



Knowledge, Perception and Attitude of Pharmacists and Pharmacy Technicians in Sana'a, Yemen toward COVID-19 Epidemic

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ABSTRACT

Background: On January 30, 2020, WHO declared COVID-19 outbreak to be a public health emergency. It led, since the beginning in December 2019, to about more 600 million confirmed cases including more than 6 million deaths, up to September 2022. **Objective:** The study aimed to knowledge of perception and attitude of pharmacists and pharmacy technicians in Sana'a city in Yemen toward COVID-19 pandemic. **Method:** A questionnaire was distributed to 252 pharmacy workers participants (109 pharmacy bachelor holding and 143 pharmacy diploma holding) with age 35 ± 13.523 years and was working, at the time of study, in 252 community pharmacies in Sana'a, Yemen. The questionnaire contained questions about personal information, perceptions and attitude about COVID-19. **Results:** Most participants (63.5%) stated that most of COVID-19 cases/suspected cases came to pharmacies were less than 5 cases since the beginning of the pandemic. the overall incorrect perception was 18.7% and the highest incorrect perception was about medications they recommend for COVID-19 cases/suspected cases. 49.2% of participants had incorrect attitudes when observed by the research team participants who had enrolled educative tours/programs about COVID-19 has significantly ($p < 0.050$) correct perception about necessity of COVID-19 control measures. Age and experience years had also influence on participants perceptions about staying home for 17 and medications recommended. Moreover, participants who had enrolled educative tours/programs about COVID-19 has significantly ($p < 0.050$) correct attitude about necessity of COVID-19 control measures. **Conclusion:** Overall incorrect perception of pharmacy workers especially those who had not enrolled in educative tout/program in Sana'a Yemen about COVID-19 are high.

Keywords: Attitudes; COVID-19; Perceptions; Pharmacy workers; Yemen

INTRODUCTION

Coronaviruses are a large family of viruses known to cause the common cold and more serious illnesses such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Types of Coronavirus recently discovered to infect humans. It is highly contagious and pathogenic. Pneumonia associated with SARS-CoV-2 infection has been designated Coronavirus disease 2019 (COVID-19) by the World Health Organization (WHO) [1-3].

The SARS epidemic that began in 2002 ended up infecting about 8,000 people and killing 770, contributing to a global

cost of up to \$100 billion.

In contrast, MERS was characterized by less infection but more severe episodes in hospitals and a somewhat higher rate in mortality (about 35%) and has not yet been eradicated with more than 90,000 confirmed cases and more than 2,500 deaths [4]. The World Health Organization (WHO) has declared COVID-19 an international pandemic public health emergency [5].

World health organization data as of May 18, 2020 showed more than 4,618,800 confirmed deaths and 31,847 deaths due to COVID-19 worldwide [6]. The most common symptoms of infection are fever, cough and shortness of breath. In more severe cases, pneumonia, acute respiratory syndrome, kidney failure and death may occur. The available data indicate that the number of fatal cases and the mortality rate among young people are not very high [7]. However, older people (over 60 years) and people with comorbidities (e.g. diabetes, heart disease) may be more vulnerable and mortality in this population may be high [8]. The main known method of transmission of the Coronavirus is from person to person through sneezing or coughing and by touching a contaminated surface [9].

Globally, as of 6:58 pm CEST, 7 September 2022, there have been 603,711,760 confirmed cases of COVID-19, including 6,484,136 deaths, stated to WHO. As of 4 September 2022, a total of 12,540,061,501 vaccine doses have been administered [10].

The first confirmed case relating to the COVID-19 pandemic in Yemen was proclaimed on 10 April 2020 with an occurrence in Hadhramaut. Organizations called the news a "devastating blow" and a "nightmare scenario" agreed the country's already dire humanitarian situation [11]. The study aimed to knowledge of perception and attitude of pharmacists and pharmacy technicians in Sana'a city in Yemen toward COVID-19 pandemic.

MATERIALS AND METHODS

Study area and period: The study was carried out in Sana'a city Yemen within the period from March 12th to May 15th 2021.

Study design: The design was observational. Data was collected using survey (questionnaire).

Method

Questionnaire survey: A questionnaire was distributed to 252 pharmacy workers participants (109 pharmacy bachelor holding and 143 pharmacy diploma holding) who were working, at the time of study, in 252 community pharmacies in Sana'a-Yemen.

The questionnaire included the following:

Four personal information on the participant Attitude of the pharmacy worker observed by the research team toward measures of controlling COVID-19. These included:

- Using glass or plastic barrier in front of dispensing table.
- Wearing face mask.
- Hand sanitization when dealing with customers age (year), experience (year), qualification and whether the participant enrolling in health educative tour about COVID-19).

Two knowledge of the participant about COVID-19 cases/suspected cases from (December, 2019 to June, 2021):

- Number of cases/suspected cases COVID-19 cases which to come to the pharmacy (or a relative to the case came to pharmacy).
- Age category of cases/suspected cases COVID-19 to came to the pharmacy (or a relative to the case came to pharmacy).

Four perceptions of the participant about COVID-19

- What is your perspective about seriousness of COVID-19?
- Are hand sanitization, wearing mask and social distancing necessary to control COVID-19 endemic?
- Should you advice suspected patients to stay home for 14 days?
- What medications do you recommend for suspect COVID-19 cases?

Attitude observation

Data analysis: Data was analyzed using SPSS version 20. Whenever necessary, average, standard deviation and relative standard deviation were calculated. Level of significance in two categories of data were determined using z-score for two populations method with $p < 0.05$ indicating significant difference. Correlation of participant knowledge, perception or attitude to participant's age, experience, qualification and enrolling in health educative tours/programs about COVID-19, was tested using *chi square* categorized method with $p < 0.05$ indicating significant relation.

RESULTS AND DISCUSSION

In present study aimed to explore the knowledge, perception and attitude toward COVID-19 of 252 pharmacy workers (subjects) who were working, at the time of the study, in the community pharmacies in Sana'a city, Yemen. The number of subjects ($n=252$) was larger than those reported in the literatur and smaler than those reported in the literature [12,13].

As demonstrated in Table 1 and Figure 1, statistically, there were significant differences in the subjects categories of parameters including categories of age (< 25 years, ≥ 25 years), experience years (< 5 years, ≥ 5 years), level of qualification (Ph. Diploma and Ph. BSc) and enrollment in educative tours/programs about COVID-19 (yes, no) with $p < 0.05$ in each parameter categories. The age (average \pm SD) of subjects in this study was 35 ± 13.5 years.

With respect to subjects experiences, 54% of subjects participated in this study had a 5 year experience as pharmacy workers. This was in agrrement with and different from that reported. In other respect, 57% of subjects were pharmacy technicians holding diploma in pharmacy while the rest were pharmacists (BSc in pharmacy). This was different from that reported by Maleki, S, et al. In other respect, 57 % of subjects were pharmacy technicians holding diploma in pharmacy while the rest were pharmacists (BSc in pharmacy). This was different from that reported by Kassie, BA, et al.

Concerning with enrollment of subjects in educative health tours/programs about COVID-19, only 4% of subjects had enrolled in such type education. This was in agrrement with that reported by Muhammad, K, et al.

Table 1: Data of participants (n=252) enrolled in this study.

Data		%	F	z-score	p value
Age (year)	< 25	17.5	44	-14.610	<0.0001
	≥ 25	82.5	208		
	Average \pm SD		35 ± 13.523		
Experience (year)	<5	45.2	114	-1.782	0.075
	≥ 5	54.8	138		
Qualification	Ph. Diploma	56.7	143	3.9198	0.00008
	Ph. BSc	43.3	109		
Enrolled in health educative tour about COVID-19	Yes	4	10	-20.3119	<0.0001
	No	96	242		

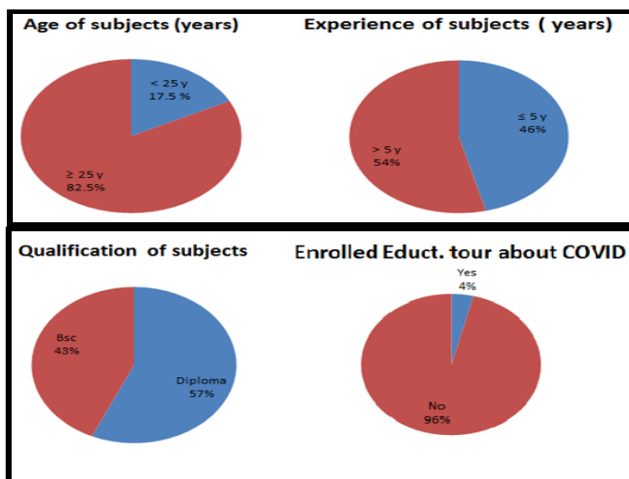


Figure 1: Distribution of data among subjects (n=252) enrolled in this study.

The knowledge of subjects concerned in COVID-19 cases or suspected cases that came to the pharmacy (or the case relative came) from December, 2019 to June, 2021. As shown in Table 2, majority of subjects (64%) informed that most COVID-19 cases/suspected cases was less than 5 cases and most of those cases were adult.

Table 2: Knowledge of participants (n=252) of COVID-19 cases came to his pharmacy from (December, 2019 to June, 2021).

Information		Percentage and number of participants		z-score	p-value
		%	F		
No. of COVID-19 cases/suspected cases	<5	63.5	160	6.058	<0.00001
	≥ 5	36.5	92		
Age category of COVID-19 cases/suspected cases	Pediatric	4.8	12	-20.312	<0.00001
	Adult	95.2	240		

The perceptions toward COVID-19 were significantly different among subjects. As demonstrated in Table 3, 19% of subjects had overall incorrect perceptions which was significantly different from 81% of subjects who had correct perceptions ($p < 0.05$). This study was as previous studies that reported by Wahed WYA, et al.

The highest incorrect perception (56%) was in the type of medications the pharmacy worker recommends for COVID-19 cases/suspected cases. Most of those subjects recommended antibiotics (like azithromycin, ceftriaxone, cefipime, cefixime, chloroquine, hydroxychloroquine and non-steroidal anti-inflammatory drugs. This was different from previous studies that reported by Maleki S, et al.

The overall attitudes were incorrect (49.2%) compared to correct (50.8%) and were significantly different ($p < 0.05$), as demonstrated in Table 4. The highest incorrect attitude were not using the barrier and also not wearing the face mask. This was in agreement with previous study and different from other that reported by Wahed WAY, et al.

Table 3: Perception of participants (n=252) toward COVID-19.

Participant`s perception		Percentage and number of participants		z-score test*	
		%	N	z-score	p value
Seriousness of COVID-19	Serious (Correct)	87.3	220	16.748	<0.00001
	Non-serious (Incorrect)	12.7	32		
Necessity of COVID-19 control measures #	Necessary (Correct)	98.4	248	21.737	<0.00001
	Not necessary (Incorrect)	1.6	4		
Advice suspected patients to stay home for 14 days	Yes (Correct)	91.3	230	18.530	<0.00001
	No (Incorrect)	8.7	22		
Medications recommended	Approved (Correct)	43.6	110	-2.851	0.004
	Non-approved (Incorrect)	56.3	142		
Overall perception	Correct	81.3	205	14.076	<0.00001
	Incorrect	18.7	47		

Note: *: Significance level=0.05; two tailed hypothesis; #: e.g. hand sanitization, wearing face mask and gloves and social distancing.

Table 4: Attitude of participants (n=252) toward COVID-19.

Participant`s attitude		Percentage and number of participants		z-score test*	
		%	F	z-score	p value
Use barrier in front of dispensing table	Yes (correct)	35	88	-6.771	<0.00001
	No (Incorrect)	65	164		
Wear face mask	Yes (Correct)	17.5	44	-14.61	<0.00001
	No (Incorrect)	82.55	208		

Apply hand sanitization	Yes (Correct)	95.2	240	20.312	<0.00001
	No (Incorrect)	4.8	12		
Overall attitude	Correct	50.8	372	-1.809	<0.00001
	Incorrect	49.2	348		
Note: * : Significance level=0.05; two tailed hypothesis					

Table 5 shows the enrollment of subjects in educative health tours/programs about COVID-19, was found to be significantly ($p < 0.05$) related to correct perception of subjects about necessity of using tools/measures to control COVID-19 spread. While age and experience years was found to have impact on perception of subjects to stay home 14 days advice.

Table 5: Relation of participants (n=252) age, experience, qualification and enrolling in health educative tour on their perception toward COVID-19 with their personal data.

Perception		% of participants							
		Age (year)		Experience (year)		Qualification		Enrolled educative tour	
		<25 y	≥ 25 y	<5	≥ 5	BSc	Diploma	Yes	No
Seriousness of COVID	Serious	13.3	74	40.2	47.1	37.1	50.2	3.2	84.1
	Non-serious	4.2	8.5	5	7.7	6.2	6.5	0.8	11.9
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test</i> (p value)	0.157		0.611		0.806		0.467	
Necessity of COVID-19 control measures #	Necessary	16.5	81.5	44.2	54.1	42.1	56.2	3	95.2
	Not necessary	1	1	1	1	1.1	0.5	1	0.8
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test</i> (p value)	0.230		0.886		0.840		0.0008	
Advice suspected patients to stay home for 14 days	Yes	12.4	78.9	44	47.3	37.2	54.1	3	88.3
	No	5.1	3.6	1.2	7.5	6.1	2.6	1	7.7
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test</i> (p value)	0.001		0.032		0.133		0.253	
Medications Recommended	Approved	12.9	30.7	30.3	13.3	23.2	20.4	3	40.6
	Non-Approved	4.6	51.8	14.9	41.5	20.1	36.3	1	55.4
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test</i> (p value)	0.007		0.00002		0.077		0.202	
Overall Perception	Correct	15.1	66.2	35.7	45.6	33.6	47.7	3	78.3
	Incorrect	2.4	16.3	9.5	9.2	9.7	9	1	17.7
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test</i> (p value)	0.451		0.491		0.376		0.755	

Similarly, Table 6 shows the enrollment of subjects in educative health tours/programs about COVID-19, was found to be significantly ($p < 0.05$) related to correct attitude of subjects about wearing face mask.

Table 6: Relation of participants (n=252) age, experience, qualification and enrolling in health educative tour on their attitude toward COVID-19 with their personal data.

Attitude		% of participants							
		Age (year)		Experience (year)		Qualification		Enrolled educative tour	
		<25 y	≥ 25 y	<5	≥ 5	BSc.	Diploma	Yes	No
Use glass or plastic barrier	Yes	7.9	27	17.5	17.5	15.9	19	2.8	30.1
	No	9.5	55.6	28.5	37.3	27.4	37.7	1.2	64.9
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test (p value)</i>	0.336		0.557		0.688		0.071	
Wear face mask	Yes	3.2	14.3	4.8	12.7	7.9	9.5	3	12.7
	No	14.3	68.2	40.4	42.1	36.4	47.2	1	83.3
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi square test (p value)</i>	0.955		0.105		0.933		0.001	
Hand sanitizers	Yes	15.9	79.4	42.9	52.4	39.7	55.6	3	90.5
	No	1.6	3.1	2.3	2.4	3.6	1.1	1	5.5
	Total	17.5	82.5	45.2	54.8	43.3	56.7	4	96
	<i>Chi-square test (p value)</i>	0.189		0.852		0.268		0.147	

CONCLUSION

Based on results obtained from this study, it could be concluded that overall incorrect perception of pharmacy workers in Sana'a Yemen was higher/lower/similar. Enrollment of pharmacy workers in educative tour/program about COVID-19 has a good relation to their correct perceptions. Age and years of experiences had good relation to advices to stay home 14 days for suspected cases. While these factors had weak relations to other perceptions and attitude.

AUTHORS' CONTRIBUTIONS

The correspondent author conceived the idea and developed the theory and performed the calculations of the presented work. All authors participated in conducting experiments, discussing the results and contributing to the last manuscript.

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