International Journal of Medical and Health Research
www.medicalsciencejournal.com
ISSN: 2454-9142
Received: 26-11-2022, Accepted: 11-12-2022, Published: 28-12-2022
Volume 8, Issue 6, 2022, Page No. 42-47

Knowledge and attitude of emergency medical service providers in Saudi red crescent authority towards covid-19 in Saudi Arabia: A cross-sectional study

Abdulelah Mohammed Almutairi[1], Wadi Alonzi[2], Faleh Mohammed Alqhtani[1], Saud Hamdi Alhabeeb[1], Khalid Rassam Bajari[1], Haitham rasheed Alhaeti[1]

[1] Saudi Red crescent Authority, Riyadh, Saudi Arabia

[2] Department, College of Business Administration, King Saud University, Riyadh, Saudi Arabia

Abstract

Several reports have investigated the current understanding of COVID-19 burden among healthcare workers (HCWs) and the impact of HCWs' knowledge on the pandemic trajectory. This study aimed to assess the level of knowledge and attitude towards COVID-19 among emergency healthcare services (EMS) providers affiliated with the Saudi Red Crescent Authority (SRCA). A questionnaire-based cross-sectional study was designed and targeted EMS providers affiliated with the SRCA. The participants were recruited from different regions using the non-probability convenience sampling technique. A total of 380 responses were retrieved. The mean knowledge score was 16.5 ±2.8 (range 0 – 22). The participants also exhibited a favourable attitude with a median attitude score was 71 (IQR 64 – 75; range 27 – 85). Two-thirds of the participants perceived that COVID-19 disease is dangerous, and nearly 73% are concerned about getting the infection or had a family member with the infection. Overall, it was found that, EMS providers affiliated with the SRCA had adequate knowledge regarding the main presentation, mode of transmission, and risk factors of COVID-19 infection. Besides, the EMS providers had a favourable attitude towards the precautionary measures taken by the Saudi authority to mitigate the spread of the pandemic. Raising knowledge about COVID-19 spread and prevention is one of the most effective strategies to face the pandemic and limit its spread.

Keywords: covid-19, knowledge, attitude, healthcare workers, red crescent authority

Introduction

In December 2019, physicians from China reported clusters of pneumonia caused by a new corona virus that could be isolated from infected patients. The novel disease (now called corona virus disease 2019: covid-19) swiftly spread to different parts of the world and was announced a global pandemic as of March 2020. By the end of December 2021, there were almost 281 million confirmed cases with COVID-19, with the highest incidence in United States, Europe, and South America [1]. While it was largely unknown how the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) transmits during early phases of the pandemic, it is now clear that respiratory droplets are the main portal of disease transmission [2]. Thus, preventive measures were implemented to mitigate COVID-19 pandemic. In tandem with the WHO recommendations, countries have intensively ramped up their response to the pandemic through various initiatives to limit the spread of COVID-19 [3, 4, 5]. Even countries that curbed the spread in their communities set up additional measures to keep reported cases down [6, 7]. As the development of effective treatment for COVID-19 is still in early stage, preventive measures remain crucial to curb COVID-19 spreads; such measures include national lockdown, mandatory facial masks wearing, and self-isolation [8].

Nonetheless, community compliance is the main determining factor for the success of those preventive measures. Proper knowledge about disease spread and presentation, perception about its impact on health and community well-being, and favorable attitude towards preventive measures are the main pillars that enhance community compliance and increase the success rate of preventive measures [9]. Previous reports demonstrated that public knowledge significantly influenced the community response to earlier epidemics, such as H_1N_1 influenza and SARS 2003 epidemic [10]. On the other hand, social stigma can arise during a pandemic with the subsequent negative psychological impact on affected persons [11]. Recently, Several reports have investigated the current understanding of COVID-19 burden among healthcare workers (HCWs) and the impact of HCWs' knowledge on the pandemic trajectory. Nonetheless, notable discrepancies exist regarding the HCWs' knowledge and attitude towards COVID-19, which may be attributed to geographical factors and education [12].

In an effort to alleviate the spread of COVID-19 in Saudi Arabia, which reported 552,000 cases and 8,870 deaths as of December 2021 [13], the Ministry of Health (MoH) has been especially active in disseminating information to the general public to raise awareness of COVID-19 in terms of general knowledge, community updates, risk factors, and preventive measures. There is a current gap in the published literature regarding the knowledge of HCWs in Saudi Arabia towards COVID-19.

This cross-sectional study aimed to assess the level of knowledge and attitude towards COVID-19 among emergency healthcare services (EMS) providers affiliated with the Saudi Red Crescent Authority (SRCA).

Methodology

Research Design

This study was a questionnaire-based, cross-sectional, study on EMS providers affiliated to the SRCA to investigate their level of knowledge and attitude towards COVID-19.

Demographic and socioeconomic variables

Involved: gender, age (years), nationality, area of residence, occupation, field of Occupation, and monthly Income

Knowledge variable

Involved: COVID-19 mode of spread, clinical presentation, impact of age and comorbidities on the severity of COVID-19, preventive measures to curb disease spread, the availability of COVID-19 vaccine and therapeutic treatment and the role of antibiotics in the management of COVID-19.

Attitude variables

Involved: the attitude towards handshaking and greeting with hugs, the attitude towards precautionary measures, including proper hand washing and wearing a facemask in public, the attitude towards self-isolation, isolation in a hospital, and informing healthcare authorities in case of suspected infection, the attitude towards job's salary during isolation, the attitude towards laboratory testing of COVID-19, vaccination, and adhering to protective measures, and the attitude towards receiving regular updates and information about COVID-19.

The Sample

The below equation was used to calculate the sample size for assuming a confidence interval level of 95%. The total sample size was determined to be 139 participants. A total of 300 participants were included.

$$n = [DEFF*Np\ (1-p)]/\ [(d^2/Z^2_{1-\alpha/2}* (N-1) + p* (1-p)]$$

Participants criteria

Participants were recruited if they fulfil the following criteria: arabic speaker, age ranged between 21-80, both gender female and male, EMS providers affiliated with the SRCA.

Validity and Reliability

The questionnaire of the present study was adopted from Abdelhafiz *et al*. [12].

All study procedures adhere to the principles of the latest version of the Declaration of Helsinki [14] were confirmed and applicable local regulatory laws. Statistical Methodology

Data were entered and validated using Microsoft Excel 2019, while the statistical analysis was done using the statistical package for the social sciences (SPSS, windows version 22).

Results

Demographic characteristics

As seen in Table 1, the majority of participants were between 30 – 50 years old (88.9%), with a mean age of 37.6 ±6.5 years old. All responders were males and were mainly Saudi (94.8%). Almost one-quarter of the participants (24.4%) were from Madinah Province, and 15.2% were from the Northern Borders Province.

Table 1: Demographical Characteristics

Characteristic	Category	Frequency	Percentage
Age (years), mean ±SD		37.6 ±6.5	
Age group (years)	18 – <30	20	5.3
	30 – <50	339	88.9
	50 – <60	21	5.5
	Total	380	99.7
Sex	Male	381	100
Nationality	Saudi	361	94.8
	Non-Saudi	18	5.2
Region	Riyadh Province	24	6.3
	Makkah Province	46	12.1
	Eastern Province	5	1.3
	Madinah Province	93	24.4
	Al Baha Province	20	5.2
	Al Jawf Province	20	5.2
	Northern Borders Province	58	15.2
	Qassim Province	15	3.9
	Ha'il Province	21	5.5
	Tabuk Province	27	7.1
	Aseer Province	30	7.9
	Jizan Province	18	4.7
	Najran Province	4	1

Socioeconomic characteristics of the sample

Table 2 summarizes the socioeconomic characteristics of the participants. Nearly 78% of the participants were EM technicians. The field-based activities accounted for the majority of the responses (88.5%). Concerning the monthly income, 65.9% of the participants had a monthly income of >10000 – 20000 SAR.

Table 2: Socioeconomic characteristics

Characteristic	Category	Frequency	Percentage
Job	EM Physician	24	6.3
	EM Specialist	28	7.3
	EM Technician	298	78.2
	Others	31	8.1
Location	Ambulatory transfer rooms	17	4.5
	Office-based	27	7.1
	Field-based	337	88.5
Monthly income (SAR)	>10000 - 20000	251	65.9
	>20000	16	4.2
	>5000 - 10000	93	24.4
	1000 - 5000	21	5.5

Participants' knowledge of COVID-19

As seen in Table 3, the knowledge towards the mode of spread of COVID-19 varies across different categories. Most of the participants correctly answered that COVID-19 can be transmitted by droplets and surfaces touched by the affected person (93.4% each). However, only a few participants knew that COVID-19 cannot be transmitted by touching coins and banknotes (7.6%). Nearly 48.6% and 39.1% of the participants knew that COVID-19 cannot be transmitted by dealing with pets and stool. The participants had a fair knowledge about common COVID-19 symptoms, except for vomiting, in which nearly 80% thought that vomiting is a common COVID-19 symptom. Most participants knew that the infection is more likely to be severe in the elderly and patients with chronic disease. They also had good knowledge about the measures to prevent the spread of the disease, except for taking antibiotics and eating garlic.

Table 3: Participants' knowledge of COVID-19

Characteristic	Category	Correct Answer	
		Frequency	Percentage
Mode of spread	Droplets [YES]	356	93.4
	Touching affected surfaces [YES]	356	93.4
	Touching coins and banknotes [NO]	29	7.6
	Dealing with pets [NO]	185	48.6
	Stool (e.g. in public toilets) [NO]	149	39.1
	Goods imported from China [NO]	151	39.6
Asymptomatic case can transmit infection [YES]		343	90
Symptoms include	Fever [YES]	378	99.2
	Dry cough [YES]	346	90.8
	Body aches [YES]	360	94.5
	Difficulty in breathing [YES]	375	98.4
	Vomiting [NO]	77	20.2
The disease is more severe among the elderly[YES]		371	97.4
The disease is more severe among patients with chronic diseases[YES]		372	97.6
Preventive measures	Proper hand wash [YES]	376	98.7
	Maintaining an appropriate distance between yourself and anyone with symptoms [YES]	376	98.7
	Avoiding touching eyes, nose and mouth [YES]	368	96.6
	Putting on facemasks in public places [YES]	371	97.4
	Taking antibiotics [NO]	175	45.9
	Eating garlic [NO]	152	39.9
A well-studied vaccines are now available for COVID-19 infection [YES]		323	84.8
A well-studied treatment isavailable for COVID-19 infection [NO]		170	44.6
Antibiotics can treat the disease[NO]		142	37.3

The mean knowledge score was 16.5 ±2.8 (range 0 – 22).

Participants' attitude towards COVID-19

Table 4 shows the attitude towards COVID-19. Overall, the participants had a favourable attitude towards obligation towards the authority's measures to limit the spread of infection.

Table 4: Participants' attitude towards COVID-19

Items		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I will always greet my friends and colleagues with a handshake	Frequency	246	38	49	16	32
	Percentage	64.6	10	12.9	4.2	8.4
I will always greet my friends and colleagues with a hug	Frequency	301	33	28	6	13
	Percentage	79	8.7	7.3	1.6	3.4
I wash my hands regularly and for enough period of time	Frequency	15	7	27	37	295
	Percentage	3.9	1.8	7.1	9.7	77.4
I usually put a facemask to protect myself from the risk of infection	Frequency	47	12	32	31	259

	Percentage	12.3	3.1	8.4	8.1	68
I will inform the health authorities if I contact an infected person infected with the virus	Frequency	19	11	32	24	295
	Percentage	5	2.9	8.4	6.3	77.4
I will inform the health authorities if I have disease-related symptoms.	Frequency	13	6	21	24	317
	Percentage	3.4	1.6	5.5	6.3	83.2
I agree to be isolated at home for a certain period of time until it is proven that I am free from the disease	Frequency	33	3	32	23	290
	Percentage	8.7	0.8	8.4	6	76.1
I agree to be isolated at an isolation hospital for a certain period of time until it is proven that I am free from the disease	Frequency	101	23	51	30	176
	Percentage	26.5	6	13.4	7.9	46.2
If I am asked to be isolated for a certain period of time, I think my salary will continued during this period	Frequency	10	3	21	21	326
	Percentage	2.6	0.8	5.5	5.5	85.6
If I am asked to be isolated for a certain period of time, my salary should be continued during this period	Frequency	10	3	13	13	342
	Percentage	2.6	0.8	3.4	3.4	89.8
If there is an available lab test for detection of the virus, I am willing to do it	Frequency	34	11	39	28	269
	Percentage	8.9	2.9	10.2	7.3	70.6
If there is an available vaccine for the virus, I am willing to get it	Frequency	8	7	26	28	312
	Percentage	2.1	1.8	6.8	7.3	81.9
I usually follow the updates about the spread of the virus in my country	Frequency	27	17	46	43	248
	Percentage	7.1	4.5	12.1	11.3	65.1
I usually follow the updates about the spread of the virus worldwide	Frequency	38	32	78	45	188
	Percentage	10	8.4	20.5	11.8	49.3
If a lecture about the virus is organized near me, I will attend it	Frequency	20	19	64	51	227
	Percentage	5.2	5	16.8	13.4	59.6
If flyers or brochures that include information about the disease are distributed, I will read them and follow the instructions mentioned in them	Frequency	17	17	39	54	254
	Percentage	4.5	4.5	10.2	14.2	66.7
If protective measures and equipment are available at an affordable price, I will buy them	Frequency	12	11	52	38	268
	Percentage	3.1	2.9	13.6	10	70.3

The median attitude score was 71 (IQR 64 – 75; range 27 – 85).

Associations between knowledge score and sociodemographic characteristics

As seen in Table 5, there were no significant associations between the overall knowledge score and age (p =0.38), region of residency (p =0.34), and job's field (p =0.075). On the other hand, non-Saudis had a significantly higher knowledge score (p <0.001). However, such finding should be interpreted cautiously as the non-Saudi workers account for only 3% of the SCRA-affiliated workers and nearly 5% of the study sample. Besides, EMS specialists (p <0.001) and participants with monthly income >20000 SAR (p =0.014) had significantly higher knowledge scores.

Table 5: Associations between knowledge score and sociodemographic characteristics

Characteristic, median (IQR)	Category	Knowledge score	P-value
Age group (years)	18 – <30	18 (14.5 – 20)	0.38
	30 – <50	16 (14 – 18)	
	50 – <60	16 (14.5 – 18)	
Nationality	Saudi	16 (14 – 18)	<0.001
	Non-Saudi	20 (17 – 21)	
Region	Riyadh Province	18 (16.3 – 19.8)	0.34
	Makkah Province	16 (14 – 18)	
	Eastern Province	18 (15.5 – 20)	
	Madinah Province	16 (14.5 – 18)	
	Al Baha Province	17.5 (15 – 19)	
	Al Jawf Province	15.5 (14 -18)	
	Northern Borders Province	16.5 (14 -18)	
	Qassim Province	16 (14 – 18)	
	Ha'il Province	17 (14.5 – 19.5)	
	Tabuk Province	16 (15 – 19)	
	Aseer Province	15.5 (14 – 18)	
	Jizan Province	17.5 (15.8 – 19)	
	Najran Province	16 (15 – 18.5)	
Job	EM Physician	19.5 (17 - 20.8)	<0.001
	EM Specialist	18 (16.3 – 20)	
	EM Technician	16 (14 - 18)	
	Others	17 (14 -18)	
Location	Ambulatory transfer rooms	15 (14 – 17)	0.075
	Office-based	18 (16 – 20)	
	Field-based	17 (14 – 19)	
Monthly income (SAR)	>10000 - 20000	17 (14 – 19)	0.014
	>20000	18 (17 – 20)	
	>5000 - 10000	16 (14 – 18)	
	1000 - 5000	15 (14 – 18)	

Associations between attitude score and sociodemographic characteristics

As seen in Table 6, there were no significant associations between the overall attitude score and age (p =0.21), nationality (p =0.36), region of residency (p =0.68), job's title (p =0.97), job's field (p =0.97), and monthly income (p=0.11).

Table 6: Associations between attitude score and sociodemographic characteristics

Characteristic, median (IQR)	Category	Attitude score	P-value
Age group (years)	18 – <30	70 (60.5 – 76)	0.21
	30 – <50	70 (64 – 74)	
	50 – <60	73 (66 – 77)	
Nationality	Saudi	71 (63 – 75)	0.36
	Non-Saudi	71 (66.8 – 76)	
Region	Riyadh Province	71 (68 – 75)	0.68
	Makkah Province	71 (63.8 – 77)	
	Eastern Province	75 (63.5 – 76)	
	Madinah Province	70 (62 – 74)	
	Al Baha Province	68.5 (65.3 – 72.5)	
	Al Jawf Province	72 (57.3 - 74.8)	
	Northern Borders Province	71.5 (63.8 – 75)	
	Qassim Province	73 (65 – 74)	
	Ha'il Province	70 (62 – 74)	
	Tabuk Province	73 (67 – 77)	
	Aseer Province	71 (60 – 75)	
	Jizan Province	73 (67 – 75)	
	Najran Province	64 (52.3 – 74.3)	
Job	EM Physician	70 (67 – 75.5)	0.97
	EM Specialist	69.5 (63 – 74.8)	
	EM Technician	71 (64 – 75)	
	Others	69 (61 – 76)	
Location	Ambulatory transfer rooms	69 (66.5 – 74.5)	0.97
	Office-based	69 (64 – 73)	
	Field-based	71 (63 – 75)	
Monthly income (SAR)	>10000 - 20000	70 (64 – 74)	0.11
	>20000	67.5 (64.5 – 72.5)	
	>5000 - 10000	73 (65.5 – 76)	
	1000 - 5000	63 (58 – 74)	

Discussion

Adequate knowledge plays important role in improving community compliance during outbreaks, previous reports demonstrated that good knowledge was an independent predictor of better application of preventive measures (such as face mask wearing and hand hygiene) and compliance to national directives during previous outbreaks such as SARS and H1N1 influenza [15]. In our cohort, the EMS providers exhibited adequate level of knowledge regarding the spread and prevention of COVID-19 infection. Notably, better knowledge was associated with higher job's title and monthly income. These findings are in line with previous report by Bashir *et al*. [16], who demonstrated good level of knowledge among HCWs in Saudi Arabia. Similar findings were reported from other MENA countries such as Egypt [17] and Jordan [18]. The impact of education and monthly income on knowledge level is further supported by previous studies during previous outbreaks [19]. These cumulative findings highlighted the need for targeted educational campaigns that are directed towards less-educated groups and population with lower socioeconomic status.

The public's behavior towards preventive measures substantially influences their success in mitigating disease spread. Many precautionary measures depend on individuals' actions, which cannot be usually forced by laws or regulations. Thus, behavioral changes should be ensured during the time of outbreaks to increase the success rate of preventive measures [10]. During SARS outbreak, a Chinese survey found that favorable public attitude towards preventive measures was an independent predictor of high compliance to isolation practice [20]. In the present study, we noticed that the EMS providers had adequate understanding of the benefits of preventive measures. Measures to improve population perception of COVID-19 danger and endure their attitude towards the preventative measures should target vulnerable groups such as elderly and less-educated persons.

Acknowledgments

I acknowledge the Saudi Red crescent Authority for their support of the study.

Ethical Consideration

The present study involved human participants. Thus, ethical approval of the study's protocol was sought from the Saudi Red Crescent Authority in SaudiArabia had been obtained to do the research.

References

1. WHO Coronavirus (COVID-19) Dashboard. WHO Coronavirus (COVID-19) Dashboard with Vaccination Data. (n.d.). Retrieved December 28, 2021, from https://covid19.who.int/
2. Rothe C, Schunk M, Sothmann P, Bretzel G, Froeschl G, Wallrauch C, *et al*. Transmission of 2019-NCOV infection from an asymptomatic contact in Germany. In

New England Journal of Medicine,2020:382(10):970-971. https://doi.org/10.1056/NEJMc2001468
3. Econòmic O, de C i D. The Territorial Impact of COVID-19: Managing the Crisis Across Levels of Government. Secretary-General of the OECD, 2020a.
4. Han E, Tan MMJ, Turk E, Sridhar D, Leung GM, Shibuya K, *et al*. Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. The Lancet, 2020a. https://doi.org/10.1016/S0140-6736(20)32007-9.
5. Nicola M, Sohrabi C, Mathew G, Kerwan A, Al-Jabir A, Griffin M, *et al*. Health policy and leadership models during the COVID-19 pandemic: A review. International Journal of Surgery (London, England),2020:81:122-129. https://doi.org/10.1016/j.ijsu.2020.07.026
6. Econòmic O, de C i D. The Territorial Impact of COVID-19: Managing the Crisis Across Levels of Government. Secretary-General of the OECD, 2020b.
7. Han E, Tan MMJ, Turk E, Sridhar D, Leung GM, Shibuya K, *et al*. Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. The Lancet, 2020b. https://doi.org/10.1016/S0140-6736(20)32007-9.
8. Güner R, Hasanoğlu İ, Aktaş F. Covid-19: Prevention and control measures in community. In Turkish Journal of Medical Sciences,2020:50(SI-1):571-577. Turkiye Klinikleri. https://doi.org/10.3906/sag-2004-146
9. Lau JTF, Griffiths S, Choi KC, Tsui HY. Widespread public misconception in the early phase of the H1N1 influenza epidemic. Journal of Infection,2009:59(2):122-127. https://doi.org/10.1016/j.jinf.2009.06.004
10. Tang CSK, Wong CY. Factors influencing the wearing of facemasks to prevent the severe acute respiratory syndrome among adult Chinese in Hong Kong. Preventive Medicine,2004:39(6):1187-1193. https://doi.org/10.1016/j.ypmed.2004.04.032
11. Kamara S, Walder A, Duncan J, Kabbedijk A, Hughes, P, Muana A. Mental health care during the Ebola virus disease outbreak in Sierra Leone. Bulletin of the World Health Organization,2017:95(12):842-847. https://doi.org/10.2471/BLT.16.190470
12. Abdelhafiz AS, Mohammed Z, Ibrahim ME, Ziady HH, Alorabi M, Ayyad M, *et al*. Knowledge, Perceptions, and Attitude of Egyptians Towards the Novel Coronavirus Disease (COVID-19). Journal of Community Health, 2020a. https://doi.org/10.1007/s10900-020-00827-7
13. Saudi Ministry of Health. COVID 19 Dashboard: Saudi Arabia [Internet]. Available from: https://covid19.moh.gov.sa/. (n.d.).
14. JAVA. Declaration of Helsinki World Medical Association Declaration of Helsinki. Bulletin of the World Health Organization,2013:79(4):373-374. https://doi.org/S0042-96862001000400016
15. Lau JTF, Kim JH, Tsui H, Griffiths S. Anticipated and current preventive behaviors in response to an anticipated human-to-human H5N1 epidemic in the Hong Kong Chinese general population. BMC Infectious Diseases, 2007, 7. https://doi.org/10.1186/1471-2334-7-18
16. Bashir S, Alsultan F, Iqbal M, Alabdulkarim N, Alammari K, Almousa A, *et al*. Healthcare workers' knowledge and attitudes towards COVID-19 in Saudi Arabia. European Review for Medical and Pharmacological Sciences,2021:25(3):1060-1069. https://doi.org/10.26355/EURREV_202101_24676
17. El-Nassir A, Mohammed S. knowledge, Attitudes, and Practices towards COVID-19 among Health Care Workers in Primary Health Care Units Dar El Salam, Suhag, Egypt. Sohag Medical Journal,2021:25(1):50-58. https://doi.org/10.21608/SMJ.2020.47286.1209
18. Olaimat AN, Aolymat I, Shahbaz HM, Holley RA. Knowledge and Information Sources About COVID-19 Among University Students in Jordan: A Cross-Sectional Study. Frontiers in Public Health,2020:8:254. https://doi.org/10.3389/fpubh.2020.00254
19. Alhazmi AM, Alshammari SA, Alenazi HA, Shaik SA, Alzaid HM, Almahmoud NS, *et al*. Community's compliance with measures for the prevention of respiratory infections in Riyadh, Saudi Arabia. Journal of Family and Community Medicine,2019:26(3):173-180. https://doi.org/10.4103/jfcm.JFCM_4_19
20. Leung GM, Ho LM, Chan SKK, Ho SY, Bacon-Shone J, Choy RYL, *et al*. Longitudinal Assessment of Community Psychobehavioral Responses During and After the 2003 Outbreak of Severe Acute Respiratory Syndrome in Hong Kong. Clinical Infectious Diseases,2005:40(12):1713-1720. https://doi.org/10.1086/429923