.014* [K]**
Bachelor	207 (414)	20 (18-22)	165.38	
Pharm D	77 (154)	20 (18-21)	152.81	
Years of experience				
<5	117 (37.3)	20 (18-22)	164.23	0.590 [U]
5--10	98 (31.2)	21 (18-22)	153.62	
>10	99 (31.5)	20 (19-22)	153.39	
Employment				
Pharmacy owner	114 (36.3)	20 (18-22)	161.27	0.575 [U]
Pharmacy employee	200 (63.7)	20 (18-22)	155.35	
Pattern of working				
Morning time	122 (38.9)	20 (18-22)	168.16	0.190 [K]
Evening time	87 (27.7)	20 (19-22)	155.72	
Morning and evening	105 (33.4)	21 (18-22)	146.59	
Working hours				
5--8	206 (65.6)	20 (19-22)	155.75	0.634 [U]
>8	108 (34.4)	20 (18-22)	160.84	
Address of work				
North	158 (50.3)	20 (19-22)	156.10	0.190 [K]
South	69 (22)	18 (16.5-22)	157.17	
Center	87 (27.7)	21 (19-22)	160.31	
Have children?				
Yes	175 (55.7)	20 (18-22)	159.52	0.655 [U]
No	139 (44.3)	20 (18-22)	154.96	
Smoking				
Yes	76 (24.2)	20 (18-22)	157.30	0.982 [U]
No	238 (75.8)	20 (19-22)	157.57	
Did you diagnose with COVID-19 before?				
Yes	94 (29.9)	20 (18-22)	147.90	0.216 [U]
No	220 (70.1)	20 (19-22)	161.60	
Was any of your staff members tested positive for COVID-19?				
Yes	116 (232)	20 (19-22)	161.72	0.524 [U]
No	198 (396)	20 (18-22)	155.03	
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)				
Yes	49 (15.6)	22 (20-22.5)	202.72	**0.000* [U]**
No	265 (84.4)	20 (18-22)	149.14	

U: Mann-Whitney test and K: Kruskal-Wallis

Concern and worries in community pharmacy after the COVID-19

Table 10 illustrated the distribution of the study population according to their responses about concern and worries in community pharmacy after the COVID-19. This table showed that 30.3% of the participants have a high concern level while 41.4% of them had a moderate level of concern and 28.3% of them had a low level of concern. Finally, the Median (IQR) of practice levels was 13 (9-16) out of 27 points.

When we asked about concern and worries, 188 participants (59.9%) stated that they worried about working in the community pharmacy throughout COVID 19, (59.6%) reported that they afraid of getting infected with COVID-19 because of occupational exposure, and the vast majority of participants 271 (86.3%) reported that, they afraid of transmitting the infection to their families or friends. About half of participants (53.5%) concern they don't have rapid access to testing if they develop COVID-19 symptoms and concomitant worry of propagating infection at work. About (76.5%) of participants who have comorbid disease such as asthma are concerned about being exposed to the risk of contracting the virus. More than 64% of the participants stated that they are concern when they develop respiratory symptoms, they are worried that they are infected with the COVID-19 (Table 11).

Table 12 showed the concern and worries related to COVID-19 among community pharmacists. The results showed that severity of concern in female higher than male (67.4% vs. 32.6%). Also, the table showed that married have higher concern compared to unmarried (68.5% vs. 31.5%). Also, severity of concern is higher in who aged 31-40 (44.9%) followed by who aged from 22% to 30%. While the lowest group of severity in concern more than 60 years (12.4%).

The results showed that bachelors have higher concern compared to pharm D and diploma 3.4% for Diploma, 74.2% for Bachelor, 22.5% for Pharm D). The table showed that lowering with experience have higher concern compared to high experience 38.2% for less than 5 years' experience, 34.8% for 5-10 years' experience, and 27% for more than 10 years' experience).

Pharmacy employees have higher concern compared to Pharmacy owners (32.6% vs. 67.4%, respectively). The table showed that morning and evening time has higher concern

compared to other patterns of working (41.6% for Morning and evening, 30.3% for Morning time, and 28.1% for Evening time).

The table showed that 47.2% from the north have higher concern compared to 19.1% in the south and 33.7% in the center. The level of higher concern was increased among those who have children compared to those who haven't (57.4% vs. 41.6%, respectively). The higher concern was lowered among smokers compared to those who were nonsmokers (23.6% vs. 76.4%, respectively). Regarding COVID-19 among community pharmacists, the results showed that the higher concern was lowered among those who were infected by COVID compared to those who were not infected (43.8% vs. 56.2%%, respectively). On the other hand, the table showed that it is difference in the percentage of high concern levels among diseases that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.) was lowering compared to those who haven't (10.5% vs. 89.5%).

Table 13 showed the concern related to COVID-19 among community pharmacists. Statistical test by Mann-Whitney test showed that female higher statistically significant compared to male regarding anxiety levels (P=.000). Also, the results showed that there is statistically significant elevated in concern levels regarding working hours more than 8 hours and who work at evening and morning, who have diagnosed with COVID-19 before, any of your staff members tested positive for COVID-19 and disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive, pulmonary disease, etc.) (P<0.05). The older age group more than 60 years old had a considerably higher percentage of concern and worries than the younger age groups (P=.0011). Compared to other regions, the center region of Palestine had the highest prevalence rates of concern and worries (p=.023). And pharmacists who worked for a long time had a higher concern rate (p=.003). Also, those who worked in the evening and morning shift had a higher level of concern than the morning shift or evening shift alone (p=.010). And pharmacist who was previously infected with the virus or his co-worker was infected had higher concern and worries than who are not infected with COVID-19. In contrast, the table showed that there is no statistically significant in c levels regarding material status, educational level, years of experience, employment have children, smoking (P>0.05).

Table 10

The concern and worries level proportion of the participants

Anxiety level	N	%	Median (IQR) 13 (9-16)
Low (0-9)	95	30.3	
Medium (10-15)	130	41.4	
High (>16)	89	28.3	

Factors affected knowledge, practice, and anxiety

All variables with significant p values according to univariate analysis were included in the logistic regression analysis. The results revealed that female highly concerned about COVID-19 were more likely to have good knowledge (OR, 2.435; 95%CI, 1.323-4.481) compared to male. In contrast, the results revealed that no significant different between diploma and Bachelor likely to have good knowledge (OR, 7.38; 95%CI, 0.98-55.76) and Pharm D (OR, 6.44; 95%CI, 0.81-51.37) compared to diploma.

Regarding practice, the results illustrated that who have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.) were more likely to have good practice compared to who haven't (OR, 8.283; 95%CI, 1.111-61.772). In contrast, the results revealed that no significant different between age groups as 31 – 40 years (OR, 86; 95%CI, 0.1-80), 41 – 60 years (OR, 2.355; 95%CI, 0.901-180) and more than 60 years (OR, 7.1; 95%CI, -0.3-14.3) compared to age groups from 22 to 30 years. Also, the results revealed that no significant different between diploma and Bachelor likely to have good knowledge Bachelor   (OR, 1.82; 95%CI, 0.678-4.886) and Pharm D Pharm D (OR, 1.889; 95%CI, 0.608-5.865) compared to diploma.

Finally, regarding concern the results showed that female highly concerned about COVID-19 were more likely to have concern compared to male (OR, 3.631; 95%CI, 2.164-6.091). Also, the age groups more than 60 years had concern compared other groups (OR, 2.2; 95%CI, 1.771-6.275). The results showed that morning and evening shift (OR, 3.492; 95%CI, 1.438-8.475) have concern. Also, central address   (OR, 2.354; 95%CI, 1.154-3.813) has more concern compared to others address.

The results revealed that concern elevated among who have diagnose with COVID-19 before (OR, 1.914; 95%CI, 1.085-3.375) and the results showed that if any of your staff

members tested positive for COVID-19 not associated with concern (OR, 1.5; 95%CI, 1.897-2.507). The results showed that who have a disease that increases the risk of contracting the virus (OR, 6.459; 95%CI, 2.027-20.579) have concern compared to those haven't (Table 13) in Appendix D.

Chapter Four

Discussions and Conclusions

4.1. Discussions

Pharmacists are vital contributors to the healthcare team and are active participants [35], in times of medical emergency, pharmacists have a dual role as healthcare providers. They are crucial in improving the standard of patient care in their professional capacity. They take on the moral duty of promoting health awareness and preventing the spread of false information in their particular societies as members of a collective [36]. The main aim of the study is to assess perception and practice of community pharmacists in Palestine towards COVID-19 pandemic and to evaluate the concern and anxiety of community pharmacists from COVID-19 and the factors that may affect it. In general, Palestinian pharmacists appear to have satisfactory knowledge and practice, but they are high concern and worries regarding COVID-19. In this study, 79.3 of pharmacists were <40 years old. That is more in line with the general population's features. 75.5% of the pharmacists working in Palestine are <45 years [37].

The majority of participants (87.3%) demonstrated medium to good general knowledge regarding COVID-19. The knowledge score of this study is comparable to a study conducted in Egypt among senior pharmacy students (83%) [38], pharmacy students in Saudi Arabia (82%) [39], and health care worker in china (89%) [24], While our knowledge score were higher than the knowledge of pharmacists in Pakistan (71.5%) [40].

We found that more than half of the participants expected the source of COVID-19 to be the animal which goes in line with research conducted by York et al., (2020) who tested the phylogenetic relations between COVID-19 and a recently sequenced bat CoV Utilizing whole genomes and viral gene sequences, York et al., (2020) studied a close phylogenetic connection between COVID-19 and a bat CoV (96% identical at the whole genome level), suggesting a bat origin of COVID-19 [41].

This finding was supported by other studies, and they demonstrated that genetic similarity results of novel coronavirus with SARS-like bat viruses confirmed the claim that only bats might be the primary reservoirs COVID-19 [42], [43]. Another study found that genomes of pangolin coronaviruses share 85.5% to 92.4% of the same sequence as

COVID-19, indicating that pangolins should be taken into account as potential hosts in the emergence of COVID-19 [44].

In this study, about three-fourths of the participants stated that COVID-19 symptoms are worse among diabetic patient, this has been proved in many studies.

Kumar A. et al., (2020) found that diabetes in cases with COVID-19 is allied with a two-fold rise in mortality as well as severity of COVID-19, compared to non-diabetics, moreover, diabetes mellitus has been connected with severe COVID-19, including ICU (Intensive care unit) requirement, invasive ventilatory requirement and risk of ARDS (Acute Respiratory Distress Syndrome) [45].

Another study conducted in Italy shows that more than two-thirds of COVID-19 patients who died by severe acute respiratory syndrome had diabetes [46]

Singh K.A et al., (2020) reported that, diabetes and related complications can increase the risk of mortality and morbidity during acute infections because of humoral immune functions and suppressed innate. The levels of glycated hemoglobin (HbA1c) > 9% were connected to a 60% increased risk of hospitalization and pneumonia-related severity during bacterial infection [47].

But the pathogenesis of the elevated mortality and severe COVID-19 in diabetic patients is still unclear [45].

Rajpal et al., (2020) explains the relation between the severity of COVID-19 and type 2 diabetes mellitus (T2DM). They suggested that individuals with T2DM have higher levels of chronic inflammation preceding the developing of COVID-19. This is largely because the variety of illnesses that are present in these individuals including, elderly people, hypertension, obesity, cardiovascular disease, and dyslipidemia. He supposes that after a viral infection, persistent inflammation increases significantly. This leads to elevated expression of ACE2 in lungs and other tissues, increases viral entrance and load, which significantly stimulates existing inflammation in T2DM patients. The last common pathway leading to severe COVID-19 cases appears to be combined with an overactive immunological response (a "cytokine storm") [48].

Additionally, COVID-19 infection and type 2 diabetes mellitus have also shared pathogenic pathways which have therapeutic implications [49].

Two of the COVID-19 receptors, angiotensin converting enzyme 2 (ACE2) and DPP4 are also transducers of metabolic pathways control glucose homeostasis, inflammation and renal and cardiovascular physiology. Since DPP4 inhibitors have the ability to lower blood glucose levels, they are frequently utilized in patients with type 2 diabetes. The effects of DPP4 inhibition on the immunological response in diabetic patients, however, are still debatable and little understood [50].

However, DPP4 acts as the MERS-CoV receptor, just like ACE-2 does for SARS-COV and COVID-19[47]. According to experimental research, specific DPP-4 polymorphisms have been related to a lower risk of MERS-CoV infection [51]. This discovery may help to explain why there have been no MERS-CoV infections in Africa despite the virus being present in camels. It is likely as Africans frequently have protective DPP-4 polymorphisms [51]. Moreover, the possibility of using DPP4 inhibitors (DPP4i) to lessen MERS-CoV viral entry has created a great deal of attention. In one in vitro investigation, sitagliptin, vildagliptin, and saxagliptin were unable to stop the coronavirus from infecting cells with its viral particles [52].

Participant expected that using steroids increases vulnerability to coronavirus infection, and this was reported by Wang et al., (2020). Corticosteroids are greatly impair the immune system at dosages above 20 mg prednisone equivalent; prolonged use of such doses during an outbreak should be avoided., if reducing corticosteroid therapy is necessary to decrease the risk of infection during the pandemic, a progressive reduction in corticosteroid therapy is advocated, aiming for a dose of less than 10 mg of prednisone or equivalent [53].

On the other hand, when we give glucocorticoids during infection, glucocorticoids may modify inflammation-mediated lung damage that is resulted from COVID-19 and thereby delaying the onset of respiratory failure and mortality. Dexamethasone treatment reduced 28-day mortality in patients hospitalized with COVID-19 who have been getting either invasive mechanical ventilation or oxygen alone at randomization but not in those who have not received any respiratory support [54].

A randomized control trial was conducted in Spain included 277 patients, they discovered that early dexamethasone administration could shorten the duration of mechanical breathing and lower the overall death rate in cases with moderate-to-severe (Acute respiratory distress syndrome) ARDS [55].

Tomazini, B.M., et al., (2020) stated that, a statistically significant increase in the number of days without a ventilator has been observed in cases with COVID-19 and moderate to severe ADRS, (days alive and free of mechanical ventilation) more than 28 days when using the dexamethasone [56].

Yang, Z., et al., (2020) concluded that, Glucocorticoids reduce inflammatory cell exudation, capillary dilatation in the early stages of inflammation and phagocytosis. The fibroblasts beside their excessive proliferative stage, which have been typically responsible for fibrosis, can be inhibited while the inflammation is at its most severe stage [57].

On the contrary, According to McGee et al., (2008) there is no data demonstrating the advantages of taking corticosteroids for RSV (Respiratory Syncytial Virus) in clinical trials conducted on children [58].

According to a different study, there is no clinical sign to support the use of corticosteroids to treat respiratory infections brought on by RSV, influenza, SARS-CoV, or MERS-CoV. On the other hand, they claimed that the available observational data pointed to higher rates of influenza mortality and subsequent infections, reduced consent of SARS-CoV and MERS-CoV, and the side effects of corticosteroid treatment in survivors [59].

Also, Shanghai, Ling et al., (2020) conducted research on 66 of the 292 patients who were positive for COVID-19, the presence of RNA in different secretions and excreta was examined between groups receiving glucocorticoids and groups getting standard supportive care. And they concluded, the glucocorticoid group had longer viral RNA detection times in oropharyngeal and fecal samples than the non-glucocorticoid group did. As a result, the authors concluded that glucocorticoids are ineffective for treating COVID-19, particularly in people with mild symptoms [60].

In this study about 60% of participants stated that, Hydroxychloroquine (HCQ) wasn't used as a preventative treatment against COVID-19. Which goes in line with research conducted by Martins-Filho et al., (2020) demonstrated no clinical benefits of HCQ as pre- and post-exposure prevention and therapy of outpatients and inpatients with COVID-19, based on randomized control trial [61].

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In this study, about (31.8%) of participants stated that Hydroxychloroquine is the drug that was suggested to treat COVID-19.

Clinical studies have been carried out in China in more than ten hospitals in Wuhan to examine the effectiveness of chloroquine or hydroxychloroquine in the treatment of COVID-19-related pneumonia, and he figured out that chloroquine phosphate is superior to the control treatment in preventing pneumonia exacerbations, improving lung imaging results, and shortening the disease course. Chloroquine's anti-viral and anti-inflammatory properties may be the reason for this medication's strong effectiveness in treating COVID-19 pneumonia patients [62].

Additionally, these drugs have immunomodulatory effects by reducing cytokine production [63]. It is suggested that HCQ can regulate the cytokine storm that develops in late-stage severe illness in patients with COVID-19 infection [64].

Chloroquine and hydroxychloroquine work by block viral entry into cells by inhibiting glycosylation of host receptors, endosomal acidification, and proteolytic processing [63], [65].

HCQ work by inhibit lysosomal activity in antigen-presenting cells (APCs), including B cells and plasmacytoid dendritic cells (pDCs) so preventing antigen processing and major histocompatibility complex (MHC) class II-mediated autoantigen presentation to T cells. This process reduces T cell activation, differentiation and expression of co-stimulatory proteins (e.g., CD154 on CD4+ T cells) and cytokines produced by T cells and B cells (e.g., IL-1, IL-6 and TNF) [66].

On March 26, the study conducted in Taiwan, identified hydroxychloroquine as a potent anti-COVID-19 drug, but some cases are not recommended for use HCQ for those with retinopathy, QTc prolongation in electrocardiograms, glucose-6-phosphatase deficiency, a history of hydroxychloroquine allergy, or who are pregnant or nursing [67].On the other hand Cortegiani A. et al., (2020) reported that HCQ has many undesirable consequences on the renal, hepatic, and hematologic systems, QTc prolongation with ventricular dysrhythmia and will possible cause a major lack of anti-malarial armamentaria [68].

One recent study found that treating 20 individuals with severe COVID-19 with azithromycin (500 mg on day 1, followed by 250 mg per day on days 2-5) greatly

increased the effectiveness of hydroxychloroquine (200 mg three times per day for 10 days) [67].

HCQ and azithromycin combination may result in possible drug-drug interactions. And doctor should be extremely careful to avoid using this combination in individuals who had cardiac conditions, irregular EKGs, dyskalemia, or who regularly used other drugs that interact with each other [69].

On the other hand, Cavalcanti et al., (2020) stated that, Individuals who got hydroxychloroquine, either alone or mixed with azithromycin, had QTc interval prolongation and an increase levels of liver enzyme more commonly than individuals who did not get either medication [70].

About (66.9%) of participants expected azithromycin is the drug that was suggested to treat COVID-19. This is in line with the study conducted by Long, B. et al (2022), who reported that, Azithromycin exhibits COVID-19 in vitro activity and has the possibility to act at different stages of the viral life cycle, its immunomodulatory properties include the capacity to decrease cytokine production, avoid lung fibrosis, or keep the integrity of epithelial cells, so use of azithromycin was related to lower ventilation and mortality days [71]. Azithromycin act on SARS-CoV-2 binding to respiratory cells. Its intracellular accumulation led to a rise in the pH that might impair trans-Golgi network (TGN) and lysosome functions. Poschet et al., has discovered that the treatment of bronchial epithelial cells with 100 µM for 1 h and 1 µM of azithromycin for 48 h led to a rise in TGN pH from 6.1 ± 0.2 to 6.7 ± 0.1 [20]. This rise in pH in TGN might alter glycosylation of hACE2 and other proteins, The rise in the lysosomal pH by azithromycin might also alter the endocytosis process and lysosomal protease's function (furins or cathepsins), which might make the process of fusion difficult [72]. This macrolide has revealed immunomodulatory and antiviral properties in addition to its antibacterial activity, which may be useful for viral infections like COVID-19 [71].

Relying on cell culture and infection multiplicity, it has demonstrated in vitro efficacy against a wide spectrum of viruses (including influenza, rhinovirus, Zika, enterovirus, and Ebola) with a wide range of 50% effective concentrations (EC50) (MOI) [73], Moreover, it acts on a variety of inflammatory cells, including macrophages, fibroblasts, and monocytes to reduce the hypersecretion of pro-inflammatory cytokines and chemokines

[10]. Its use was related with a reduction of IL-1β, IFN-γ, GM-CSF, TNF-α, IP-10, IL-4, IL-5, IL-6, IL-8, and IL-12 [74].

In our study only 60 participant (19%) expected that remdesivir could be used to manage COVID-19. Jean, S.S (2020) explain why remdesivir can be effective in treating COVID-19 they reported that Remdesivir acts by inhibiting the activity of RNA-dependent RNA polymerase (RdRp) of the virus, and they concluded that remdesivir is thought to be the most effective antiviral medication for COVID-19 treatment [65].

The US-FDA authorized an emergency use authorization (EUA) for remdesivir on the 1st of May 2020 based on the preliminary clinical research demonstrating the COVID-19 patients recovered quickly [75] [76].

In a clinical trial study, COVID-19 patients have been managed by using remdesivir for 10 days, on the first day, they were given 200 mg intravenously. Then, they given 100-mg intravenous every day dose has been continued for another 9 days. The findings demonstrated clinical improvements for 36 of 53 patients (68%) [77].

In our study, only about half of the participants expected that oseltamivir has been used in the management of COVID-19, More studies are needed there to reveal the effectiveness of antiviral medications in managing the individuals with COVID-19. Oseltamivir was predicted to be the antiviral drugs against COVID-19, according to Zhou, L. et al., (2020) study who evaluated and tested 96-virus drug and 78 small molecules and after full genomic sequence similarity of the virus and chemical structure similarity of medications led to the conclusion that this drug has higher molecular binding energies with ACE2 [78]

Zendehdel, A., et al., (2022) stated that oseltamivir was found to be more effective than usual regimen therapy alone in promoting quick healing and faster hospital discharge. It was also linked to a decreased mortality rate. [79], and this was confirmed by Chiba, S., (2021) through his study on Oseltamivir who confirmed the effectiveness of Oseltamivir in the treatment of COVID-19 and it has a role in reducing the duration of symptoms such as heat, fatigue, and cough [80].

In our study, the majority of participants stated that the source of information about COVID-19 was from social media (66.9%), followed by HCWs (48.7%) as their main source to have information about COVID-19. These findings were similar to the finding

of Basheti, I.A. et al., (2021) (59.5%) [35], Saqlain et al., (2020) (87.7%) [81], Muhammad, K. et al., (2021) (45.3%) [40], and Huynh et al., (2020) (91.1%) [82].

Contrarywise, DemIrkan et al., (2020) stated that the individuals usually made use of Internet, newspapers, and television as a primary source to have information about COVID-19 [83].

The majority of participants (83.8 %) stated that nonsteroidal anti-inflammatory drugs like Ibuprofen doesn't raise the risk of complications when utilized throughout viral infections. In fact, this point is still controversial, and the unclear or contradictory information can lead to confusion for both patients and clinicians [84] Basheti, I.A. et al., (2021) reported in her study when NSAID use during viral infections, it can raise the risk of complication [35]. The WHO first suggested against the usage of Ibuprofen in managing COVID-19 cases but later came to the conclusion that there wasn't enough data to back up this recommendation [85].

Fang et al., (2020) study reported that NSAIDS are believed to enhance angiotensin-converting enzyme 2 expression (ACE2). A hazard with NSAIDs during the COVID-19 pandemic is the probable rise in infection risk caused on by the overexpression of ACE2, the SARS-CoV2 virus's cellular entry site [86].

About (91.4%) of respondents in this study stated that consuming food like garlic and mushrooms is helpful for their immune system, and this was clear in many studies [87-89]

Thuy, B.T.P. et al., (2020) reported that garlic essential oil has 18 active ingredients, including 17 organosulfur compounds. According to the finding, these organosulfur compounds, which make up 99.4% of the garlic essential oil, interact strongly with the amino acids of the ACE2 protein and the primary protease PDB6LU7 of the COVID-19, and the most abundant components in garlic essential oil, allyl disulfide and allyl trisulfide, which exhibit the strongest anti coronavirus activity (51.3 %). And they concluded that garlic essential oil is an effective natural source of antivirus that helps to prevent coronavirus from entering the human body [87].

In our study, (81.8%) of the participants mentioned that pregnant females are never at-risk group of having the disease, but in fact, there are many studies that have proven a relationship between increased infection with the COVID-19 and pregnancy. Dashraath

P. et al., (2020) found that, pregnant women may be more susceptible to be infected by COVID-19 because of physiological changes in the immunological and respiratory systems [90]. A study in the United States found that the prevalence of COVID-19 in pregnant females was (9.0%) [91].

In the practice domain, the majority of community pharmacists questioned reported good safety habits and COVID-19 infection prevention strategies, (87.6%) of the participants demonstrated good practices toward COVID-19. The practices score of this study is comparable to a study conducted in healthcare workers in Hospitals in Saudi Arabia (88.7%) [81], another study conducted in Saudi Arabia found that (80.2%) of healthcare workers in hospitals have good practice against COVID-19 [34], another study conducted in china among HCW found that (89.7%) followed correct practices regarding COVID-19. In this study, the practice scores were much higher than the practice scores in Pakistan (57.3%) [40],

Washing hands while working in the pharmacy was the most common participant behavior overall, followed by donning a face mask (87%). A recently study conducted study in Pakistan reported that about (90.6%) cleaned their hands at their workplace and (91.6%) of the pharmacists made use of face masks [40]. Another study revealed that only 8.9% of pharmacists made use of face masks and that 84.8 percent of them cleansed their hands at work [83]. Health care professionals can stop the transmission of COVID-19 by washing their hands with water and soap at certain intervals and keeping great personal hygiene standards. However, the least practice noted amongst respondents has been wearing eyeglasses to protect eyes (17.5%).

In our study, age was not predictor of high knowledge and practice. In contrast to prior research, Turkish hospital pharmacists' age was correlated with high knowledge and practices [83]. Gender was a factor in determining knowledge, where females had the highest knowledge score. This may be because females spend more time with their children than male, and her fear of transmitting the infection to their children prompts female to educate more about the disease.

In the present study, it was detected that health status is factor that influences the participants' practice towards COVID-19 infection, pharmacists who have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.) had highest practice score, This may be because the pharmacist who have

chronic diseases is trying to protect himself from COVID-19, because the severity of viral symptoms is more and the death rate is higher for those with chronic diseases [92].

For concern and worries domain, we found that 35.6% of the pharmacists had high concern, and this rate was higher compared to earlier studies carried out among HCWs in the early phases of the pandemic [93-96]. This may be because our study was done at the beginning of the Corona pandemic, where the level of anxiety was high from the Corona virus.

Another study was performed in Saudi Arabia found the same findings in our study, about 33.3% of HCW had severe or extremely severe anxiety [97].

Moreover, this study found that worries about contracting the illness and spreading it to one's family and friends greatly raise the anxiety level. This is in line with research findings from other studies conducted on healthcare professionals or the general public [98], [99].The participants' excessive concern about this issue emphasizes the necessity for interventions.

In this study the majority of pharmacists (64.7%) don't concern about access to adequate protective equipment, in contrast to other studies that stated that pharmacists have a high level of concern about the lack of access to proper protective equipment [100], [19].

Providing adequate protective equipment for HCW in future pandemics is necessary for both their physical and mental health. According to a study on emergency medical practitioners, doctors believe that the best way to reduce their stress is to make personal protective equipment more accessible [100].

In this investigation, we examined the relationships between different demographic characteristics and concern problems. Female participants were significantly more anxious than males, this finding is in line with other studies [101-103].

In this study older age group had significantly higher rates of anxiety than the younger group. This is consistent with a study conducted in Spain and explained that because the lethality of COVID-19 in this age range [104].

In contrast, the study of Almalki et al., (2021) stated that compared to older age groups, younger age groups had significantly higher prevalence rates of depression and anxiety among health care worker [97].

Our results indicated that pharmacist with chronic illnesses had significantly higher prevalence rates of concern and anxiety, this result is consistent with the research, which indicates that patients with chronic illnesses are more likely to experience stress, anxiety, and depression [104],[97]. This may be explained by the early pandemic finding that individuals with chronic illnesses are more likely to experience severe and potentially lethal complications. COVID-19 infection [105].

Elbeddini et al., (2020) link pharmacists' anxiety to having to work for a prolonged period of time [19].This is similar to the outcomes of our study, where the pharmacist who works in the morning and evening shifts has a higher rate of concern than the pharmacist who works in the morning or evening shifts. On the contrary, a study was conducted in Turkey and concluded that, there has been no statistically major difference in anxiety scores between those who had to work for prolonged period of time and those who did not [98].

In this study, the pharmacist who was infected with the COVID-19 was more concern than others who had not infected. This result is consistent with the study of Alzaid et al., (2020) who found that, primary health care provider who was infected with COVID-19 were more likely to experience stress and anxiety [102].

4.2. Conclusion and Recommendations

Our findings revealed that there was a good level of perception and practices of community pharmacist towards COVID-19. But there are high levels of concern present among Palestinian community pharmacist toward COVID-19.

We recommend the relevant authorities to develop a structured training program to increase pharmacists' expertise and knowledge about COVID-19.

Intervention programs targeting community pharmacists should be done. And pharmacists should be encouraged to receive therapy and support on a psychological level.

4.3. Limitations

The validity of the data may have been affected because we asked the pharmacist to fill out the questionnaire alone. . Follow-up studies are needed to fully understand the impact of the pandemic. Because this study was carried out during a medical emergency, it's possible that some of the findings have since changed.

The viewpoints expressed may not be representative of all Palestinian pharmacists even if an adequate sample size was obtained and the study was only done in the West Bank.

List of Abbreviations

Abbreviation	Meaning
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus2
COVID-19	Coronavirus disease -19
SARS-COV	Severe Acute Respiratory Syndrome-Coronavirus
MERS-CoV	Middle East Respiratory Syndrome-Coronavirus
WHO	World health organization
VOCs	Variants of Concern
UK	United Kingdom
FIP	International Pharmaceutical Federation
HCWs	Healthcare Workers
PPE	Personal protective equipment
PCR	Polymerase chain reaction
CRP	C-reactive protein
CBC	Complete Blood Count
ICU	Intensive Care Unit
ARDS	Acute Respiratory Distress Syndrome
T2DM	Type 2 diabetes mellitus
HbA1c	Glycated hemoglobin
DPP4	Dipeptidyl peptidase 4 inhibitors
ARDS	Acute Respiratory Distress Syndrome
HCQ	Hydroxychloroquine
CQ	Chloroquine
PDC	plasmacytoid dendritic cells
MHC	Histocompatibility complex
TGN	Trans-Golgi network
RdRp	RNA-dependent RNA polymerase
EC50	Effective Concentrations 50%
EUA	Emergency use authorization
NSAID	Non-steroidal anti-inflammatory drugs.

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Appendices

Appendix A: English version of questionnaire

Section one: Demographic data

❖ **Sex**
- ☐ Male
- ☐ Female

❖ **Age**
- ☐ 22-30
- ☐ 31- 40
- ☐ 41-60
- ☐ >60

❖ **Marital status**
- ☐ Married
- ☐ Un- married (single, divorced, widowed)

❖ **Educational level**
- ☐ Diploma
- ☐ Bachelor
- ☐ Pharm D

❖ **Experience (years)**
- ☐ <5
- ☐ 5-10
- ☐ >10

❖ **Employment**
- ☐ Pharmacy owner
- ☐ Pharmacy employee

❖ **Pattern of working**
- ☐ Morning time
- ☐ Evening time
- ☐ Morning and evening

❖ **How many hours do you work daily?**
- ☐ 5-8
- ☐ >8

❖ **Address of your work**
- ☐ Northern Governorates
- ☐ Southern Governorates
- ☐ Central Governorates
  - ❖ **Have children**
- ☐ Yes
- ☐ No

❖ **If yes, how old is the youngest child? ----------**

❖ **Number of family members? -----------**

- ❖ **Do you smoke?**
  - ☐ Yes
  - ☐ No
- ❖ **Have you been diagnosed with COVID-19?**
  - ☐ Yes
  - ☐ No
- ❖ **Was any of your staff members tested positive for COVID-19?**
  - ☐ Yes
  - ☐ No
- ❖ **Do you have medical conditions that increase the risk of contracting the virus (diabetes, asthma, COPD, etc.)?**
  - ☐ Yes
  - ☐ No

Section two: Perception

1) Corona Virus Origin

☐ Laboratories
☐ Animal
☐ Human

2) Incubation Period

☐ 2-7 days
☐ 2–14 days
☐ More than 14 days

3) Diagnostic Testing

☐ PCR
☐ CRP
☐ CBC

4) Main method of transmission

☐ Coughing and Sneezing
☐ Contaminated surfaces
☐ Fecal-Oral Rout
☐ Body Fluids
☐ Sputum Secretion.

5) Patients at-Risk for contacting COVID19

☐ Older Adults
☐ Chronic Diseases
☐ Weakened Immunity
☐ Pregnant
☐ Smoker
☐ Children
☐ Adult Female
☐ Adult Male

6) COVID-19 symptoms are worse among diabetic patients

☐ Yes
☐ No

7) Non-steroidal anti-inflammatory drugs such as Ibuprofen can increase the risk of complications when used during viral infections

☐ Yes
☐ No

8) Using steroids do not increase vulnerability to coronavirus infection

☐ Yes
☐ No

9) The use of autoimmune disease treatments increases the susceptibility to contract coronavirus infection

☐ Yes
☐ No

10) Oseltamivir has not been used in the management of coronavirus infection cases

☐ Yes
☐ No

11) Hydroxychloroquine has not been used as a preventative therapy against coronavirus infection

☐ Yes
☐ No

12) Eating food like mushrooms and garlic is beneficial for the immune system

☐ Yes
☐ No

13) How long does it take to wash hands with soap protect from spreading the infection?

☐ 10 second
☐ 15 second
☐ 20 second
☐ 30 second

14) Which of the following medicines is suggest as a treatment of corona virus?

☐ Remdesivir
☐ Hydroxychloroquine
☐ NSAID
☐ Azithromycin

15) The source of information you use to read about the disease.

☐ Journals
☐ Health staff
☐ Social media
☐ TV

Section three: Practice

1. Are you wearing eyeglasses to protect your eyes while performing your job at the pharmacy?

☐ Always
☐ Rarely
☐ Never

2. Do you wear a mask during your work shift?

☐ Always
☐ Rarely
☐ Never

3. Do you put gloves during your work shift?

☐ Always
☐ Rarely
☐ Never

4. Are you able to wash your hands during your shift?

☐ Always
☐ Rarely
☐ Never

5. Are you able to rub your hands with hydro-alcoholic gel during your work shift?

☐ Always
☐ Rarely
☐ Never

6. Are you able to maintain social distancing of at least 1.5 m from work colleagues?

☐ Always
☐ Rarely
☐ Never

7. Are you able to avoid touching eyes, nose, and mouth?

☐ Always
☐ Rarely
☐ Never

8. Are you able to stay at home if not feeling well?

☐ Always
☐ Rarely
☐ Never

Section four: Concern and worry from COVID-19

1) **Are you worried about working in the community pharmacy during COVID 19 pandemic?**

☐ Very anxious
☐ Moderate anxious
☐ Little anxious
☐ No change

2) **Are you afraid of getting infected with COVID-19 due to occupational exposure?**

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me.

3) **Are you afraid of transmitting the infection to your family or friends?**

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me.

4) **Are you stress because your pharmacy does not have precautionary measures in place (lack of protective screen, policy on social distancing, availability of face masks, etc.)**

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me

5) **Are you concern from the laws in your pharmacy prevents you to take necessary precautions to prevent yourself from COVID19?**

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me

6) **Are you concern about, we not having rapid access to testing if they develop COVID-19 symptoms and concomitant fear of propagating infection at work?**

☐ Miner concern
☐ Moderate concern
☐ Major concern

☐ Not applicable to me.

7) Are you concern about uncertainty the organization will support/take care of personal or family needs if the pharmacist develop infection?

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me.

8) If you have comorbid conditions putting you at a high risk of getting COVID-19 (Diabetes mellitus, COPD, asthma) are you concern from this condition?

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me

9) When you have respiratory symptoms, do you worry about whether you will be infected

☐ Miner concern
☐ Moderate concern
☐ Major concern
☐ Not applicable to me

Appendix B: Arabic version of questionnaire

القسم الأول: البيانات الديموغرافية

❖ **الجنس**
- ☐ ذكر
- ☐ أنثى

❖ **العمر**
- ☐ أقل من 40 عام
- ☐ أكثر من 40 عام

❖ **الحالة الاجتماعية**
- ☐ متزوج
- ☐ غير متزوج

❖ **المستوى التعليمي**
- ☐ دبلوم
- ☐ بكالوريوس
- ☐ دكتور صيدلة

❖ **الخبرة (سنوات)**
- ☐ أقل من 5
- ☐ 5-10
- ☐ أكثر من 10

❖ **طبيعة الوظيفة**
- ☐ مالك صيدلية
- ☐ موظف صيدلية

❖ **نمط العمل**
- ☐ شفت صباحي
- ☐ شفت مسائي
- ☐ صباحي ومسائي

❖ **كم ساعة تعمل يوميا؟**
- ☐ 5-8
- ☐ 8<

❖ **عنوان العمل**
- ☐ المحافظات الشمالية
- ☐ المحافظات الوسطى
- ☐ المحافظات الجنوبية

❖ **هل لديك أطفال؟**
- ☐ نعم
- ☐ لا

❖ **إذا كانت الإجابة نعم، كم عمر أصغر طفل؟ ....**
❖ **كم عدد أفراد الأسرة؟ ....**
❖ **هل أنت مدخن؟**
- ☐ نعم
- ☐ لا

❖ **هل سبق أن تم تشخيصك بفيروس كورونا؟**
- ☐ نعم

☐ لا

❖ هل تم اصابة اي من افراد طاقم العمل بالمرض؟

☐ نعم

☐ لا

❖ هل لديك حالات مرضية تزيد من خطر الاصابة بالفيروس (داء السكري، الربو، مرض الانسداد الرئوي المزمن، إلخ)، فهل أنت قلق من هذه الحالات التي تعرضك لخطر الإصابة بـالفيروس؟

❖ نعم

❖ لا

❖

القسم الثاني: المعارف الأساسية

1. **أصل فيروس كورونا**
   ☐ المختبرات
   ☐ الحيوان
   ☐ البشر

2. **فترة الحضانة للفيروس**
   ☐ 2-7 أيام
   ☐ 2-14 يوم
   ☐ أكثر من 14 يوم

3. **الاختبار التشخيصي**
   ☐ CBC
   ☐ RCP
   ☐ PCR

4. **الطريقة الرئيسية لانتقال المرض**
   ☐ السعال والعطس
   ☐ الأسطح الملوثة
   ☐ طريق البراز الفموي
   ☐ سوائل الجسم

5. **الفئات الأكثر عرضة للإصابة بالفيروس (يمكن اختيار أكثر من اجابة)**
   ☐ كبار السن
   ☐ الأمراض المزمنة
   ☐ الأشخاص الذين يعانون من ضعف المناعة
   ☐ المدخنون
   ☐ الحوامل
   ☐ الأطفال
   ☐ الاناث
   ☐ الذكور

6. **أعراض الفيروس أسوأ بين مرضى السكري**
   ☐ نعم
   ☐ لا

7. **مضاد الالتهابات غير الستيرويدية مثل الإيبوبروفين يمكن أن تزيد من خطر حدوث مضاعفات عند استخدامها أثناء العدوى**
   ☐ نعم
   ☐ لا

8. **استخدام الستيرويد يزيد من التعرض للإصابة بفيروس كورونا**
   ☐ نعم
   ☐ لا

9. **يزيد استخدام علاجات أمراض المناعة الذاتية من قابلية الإصابة بعدوى فيروس كورونا**
   ☐ نعم
   ☐ لا

10. **يتم استخدام الأوسيلتاميفير في علاج الحالات المصابة بالفيروس**
   ☐ نعم
   ☐ لا

11. يتم استخدام هيدروكسي كلوروكين كعلاج وقائي ضد عدوى فيروس كورونا

☐ نعم

☐ لا

12. تناول أطعمة مثل الفطر والثوم مفيد لجهاز المناعة

☐ نعم

☐ لا

13. أي من الأدوية التالية تم اقتراحه كعلاج لفيروس كورونا؟

Remdesivir ☐

Hydroxychloroquine ☐

NSAID ☐

Azithromycin ☐

14. كم المدة الكافية لغسل اليدين بالصابون للقضاء على الجراثيم

☐ 10 ثواني

☐ 15 ثانية

☐ 20 ثانية

☐ 30 ثانية

15 مصدر المعلومات الذي تستخدمه للقراءة عن المرض

☐ المجلات

☐ مواقع التواصل الاجتماعي

☐ التلفزيون

☐ الكادر الصحي

القسم الثالث: قسم الممارسة

1) هل ترتدي نظارة لحماية عينيك أثناء أداء عملك في الصيدلية؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

2) هل ترتدي كمامة أثناء أداء عملك في الصيدلية؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

3) هل ترتدي قفازات أثناء أداء عملك في الصيدلية؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

4) هل تستطيع غسل يديك أثناء العمل؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

5) هل يمكنك تعقيم يديك بالجل الكحولي أثناء أداء عملك؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

6) هل أنت قادر على الحفاظ على مسافة لا تقل عن 1.5 متر من المرضى أو زملائك في العمل؟

- ☐ أبدا
- ☐ دائما
- ☐ غالبا
- ☐ نادرا

7) هل أنت قادر على تجنب لمس العينين والأنف والفم؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

8) هل يمكنك البقاء في المنزل اذا لم تكن على ما يرام؟

- ☐ أبدا
- ☐ غالبا
- ☐ نادرا

القسم الرابع: القلق من الفيروس

1. هل أنت قلق بشأن العمل في صيدلية المجتمع أثناء الجائحة؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

2. هل تخشى الإصابة بالمرض بسبب عملك بالصيدلية؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

3. هل تخشى نقل العدوى إلى عائلتك أو أصدقائك؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

4. هل أنت متوتر بسبب عدم وجود تدابير وقائية في الصيدلية الخاصة بك (نقص الشاشة الواقية، وسياسة التباعد الاجتماعي، وتوافر أقنعة الوجه، وما إلى ذلك)
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

5. هل أنت قلق من القوانين في الصيدلية التي تمنعك من اتخاذ الاحتياطات اللازمة لمنع نفسك من الاصابة بالعدوى؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

6. إذا كان لديك حالات مرضية تزيد من خطر الاصابة بالفيروس (داء السكري، الربو، مرض الانسداد الرئوي المزمن، إلخ)، فهل أنت قلق من هذه الحالات التي تعرضك لخطر الإصابة بـالفيروس؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

7. هل أنت قلق بشأن عدم وجود وصول سريع للاختبار إذا ظهرت عليك أعراض المرض وما يصاحب ذلك من خوف من انتشار العدوى في العمل؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا
   ☐ غير قلق

8. هل أنت قلق بشأن عدم وجود من يعتني باحتياجاتك الشخصية أو العائلية إذا أصبت بالعدوى؟
   ☐ قلق جدا
   ☐ متوسط القلق
   ☐ قليلا

☐ غير قلق

9. عندما يكون لديك أعراض تنفسية، هل تقلق حول ما إذا ستكون مصاب بالمرض

☐ قلق جدا

☐ متوسط القلق

☐ قليلا

☐ غير قلق

Appendix C: Institutional Review Board (IRB) approval

An-Najah
National University
Faculty of medicine Sciences &
Health
Institutional Review Board

جامعة النجاح
الوطنية
كلية الطب وعلوم الصحة
لـجنة اخلاقيات البحث
العلمي

Ref: Pharm . Jan.2021/8

IRB Approval Letter

Study Title:

"Knowledge and practices of community pharmacist about COVID-19 and the effect of COVID-19 on the mental health of the Palestinian community pharmacist"

Submitted by:
Alaa Adnan Qassem Najjar

Supervisor:
Adham Abu Taha , Waleed Sweileh
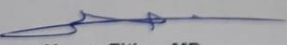
Date Approved:
14th Jan. 2021

Your Study Title "Knowledge and practices of community pharmacist about COVID-19 and the effect of COVID-19 on the mental health of the Palestinian community pharmacist" viewed by An-Najah National University IRB committee and was approved on 14th Jan. 2021

Hasan Fitian, MD

IRB

IRB Committee Chairman
An-Najah National University

Appendix D

Tables

Table 11

Concern and worries in community pharmacy after the COVID-19

Question	Very anxious	Moderate anxious	Little anxious	No change
Are you worried about working in the community pharmacy during COVID 19 pandemic?	58 (18.5%)	130 (41.4%)	79 (25.2%)	47 (15%)
Are you afraid of getting infected with COVID-19 due to occupational exposure?	63 (20.1%)	124 (39.5%)	81 (25.8%)	46 (14.6%)
Are you afraid of transmitting the infection to your family or friends?	180 (57.3%)	91 (29%)	33 (10.5%)	10 (3.2%)
Are you stress because your pharmacy does not have precautionary measures in place (lack of protective screen, policy on social distancing, availability of face masks, etc.)	25 (8%)	86 (27.4%)	92 (29.3%)	111 (35.4%)
Are you concern from the laws in your pharmacy prevents you to take necessary precautions to prevent yourself from COVID19?	20 (6.4%)	78 (24.8%)	79 (25.2%)	137 (43.6%)
Are you concern about, we not having rapid access to testing if they develop COVID-19 symptoms and concomitant fear of propagating infection at work?	51 (16.2%)	117 (37.3%)	63 (20.1%)	83 (26.4%)
Are you concern about uncertainty the organization will support/take care of personal or family needs if you get infection?	70 (22.3%)	75 (23.9%)	67 (21.3%)	102 (32.5%)
When you have respiratory symptoms, do you worry about whether you will be infected	88 (28%)	116 (36.9%)	80 (25.5%)	30 (9.6%)
If you have comorbid conditions putting you at a high risk of getting COVID-19, are you concern from this condition?	25 (49 %)	14 (27.5%)	8 (15.7%)	4 (7.8%)

Table 12

Concern and worries related to COVID-19 among community pharmacists

Variable	Total n%	Concern and worries related to COVID-19 among community pharmacists		
		Low n%	Moderate n%	Sever n%
Gender, n%				
Female	160 (51)	28 (29.5)	72 (55.4)	60 (67.4)
Male	154 (49)	67 (70.5)	58 (44.6)	29 (32.6)
Age, n%				
22 - 30	111 (222)	37 (38.9)	50 (38.5)	24 (27)
31 - 40	138 (276)	46 (48.4)	52 (40)	40 (44.9)
41 - 60	38 (76)	7 (7.4)	17 (13.1)	14 (15.7)
>60	27 (54)	5 (5.3)	11 (8.5)	11 (12.4)
Material status,				
Married	210 (66.9)	65 (68.4)	84 (64.6)	61 (68.5)
None- married (single, divorced, widowed)	104 (33.1)	30 (31.6)	46 (35.4)	28 (31.5)
Educational level				
Diploma	30 (60)	12 (12.6)	15 (11.5)	3 (3.4)
Bachelor	207 (414)	64 (67.4)	77 (59.2)	66 (74.2)
Pharm D	77 (154)	19 (20)	38 (29.2)	20 (22.5)
Years of experience				
<5	117 (37.3)	35 (36.8)	48 (36.9)	34 (38.2)
5--10	98 (31.2)	28 (29.5)	39 (30)	31 (34.8)
>10	99 (31.5)	32 (33.7)	43 (33.1)	24 (27)
Employment				
Pharmacy owner	114 (36.3)	33 (34.7)	52 (40)	29 (32.6)
Pharmacy employee	200 (63.7)	62 (65.3)	78 (60)	60 (67.4)
Pattern of working				
Morning time	122 (38.9)	51 (53.7)	44 (33.8)	27 (30.3)
Evening time	87 (27.7)	16 (16.8)	46 (35.4)	25 (28.1)
Morning and evening	105 (33.4)	28 (29.5)	40 (30.8)	37 (41.6)
Working hours				
5--8	206 (65.6)	74 (77.9)	80 (61.5)	52 (58.4)
>8	108 (34.4)	21 (22.1)	50 (38.5)	37 (41.6)
Address of work				
North	158 (50.3)	46 (48.4)	70 (53.8)	42 (47.2)
South	69 (22)	31 (32.6)	21 (16.2)	17 (19.1)
Center	87 (27.7)	18 (18.9)	39 (30)	30 (33.7)
Have children?				
Yes	175 (55.7)	47 (49.5)	76 (58.5)	52 (58.4)
No	139 (44.3)	48 (50.5)	54 (41.5)	37 (41.6)
Smoking				
Yes	76 (24.2)	26 (27.4)	29 (22.3)	21 (23.6)
No	238 (75.8)	69 (72.6)	101 (77.7)	68 (76.4)
Have you been diagnosed with COVID-19 before?				
Yes	94 (29.9)	20 (21.1)	39 (30)	35 (39.3)
No	220 (70.1)	75 (78.9)	91 (70)	54 (60.7)
Was any of your staff members tested positive for COVID-19?				
Yes	116 (232)	29 (30.5)	48 (36.9)	39 (43.8)
No	198 (396)	66 (69.5)	82 (63.1)	50 (56.2)
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)				
Yes	49 (15.6)	4 (4.2)	13 (10)	32 (36)
No	265 (84.4)	91 (95.8)	117 (90)	57 (64)

Table 13

Mann-Whitney test and Kruskal-Wallis test of concern and worries related to COVID-19 among community pharmacists

Variable	Total n (%)	Anxiety Median IQR	Mean ranks	Statistical test (p-value)
Gender, n%				
Female	160 (51)	14 (11.25-18)	184.40	**0.000*** [U]
Male	154 (49)	10 (7-15)	129.55	
Age, (years) n%				
22 - 30	110 (35.0)	12 (7.75-15)	140.52	0.0011* [U]
31 - 40	139 (44.3%)	13 (8-16)	157.05	
41 - 60	38 (12.1%)	14 (10.75-18.25)	182.26	
>60	27 (8.6%)	15 (11-19)	194.17	
Material status, n%				
Married	210 (66.9)	13 (9-16)	156.07	0.690 [U]
None- married (single, divorced, widowed)	104 (33.1)	13 (9-16)	160.39	
Educational level				
Diploma	30 (60)	11 (6.75-14.25)	126.82	0.145 [K]
Bachelor	207 (414)	13 (8-16)	161.56	
Pharm D	77 (154)	13 (9.5-16)	158.55	
Years of experience				
<5	117 (37.3)	13 (9-16)	160.33	0.552 [U]
5--10	98 (31.2)	13 (9-16.5)	162.33	
>10	99 (31.5)	12 (8-15)	149.37	
Employment				
Pharmacy owner	114 (36.3)	13 (9-16)	154.20	0.626 [U]
Pharmacy employee	200 (63.7)	13 (9-16)	159.38	
Pattern of working				
Morning time	122 (38.9)	12 (7-15)	137.95	0.010* [K]
Evening time	87 (27.7)	13 (10-16)	169.67	
Morning and evening	105 (33.4)	14 (9-18)	170.13	
Working hours				
5--8	206 (65.6)	12 (8-16)	146.61	0.003* [U]
>8	108 (34.4)	14 (11-17)	178.28	
Address of work				
North	158 (50.3)	13 (9-16)	155.35	0.023* [K]
South	69 (22)	11 (6-15.5)	137.57	
Center	87 (27.7)	14 (10-16)	177.21	
Have children?				
Yes	175 (55.7)	13 (9-16)	160.27	0.543 [U]
No	139 (44.3)	13 (8-16)	154.01	
Smoking				
Yes	76 (24.2)	13 (8-16)	153.37	0.648 [U]
No	238 (75.8)	13 (9-16)	158.82	
Have you been diagnosed with COVID-19 before?				
Yes	94 (29.9)	14 (10-18)	177.42	0.011* [U]
No	220 (70.1)	12 (8-15)	148.99	
Was any of your staff members tested positive for COVID-19?				
Yes	116 (232)	14 (9.25-17)	173.54	0.016* [U]
No	198 (396)	13 (8-16)	148.10	
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)				
Yes	49 (15.6)	18 (14-21)	230.26	0.000* [U]
No	265 (84.4)	12 (8-15)	144.05	

U: Mann-Whitney test and K: Kruskal-Wallis

Table 14

Logistic regression test to predict factors that affected knowledge, practice, and anxiety

Variable	B	S.E.	Wald	P-value	OR	95% C.I.for OR Lower	Upper
Knowledge							
Gender							
Male							Ref
Female	0.890	0.311	8.183	0.004	2.435	1.323	4.481
Educational level			3.81	0.149			
Diploma							Ref
Bachelor	2.00	1.03	3.75	0.053	7.38	0.98	55.76
Pharm D	1.86	1.06	3.09	0.079	6.44	0.81	51.37
Practice							
Age							
22-30							Ref
31 – 40 years	20.39	3.45	2.15	0.995	86	0.100	80
41 – 60 years	0.86	0.49	3.05	0.081	2.355	0.901	180
>60 years	20.39	3.14	2.05	0.998	7.1	-0.3	14.3
Educational level							
Diploma							Ref
Bachelor	0.599	0.504	1.413	0.235	1.820	0.678	4.886
Pharm D	0.636	0.578	1.210	0.271	1.889	0.608	5.865
Do you have a disease that increase the risk of contracting the virus (diabetes, asthma, chronic obstructive pulmonary disease, etc.)							
No							Ref
Yes	2.114	1.025	4.253	0.039	8.283	1.111	61.772
Anxiety							
Gender							
Male							Ref
Female	1.289	0.264	23.849	0.000	3.631	2.164	6.091
Age							
22-30							Ref
31 – 40 years	0.000	0.270	.000	0.928	1.088	0.589	1.699
41 – 60 years	0.795	0.464	2.930	0.087	2.214	0.891	5.502
>60 years	1.788	0.535	2.174	0.015	2.200	1.771	6.275
Pattern of working			16.916	0.000			
Morning time							Ref
Evening time	0.379	0.401	0.893	0.045	1.985	1.312	1.501
Morning and evening	1.250	0.452	7.637	0.006	3.492	1.438	8.475
Working hours (vs.)							
5-8							Ref
>8	0.843	0.283	8.853	0.003	2.323	1.333	4.046
Address of work							
North							Reference
South	0.760	0.371	4.205	0.140	0.468	0.226	0.967
Cantal	1.039	0.424	5.990	0.014	2.354	1.154	3.813
Diagnose with COVID-19 before							
No							Ref
Yes	0.649	0.289	5.031	0.025	1.914	1.085	3.375
Was any of your staff members tested positive for COVID-19?							
No							Ref
Yes	0.405	0.262	2.393	0.022	1.500	.897	2.507
have a disease that increases the risk of contracting the virus (yes)							
No							Ref
Yes	1.866	0.591	9.957	0.002	6.459	2.027	20.579

R: reference value.

جامعــــة النجاح الوطنية

كليــــة الدراســـات العليـــا

تصور وقلق وممارسات صيادلة المجتمع فيما يتعلق بفيروس كورونا

إعداد

ألاء عدنان قاسم نجار

إشراف

د. أدهم أبو طه

أ.د وليد صويلح

2022

تصور وقلق وممارسات صيادلة المجتمع فيما يتعلق بفيروس كورونا

اعداد

ألاء عدنان قاسم نجار

إشراف

د. أدهم أبو طه

أ.د وليد صويلح

الملخص

الخلفية: في الآونة الاخيرة يُعتقد أن كوفيد −19 هو من أحد المخاطر على الصحة العامة. ويُعد صيادلة المجتمع من أوائل العاملين في مجال الرعاية الصحية الذين يعملون بجد خلال هذا الوباء، كما أن دورهم حاسم في منع انتشار كوفيد −19.

الأهداف: تهدف هذه الدراسة إلى تقييم معرفة وممارسة صيادلة المجتمع في فلسطين تجاه جائحة كوفيد −19، وتقييم مخاوف وقلق صيادلة المجتمع من كوفيد −19.

الطريقة: هذه الدراسة هي مقطعية كمية وصفية، تم استخدام استبانة لجمع البيانات، تتكون العينة من314 صيدلانيا يعملون في صيدليات المجتمع، في منطقة الضفة الغربية من فلسطين. تم تطبيق الدراسة في الفترة من 1 شباط 2021 إلى نهاية نيسان (أبريل) 2021.

النتيجة: أظهرت النتائج أن 18.2٪ من المشاركين لديهم مستوى عالٍ من المعرفة حولCOVID−19 ، بينما 69.1٪ لديهم مستوى متوسط من المعرفة و12.7٪ لديهم مستوى منخفض من المعرفة. أظهرت النتائج أن 87.3٪ من المشاركين لديهم مستوى عالٍ من الممارسة المتعلقة بـCOVID−19 ، بينما 12.7٪ لديهم مستوى منخفض من الممارسة. أظهرت النتائج أن 30.3٪ من المشاركين لديهم مستوى قلق مرتفع بينما 41.4٪ لديهم مستوى متوسط من القلق و28.3٪ لديهم مستوى منخفض من القلق. أظهر الانحدار

اللوجستي أن المعرفة تؤثر على الجنس وأن الاناث هم الاعلى معرفة. فيما يتعلق بالممارسة، تأثرت الحالة الصحية بالممارسة، والصيدلاني المصاب بمرض يزيد من خطر الإصابة بالفيروس كان أكثر عرضة لممارسة جيدة، بنفس الطريقة، المشاركين الاناث، المشاركين الذين تزيد أعمارهم عن 60، نمط العمل في الصباح والمساء، عنوان العمل (المحافظات المركزية)، والحالة الصحية (الذين يعانون من مرض يزيد من خطر الإصابة بالفيروس) والذين تم تشخيص إصابتهم بـ COVID-19 هي عوامل تسبب زيادة معدل القلق (P <0.05).

الخلاصة: كشفت النتائج التي توصلنا إليها أن مستوى معلومات الصيادلة وممارستهم تجاه فيروس كورونا مرضية. لكن هناك مستويات عالية من التوتر والقلق بين صيادلة المجتمع الفلسطيني تجاه كوفيد -19.

الكلمات المفتاحية: كوفيد -19، تصور ، ممارسة، قلق، صيدلي المجتمع.