

Knowledge, attitudes, and practices toward COVID-19 among Yemeni health care workers during the COVID-19 pandemic: A single-center survey in Al-Thawra Hospital, Ibb Governorate, Yemen

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ABSTRACT

Background and Objective: Health care workers (HCWs) are at the highest risk of contracting COVID-19, so their knowledge about the disease and their preventive attitude and practice toward COVID-19 are of concern. The present study aimed to assess the knowledge, attitudes, and practices of HCWs toward COVID-19 in Al-Thawra Hospital, Ibb Governorate, Yemen. **Materials and Methods:** We conducted a cross-sectional survey among HCWs in Al-Thawra Hospital, Ibb, Yemen, from January 1 to March 31, 2022. **Results:** Of the 80 participants, 50 (62.5%) were males and 30 (37.5%) were females with a mean age of 29.33 ± 7.86 years. About 51.2% of respondents were aware that sneezing is a recognized symptom of COVID-19, while most were unaware of the extrapulmonary symptoms of the disease, such as diarrhea and confusion. About 28.7% of respondents believed that eating or contacting wild animals would result in infection by the COVID-19 virus, with the majority (71.3%) agreeing that wearing a well-fitting face mask effectively prevents COVID-19 infection. Approximately 48 respondents (60.0%) believed that washing hands could prevent contracting COVID-19, and only 31 (38.7%) agreed that if a patient shows signs and symptoms of COVID-19, they can confidently participate in that patient's treatment. In response to avoid COVID-19, about 23 respondents (28.7%) had always gone to crowded places, and 35 (43.6%) had always worn face masks at every contact with patients, while only 14 (17.5%) of participants refrained from shaking hands and 37 (46.3%) always washed their hands before and after handling each patient. **Conclusion:** This study showed that most respondents have poor knowledge regarding the clinical picture of COVID-19 and its mode of transmission as most of them failed to detect an extrapulmonary manifestation of COVID-19 and were unaware of the possibility of transmission of the disease from wildlife. In addition, the attitude and preventive practice of the respondents were unsatisfactory in containing the transmission of the disease.

Key words: COVID-19, Health care workers, Knowledge, Attitude, Practices

An outbreak of a devastating disease caused by SARS-CoV-2 was first detected in China in December 2019 [1]. Since then, the virus has continued to have a disruptive effect on global health-care delivery, public health, and economic activity, resulting in an infection known as COVID-19, which the World Health Organization (WHO) declared a pandemic on March 11, 2020 [2]. Consequently, all countries worldwide have taken precautions to combat this pandemic. There have been 548,990,094 confirmed cases of COVID-19, including 6,341,637 deaths, according to the WHO [3].

In Yemen, following the initial denial, the internationally recognized government and the *de facto* authority of the

Houthi acknowledged the first COVID-19 cases on March 11, 2020, and May 13, 2020, respectively [2]. Since then, efforts to fight COVID-19 continued in the areas under the authority of the internationally recognized government, while in areas under the *de facto* authority of Houthi, there was an ignorance of the situation, and the authorities denied the presence of more COVID-19 and almost no testing for the virus was conducted since then [2]. However, knowledge, attitude, and practices toward COVID-19 at the professional level in areas under the *de facto* authority of Houthi are unknown. This study aimed to assess the knowledge, attitude, and practices of health care workers (HCWs) toward COVID-19 in Al-Thawra Hospital, Ibb Governorate, Yemen.

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MATERIALS AND METHODS

Design, Population, and Setting

We conducted a cross-sectional survey among HCWs in Al-Thawra Hospital, Ibb, Yemen, from January 1 to March 31, 2022. Ibb Governorate is located in the middle of Yemen, and its capital is the city of Ibb, located about 194 km South of Sana'a. Al-Thawra Hospital is the main hospital in the city, with a bed capacity of 360. The governorate is under the *de facto* authority of the Houthis (Ansar Allah). The study was approved by the hospital authority, as we do not have a research committee in the country.

Questionnaire

We conducted our survey using an English self-administered questionnaire from a previous studies [1,4]. The questionnaire was divided into four parts: Participant information, knowledge (22 items), attitude (four items), and practices (five items) about COVID-19. Informed consent was obtained from all participants.

Data Analysis

The obtained data were analyzed using descriptive statistics. Data were reported as mean±standard deviation for quantitative variables, whereas qualitative variables were described as numbers and percentages. Data analysis was performed using SPSS software (v.21; IBM Corp, Armonk, NY, USA)

RESULTS

Participants' Information

A total of 80 HCWs in Al-Thawra Hospital, Ibb, participated in this survey; their mean age was 29.33±7.86 (20–65 years). In total, 62.5% (n=50) were males and 37.5% (n=30) were females. Most of the participants were doctors (38, 47.5%). Table 1 summarizes the participants' information.

Knowledge of the Participants on COVID-19

The majority of respondents were aware of most of the respiratory symptoms of COVID-19, such as fever, cough, and smell disturbance. However, only 51.2% of respondents knew that sneezing is a recognized symptom of COVID-19. Most of the respondents expressed unawareness of the extrarespiratory symptoms of the disease, such as diarrhea and confusion (Table 2). Regarding the mode of transmission, although 79 (98.8%) of the respondents agreed that the COVID-19 virus spreads through respiratory droplets from infected people, the majority ignored the fact that eating or interacting with wild animals may contribute to the infection with the COVID-19 virus. Responses to knowledge-based questions are summarized in Table 2.

Table 1: Sociodemographic characteristics of the participants

Variables	N (%) / Means (range)
Age	29.33±7.86 (20–65 years)
Sex	
Male	50 (62.5)
Female	30 (37.5)
Health worker categories	
Doctors	38 (47.5)
Nurses	20 (25.0)
Technicians	17 (21.3)
Clarks	2 (2.5)
Housekeeping	3 (3.8)
Health workers degrees	
Master/doctorate	40 (50.0)
Diploma	35 (43.8)
Primary school	3 (3.8)
Secondary school	2 (2.5)

Attitude and Practice of Health Workers toward COVID-19

Regarding their attitudes toward preventive measures against COVID-19, about 71.3% (n=57) of the respondents agreed that wearing a well-fitting face mask is effective in preventing COVID-19 infection. At the same time, 48 respondents (60.0%) believed that washing hands can prevent contracting COVID-19 and 31 (38.7%) agreed that if a patient shows signs and symptoms of COVID-19, they can confidently participate in their treatment. Moreover, 57 respondents (71.3%) agreed that Yemen is in a good position to contain COVID-19 (Table 3). Regarding respondents' practice to avoid COVID-19, about 23 respondents (28.7%) had always gone to crowded places and 35 (43.6%) had always worn face masks at every contact with patients, while 14 (17.5%) participants refrained from shaking hands and always avoided patients with signs and symptoms suggestive of COVID-19. Only 37 respondents (46.3%) always washed their hands before and after handling each patient (Table 4).

DISCUSSION

This survey provides an insight into the knowledge, attitude, and practices of HCWs toward COVID-19 in Al-Thawra Hospital, Ibb. A previous survey [5] was conducted in the areas under the internationally recognized government; however, this is the first survey among HCWs in an area under the *de facto* authority of Houthis to assess their knowledge, attitude, and practices toward COVID-19.

Knowledge is a prerequisite for establishing good prevention beliefs, forming positive attitudes, promoting positive behavior, and individual cognition of their coping strategies to a certain extent. As noted, most of the respondents could not recognize the extrarespiratory symptoms of COVID-19, such as diarrhea and confusion, which is consistent with the results of a previous local study [5] and two other studies [6,7]. However, unlike an earlier study, most respondents in this survey were unable

to recognize sneezing as a symptom of COVID-19. Moreover, most participants in this survey were unaware that eating or

Table 2: Knowledge of the participants toward COVID-19

No	Knowledge about COVID-19	Yes (%)
1	Fever is the main clinical symptom of COVID-19	80 (100)
2	Headache is the main clinical symptom of COVID-19	70 (87.5)
3	Smell disturbance is a recognized clinical symptom of COVID-19	69 (86.3)
4	Sneezing is a recognized clinical symptom of COVID-19	41 (51.2)
5	Diarrhea is a recognized clinical symptom of COVID-19	36 (45.0)
6	Cough is a recognized clinical symptoms of COVID-19	77 (96.3)
7	Confusion is a recognized clinical symptom of COVID-19	33 (41.3)
8	Not all persons with COVID-19 will develop severe cases, only those who are elderly, have chronic illnesses, and are obese are more likely to be severe cases	70 (87.5)
9	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus	22 (27.5)
10	Eating or contacting wild animals would result in the infection by the COVID-19 virus	23 (28.7)
11	If a person with COVID-19 does not have fever, he/she can transmit the virus to others	14 (17.5)
12	The COVID-19 virus spreads through respiratory droplets of infected individuals	79 (98.8)
13	Wearing a mask can prevent COVID-19 infections	72 (90.0)
14	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as bus parks and avoid taking public transportations	76 (95.5)
15	One can get infection while crossing the patient	51 (63.7)
16	One can get infection while sitting with the patient in the same room with mask	23 (28.7)
17	One can get infection while sitting in the same room without mask	66 (82.5)
18	One can get infection while having tea without one arm distance	62 (77.5)
19	There is currently no effective cure for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection	73 (91.3)
20	Isolation and treatment of COVID-19 patients are effective ways to reduce the spread	77 (96.3)
21	People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days	75 (93.8)

Table 3: Attitude of healthcare workers toward COVID

Attitude	Agree	Not sure	Disagree
Wearing a well-fitting face mask is effective in preventing COVID-19	57 (71.3)	20 (25.0)	3 (3.7)
Using a hand wash can prevent you from getting COVID-19	48 (60.0)	25 (31.3)	7 (8.7)
When a patient has signs and symptoms of COVID-19, I can confidently participate in the management of the patient after taking the necessary precautions	31 (38.7)	32 (40.0)	17 (21.3)
Yemen can contain the COVID-19 virus and win the battle	57 (71.3)	7 (8.7)	16 (20.0)

interacting with wild animals may contribute to the infection with the COVID-19 virus, which is consistent with a previous study [5]. These findings are discouraging and suggest that our health workers agreed with the authorities that there are no cases of COVID-19 and thus do not want to improve their knowledge. Furthermore, the fact that HCWs have insufficient information about COVID-19 would harm their practice as it could delay the recognition and management of potential patients with COVID-19 during the pandemic period. Therefore, continuing professional education for HCWs is necessary to broaden their knowledge and keep them up to date on the clinical presentation and modes of COVID-19 transmission.

In general, HCWs' attitudes and practices toward COVID-19 are influenced by their knowledge of the disease [8-10]. When HCWs have good knowledge, their attitude, and practices toward COVID-19 will be effective, and vice versa. Regarding the attitude of the participants in this survey, 60% of them agreed that washing their hands can prevent contracting COVID-19, and only 38.7% of the participants agreed that when a patient has signs and symptoms of COVID-19, they can confidently participate in the management of the patient after taking the necessary precautions. These results, which are attributed to lack of knowledge, are consistent with the belief of the authorities that denies the presence of more COVID-19 in the areas under their control. On the other hand, 71.3% of the respondents agreed that Yemen can contain the COVID-19 virus and win the battle. This belief is nonrealistic and reflects the poor knowledge of the participants about the disease and the poor state of the health system in the country.

This survey revealed a poor practice adopted by the respondents, which is in contrast to many studies performed globally [4-10] but comparable with a study from Ethiopia [11]. Only 15.0% of the participants in the current survey had never been to any crowded place, and 43.6% always wore a mask when in contact with patients. Moreover, only 17.5% did not shake hands with people and 46.3% washed their hands before and after handling each patient, while 55.0% avoided patients with signs and symptoms suggestive of COVID-19. These findings are incomparable with the previous study findings [5]. Thus, priority needs to be given to improving prevention practices parallel to awareness creation.

This study has several limitations. First, the study is hospital-based, and thus the results cannot be generalized. Second, the cross-sectional nature of the study design on a small sample size requires that the results be viewed with caution. Third, the data presented in this study are self-reported and partly dependent on the participants' honesty and recallability; thus,

Table 4: Practices of the health care workers toward COVID-19

Practice	Always	Occasional	Never
In recent days, I have gone to any crowded place	23 (28.7)	45 (56.3)	12 (15.0)
In recent days, I have worn a mask when in contact with patients	35 (43.6)	29 (36.4)	16 (20.0)
In recent days, I have not been shaking hands with people	14 (17.5)	35 (43.7)	31 (38.8)
In the recent days, I have washed my hands before and after handling each patient	37 (46.3)	30 (37.5)	13 (16.2)
In the recent days, I have avoided patients with signs and symptoms suggestive of COVID-19	44 (55.0)	24 (30.0)	12 (15.0)

they may be subjected to recall bias. Despite these limitations, our findings provide valuable information about the knowledge and perceptions of HCWs during a period of the pandemic.

CONCLUSION

This study showed that most respondents have poor knowledge regarding the clinical picture of COVID-19 and its mode of transmission as most of them failed to detect an extrapulmonary manifestation of COVID-19 and were unaware of the possibility of transmission of the disease from wildlife. In addition, the attitude and preventive practices of the respondents were unsatisfactory in containing the transmission of the disease. Therefore, HCWs must receive continuing professional education to keep them updated on the clinical presentation of COVID-19 and its modes of transmission and to avoid negative attitudes and promote positive preventive and therapeutic practices.

AUTHORS' CONTRIBUTION

Al-Shoaibi I wrote the proposal, analyzed the data, and wrote the final manuscript. Abdo BA proposed the idea, reviewed the literature, and aided in the data collection. Shaddad N aided in the data collection, research proposal writing, and data entry. All authors read the manuscript and agree to its publication

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