

Pharmacists Knowledge and contribution during COVID-19 pandemic in Sudan, 2020

Nahid Ahmed¹ and Ali Saeed¹

¹Napata College

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Abstract

Introduction: Pharmacist's knowledge about different aspects of this pandemic is crucial because it influence their role and contribution as a frontline health care provider, as pharmacies and most of the pharmacy practice sectors are kept open even during lockdowns providing counseling, patient care. Pharmacist can provide valuable services during COVID-19 pandemic, these services may include: provide reliable information on the disease, participate in public education on preventive measures, referring of suspected cases, insuring continuous supply of medicine. **Methods:** A web-based, cross-sectional study, conducted using survey instrument to obtain responses from Sudanese pharmacists during the period from 26th of May to 3rd of June 2020. A 14-item survey instrument was developed. The web-based cross-sectional study was carried out among Sudanese pharmacists. A self-reported structured questionnaire was divided into three sections: demographic characteristics, questions assessing the knowledge, and one question for the pharmacist contribution during the pandemic. **Results:** The study showed that 51.1% of pharmacists have good knowledge about the COVID-19. The work experience and education level significantly ($P < 0.05$) influence pharmacist knowledge. Majority of pharmacists contribute to different activities during the pandemic, e.g. providing patients with transmission information (94%), Provide factual and reliable information on the diseases symptoms (93.1%), providing patients with prevention information (91.1%). **Conclusion:** The study identified that pharmacists have good knowledge about COVID-19 pandemic Also pharmacists contributed in many activities as a frontline health care provider during this pandemic.

Introduction:

The outbreak of Novel corona virus disease 2019 (COVID-19) is the recent worldwide disaster which is considered by the WHO as a Public Health Emergency of International Concern (PHEIC) ⁽¹⁾. The first case was discovered in Wuhan City, China ^(2, 3) and then after few weeks spread as a global pandemic ^(4, 5).

In Sudan the first reported COVID-19 positive case was in 11 of March 2020, at the time of writing this article (6 March 2020) there were 9081 reported cases.

The novel corona virus can live on hands, surfaces, objects, mucus membranes, body fluids, respiratory secretions, and spread from person to person through the direct contact ^(6, 7), which makes the most effective preventive measures are avoiding close contact with people, hand hygiene, clean and disinfect surfaces ⁽⁸⁾, as there is no specific efficacious treatment or vaccine available for this virus until writing of this paper ^(9, 10).

Pharmacist's knowledge about different aspects of this pandemic is crucial because it influence their role and contribution as a frontline health care provider, as pharmacies and most of the pharmacy practice sectors are kept open even during lockdowns providing counseling, patient care ^(11, 12, 13).

To strengthen pharmacists knowledge about COVID-19, there are many training programs held worldwide, for example the International Pharmaceutical Federation (FIP), and American Pharmacist Association (APhA) have issued guidance, and resource documents ^(14, 15)

Although the role of pharmacist especially in the community is ranging between essential and expanded role according to the policies in different countries ⁽¹⁶⁻¹⁸⁾, but still pharmacist can provide valuable services during COVID-19 pandemic, these services may include: provide reliable information on the disease, participate in public education on preventive measures, referring of suspected cases, insuring continuous supply of medicine ^(19, 20).

Methods

Survey Instrument and Dissemination

A web-based, cross-sectional study was conducted using survey instrument to obtain responses from Sudanese pharmacists during the period from 26th of May to 3rd of June 2020.

A 14-item survey instrument was developed. The web-based cross-sectional study was carried out among Sudanese pharmacists. A self-reported structured questionnaire was divided into three sections: demographic characteristics (4 questions), questions assessing the knowledge (9 questions), and one question for the pharmacist contribution during the pandemic. The questionnaire prepared using the Google forms and the link was shared through social media; Facebook, e-mail, and Whatsapp groups. The purpose of the study was explained to participants prior to attending the survey. The participation of the study was voluntary and only those who are willing participated in the survey.

Data Analysis

For analysis of data, Statistical Package for Social Sciences software, version 21.0 (IBM SPSSInc., Chicago, IL) and STATA 11 were used. Initially, all information gathered via questionnaire then coded into variables. Normality of data was tested using Kolmogorov-Smirnov test and Shapiro-Wilk test. Both descriptive and inferential statistics involving Pearson Chi-Square, Fisher's exact test, Pearson Correlation, One Way ANOVA (Analysis of variances) Test, were used to present results. A p-value of less than 0.05 was considered statistically significant.

Score: In order to have a better assessment of overall knowledge, each correct answer in the knowledge domain carried 1 mark while wrong answer carried 0 mark, also question consist of more than one correct answers one mark was distributed according to number of answers, this gave a total score range of 0 – 10 then converted to percentages.

Ethical Considerations

Survey questions do not include name or contact information, and participation in the study was voluntary.

Results:

Demographic data:

Three hundred forty eight pharmacists participated in the study, 62.1% were female while 37.9% were male. 57.8% from the participants were master holders, 38.8% were bachelor holders and 3.4% were PhD holder.

Regarding participants' work place, 25.9% working as community pharmacists, 17.2% working in pharmaceutical companies and 13.8% working in hospital pharmacy. (Table 1)

The participants' working experience ranges between more than 10 years' experience (37.4%), 5- 10 years' experience (33.9%), and less than 5 years' experience (28.7%).

Table 1: Demographic data

Demographic variables	Percent
Place of work (n=348)	
Hospital pharmacy, Community Pharmacy and Company	0.3%
Clinical pharmacy, Community Pharmacy and Ministry of health	0.3%

Demographic variables	Percent
Community Pharmacy, Academic and Company	0.3%
Hospital pharmacy and Company	0.3%
Hospital pharmacy and Academic	0.6%
Hospital pharmacy and Clinical pharmacy	0.6%
Community Pharmacy and Company	0.9%
Clinical pharmacy and Academic	0.9%
Clinical pharmacy and Ministry of health	1.1%
Community Pharmacy and Academic	1.1%
Clinical pharmacy and Community Pharmacy	1.7%
National medical supply	2.6%
Hospital pharmacy and Community Pharmacy	3.2%
Ministry of health	7.8%
Academic	9.8%
Clinical pharmacy	11.8%
Hospital pharmacy	13.8%
Company	17.2%
Community Pharmacy	25.9%

Knowledge of the participants about COVID- 19:

The majority of participants (80.2%) respond with the right answer about the incubation period for the COVID-19 virus which is 2- 14 days.

About the main methods of transmission of COVID-19 virus, 26.4% and 7.5% of participants give wrong response about possibility of transmission through fecal- oral route, and raw food respectively. While 82.2%, 82.5%, 89.1%, 64.4% and 26.4% choose the right methods of transmission: close contact from person to person, contaminated surface, coughing and sneezing, air droplets and through body fluids respectively.

About the main signs and symptoms associated with COVID-19, 96.6%, 95.1%, 94.8%, 91.4% 91.1% and 68.1% of participants think that main signs and symptoms are fever, shortness of breath, dry cough, headache, general weakness and diarrhea respectively. Also 27.3%, 23.3%, 19% and 5.2% think that the symptoms are anorexia, CT ground- glass opacification, insomnia and ageusia respectively. While 2.3% select the wrong answer edema.

Regarding sever illness risk factors, participants think that chronic illness, older adults, cancer patients, smoker, pregnant women and adult male are at high risk for severe COVID-19, while 7.8% and 4.6% select the wrong answers : children and adult female respectively.

Few participants (9.5%) think that COVID-19 can only gain inside the body through the nose but not through the eyes and mouth. Also only 6% think that healthy carriers of virus who has no cough or fever cannot spread COVID-19. The majority (98.9%) know that the best way to prevent COVID-19 is to avoid crowded and stay at home.

As a response to the question about management of mild cases, 73%, and 96.8% of participants select vitamin D and vitamin C respectively, while some of them select wrong answers e.g. Azithromycin (67.5%), Oxygen (24.4%). For moderate cases 12.6 % select Amoxicillin, 88.5% select Azithromycin, and some of them select wrong answers e.g. Hydroxychloroquine (75.3%), corticosteroids (8.9%). (Table 2)

As general after responding to the knowledge questions, about half of the participants (51.1%) in the study have good knowledge about COVID-19.

Table 2: Pharmacists' Knowledge about COVID-19 Pandemic

Knowledge variables	Percent	Knowledge variables	Percent
COVID-19 can only gain side the body through the nose but not through the eyes and mouth		Incubation Periods for the COVID-19 virus 2-14 days	80.2%
True	9.5%	14-30 days	18.4%
False	90.5%	Up to 45 days	1.4%
Who looks healthy and has no cough or fever cannot spread COVID-19		Main methods of transmission of COVID-19 virus	
True	6%	Raw Food	7.5%
False	94%	Body Fluids	26.4%
		Fecal- Oral Route	26.4%
		Air droplets	64.4%
		Close contact from person to person	82.2% 82.5% 89.1%
		Contaminated surfaces	
		Coughing and sneezing	
The best way to prevent COVID-19 is to avoid the crowd and staying at home		Signs and symptoms associated with COVID-19 Edema	2.3%
True	98.9%	Ageusia	5.2%
False	1.1%	Insomnia	19 %
		CT ground- glass Opacification	23.3%
		Anorexia Diarrhea	27.3% 68.1%
		General weakness	91.1%
		Headache	91.4%
		Dry cough	94.8%
		Shortness of breath	95.1%
		Fever	96.6%
According to Sudan case treatment protocol, the management of mild cases includes		Risk factors for severe-moderate illness of COVID-19	4.6% 7.8%
Corticosteroids	2%	Adult female Children	
Amoxicillin 500 mg	9.2%	Adult male	17.8%
Oxygen	24.4%	Pregnant	64.4%
Azithromycin 500 mg	67.5%	Smoker	79.7%
Vitamin D 1000 IU	73.0%	Cancer patients	82.2%
Vitamin C 1000 IU	96.8%	Older Adults	93.7%
According to Sudan case treatment protocol, the management of moderate cases includes Corticosteroids	8.9%	Chronic Diseases	96%

Knowledge variables	Percent	Knowledge variables	Percent
Amoxicillin 500 mg	12.6%		
Oxygen	55.7%		
Hydroxy chloroquine 400mg	75.3%		
Azithromycin 500 mg	88.5%		

Contribution of pharmacists during COVID-19:

During these pandemic pharmacists as a health care provider participated in different activities. The majority (94%, 93.1%) provide factual and reliable information on the diseases symptoms and transmission information respectively. And other activities e.g. providing patients with prevention information (Table 3)

Table 3: Pharmacists' contribution during COVID-19 pandemic

Contribution variables	Percent of yes
Participate in developing COVID-19 protocols	51.7%
Participate in COVID-19 research efforts	52.9%
Participate in preparation of stock of medications used in of COVID-19 treatment protocols	59.5%
Referral of suspected patients	69%
Participate in synthesizing or distributing sanitizers initiatives	75%
Participate in community awareness programs	76.7%
Providing patients with prevention information	91.1%
Provide factual and reliable information on the diseases symptoms	93.1%
Providing patients with transmission information	94%

There is a significant relationship between work experience and the participants knowledge about COVID-19 (P-value: 0.043) using Pearson Chi-Square and Fisher's Exact test as shown in table 4.

Table 4: Correlation between variables and the knowledge using Chi-Square Test

Variables	Variables	Knowledge score	Knowledge score	Pearson Chi-Square Test P value
		Poor	Good	
Gender	Male	50.00%	50.00%	0.737*
	Female	48.10%	51.90%	
Level of education	Bachelor	54.10%	45.90%	0.205*
	Master	46.30%	53.70%	
Work experience	Less than 5 years	33.30%	66.70%	0.043**
		59.00%	41.00%	
		42.40%	57.60%	
		46.90%	53.10%	

There is a significant relationship between level of education and knowledge score using one way ANOVA-Test (P- value 0.035) as shown in table 5.

Table 5: Correlation between variables and the knowledge using one way ANOVA- Test

One Way ANOVA-Test	One Way ANOVA-Test	One Way ANOVA-Test	One Way ANOVA-Test	One Way ANOVA-Test
Variables	Variables	Number	Knowledge score (%) Mean	Knowledge score (%) Std. Deviation
Level of education	Bachelor	135	73	10
	Master	201	75	8
	PhD	12	78	8
Work experience	Less than 5 years	100	73	9
	5-10 years	118	75	9
	More than 10 years	130	74	9

Discussion:

This study revealed that more than half of the pharmacists (51.1%) have good knowledge about COVID-19 pandemic especially concerning methods of transmission, incubation period, prevention methods and risk of severe illness.

And this type of knowledge is very important as suspected patients and co-patients may reach pharmacists in community pharmacy asking for over the counter medications to relief their symptoms before they seek medical attention, when they get worse, so it is so important that the pharmacists must have the knowledge so as to council those patients, more over this good know edge may help pharmacists to protect themselves from getting infected.

Nevertheless their knowledge about treatment guidelines should be better, for example more than 67% of participants, and more than 24% think that Azithromycin and oxygen respectively is used in the national protocol for treatment of mild cases, while in fact they are not.

Also more than 75% of pharmacists think that hydroxychloroquine is used for treatment moderate cases, while according to the Sudan national protocol it is used for the treatment of severe cases.

Although the Sudan national treatment protocol for COVID-19 is available in the Federal Ministry of Health website ⁽²¹⁾ but it is not widely distributed in the media so pharmacists do not have the sufficient knowledge about this protocol.

Regarding contribution, the majority of participants provide different types of information e.g: information about diseases symptoms (93.1%), transmission information (94%), and prevention information (91.1%).

Different initiatives were acting in Sudan during this pandemic; pharmacists play many roles in these initiatives e.g.: synthesizing or distributing sanitizers (75%), also 76.7% of pharmacists participate in community awareness programs.

More than half of pharmacists participate in referral of suspected patients, developing protocols, research efforts, preparing medication stocks.

The study revealed that work experience and level of education significantly ($P < 0.05$) influence pharmacists knowledge about the COVID-19 pandemic.

Limitations

This study has the limitations of online cross sectional studies which depends on participants' honesty, and the limited sample size, which may limit the generalization of the results.

Conclusion

We identified that pharmacists have good knowledge in different aspects regarding COVID-19 pandemic, we found that the level of education and work experience influence this knowledge.

Also pharmacists contributed in many activities as a frontline health care provider during this pandemic.

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