

Knowledge, attitude, and practice study regarding cholera among the people in Jazan city, KSA

Eman Merghani Ali¹, Moawiya Badawi Mohamed², Mosa Tawhari³

¹Lecturer in Clinical Pharmacy Department, Jazsn University, Jazan, Saudi Arabia, ²Department of Peadiatric, King Fahad Hospiat, Jazan, Saudi Arabia, ³Pharmacist, King Fahad Central Hospital, Jazan, Saudi Arabia

ABSTRACT

Background: Cholera is a contagious infection that can be fatal; in spite of this, it can be easily prevented by sticking to proper hygienic measures as well as administering cholera vaccine. However, prevention of cholera is highly dependent on the knowledge and attitude of the general population toward the symptoms and preventive measures of cholera, which is unclear in medical literature. **Objective:** This survey analysis aims to explore the level of knowledge as well as attitude and practice of people in Jazan, Saudi Arabia toward cholera infections. **Design and Setting:** A self-administered structured questionnaire was distributed via online link to individuals living in Jazan region in Saudi Arabia. The survey included questions on knowledge about cholera symptoms, etiology, and prevention as well as attitude and practices of the responders on this type of infection in addition to sociodemographic data. Data analysis was done through SPSS program version 24. **Results:** 400 participants responded to this questionnaire. The mean score for knowledge section was 1.86 ± 0.990 , for practice section was 5.07 ± 1.353 , and for attitude section was 6.14 ± 2.346 , all of them were below average rating. There was statistically significant difference (P -value = 0.003) between different educational levels, with a positive correlation between educational level and level of knowledge about cholera. There was a statistically significant difference (P -value = 0.034) between different genders. Females showed a significantly improved practice towards cholera infection. **Conclusion:** The level of knowledge of the public in Saudi Arabia is poor. Also, the attitudes and practices of people in Jazan area, Saudi Arabia is considered unsatisfactory. Further studies in other regions of Saudi Arabia are highly recommended.

Keywords: Attitude, cholera, knowledge, practice

Introduction

Cholera is defined as an acute bacterial infection that is caused by *Vibrio Cholera*. The main clinical feature for cholera is the watery diarrhea.^[1] Although the causative bacteria has above 200 serotypes, only two serotypes are prevalent in poor sanitary and hygienic conditions which are the O1 and O 139.^[2] These particular two strains have been linked to the cholera outbreaks globally.

Cholera infections are commonly severe, and highly virulent.^[3] Additionally, cholera outbreaks usually occur in areas which have contaminated water or food because of poor sanitary measures.^[4] The bacteria is transmitted along the gastrointestinal tract through contaminated food or water. *Vibrio cholera* produces cholera toxin, which causes the clinical symptoms of the infection.^[5] In addition to the watery diarrhea, other symptoms included vomiting and abdominal colic. Furthermore, the infection affects all age groups.^[6]

Address for correspondence: Dr. Eman Merghani Ali, Lecturer in Clinical Pharmacy Department, Jazan University, Jazan, Saudi Arabia.
E-mail: emanmerghani30@gmail.com

Diagnosis of cholera depends mainly on culturing the causative bacteria from a stool sample of the patient.^[7] Rapid testing can also provide a preliminary result to start a targeted treatment plan.^[8] The management of cholera consists of antibiotics for

Received: 23-05-2020

Revised: 02-07-2020

Accepted: 31-08-2020

Published: 27-02-2021

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_965_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Ali EM, Mohamed MB, Tawhari M. Knowledge, attitude, and practice study regarding cholera among the people in Jazan city, KSA. *J Family Med Prim Care* 2021;10:712-7.

the infection, and rehydrating measures for the vomiting and diarrhea through electrolytes and fluids administration.^[9]

However, the key to prevent cholera outbreaks is through improving public hygiene, water sanitation, and sewage systems. Additionally, cholera vaccination can play an important role in infection control and prevention.^[10,11] Recent reports have demonstrated that the annual estimates for cholera infections globally are up to 4 million patients, with up to 143,000 annual mortality.^[12] Accordingly, cholera represents a global public health hazard and a sign of under development for a country. Cholera outbreaks affected multiple countries over the past years mainly in Asia and Africa, such as India, Sudan, Pakistan, and Bangladesh.^[13]

Another contributing factor for the spread of cholera is the poor knowledge and awareness of the public about its modes of transmission and early measures of diagnosis and treatment of cholera symptoms. Hence, it is important to understand the knowledge and awareness of the public toward the disease to reduce its transmission.^[14] Therefore, the aim of this study is to examine the knowledge and attitude of the general public in Jazan city, Saudi Arabia toward cholera infection and its prevention.

Materials and Methods

Study design

This is a cross-sectional, qualitative prospective study that was carried out in Jazan city hospital, Saudi Arabia through distribution of an online survey to individuals living in the city. Only participants who filled the survey were included in the analysis.

Data collection

A self-developed questionnaire was distributed to subjects living in Jazan city in an online link. The survey was mainly focusing on collecting demographic data, questions on knowledge, attitude and practices about cholera infection and prevention.

Statistical analyses

Data were represented in terms of frequencies and valid percentages for categorical variables. One-way ANOVA analysis was used to compare means among different groups. All *P* values <0.05 were considered statistically significant. IBM SPSS (Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA) was used to perform all statistical calculations, version 24 for Microsoft Windows.

Ethical considerations

Institutional research ethics board approval was acquired from Ethical committee before conducting any study procedure.

Results

Four hundred participants responded to this online questionnaire in this study. Only participants who completed all the questions

in the survey were included. Sociodemographics of participants and analysis of questionnaire is shown below.

General characters of responders

Out of 400 participants, age was subcategorized into four groups on a scale of 20 years, starting with less than 20 years old and ending with more than 61 years old. Most of the responders (55.5%) belonged to the age group between 20 and 40 years old. On the other hand, the age group who were greater than 61 years old had the least number of responses, with only 2.3% of responses.

Turning to gender of participants, males constituted 44.3% of participants while females were 55.8%. Educational level was also evaluated. 49% had a university degree or higher while 5.5% were illiterate. All sociodemographic data is shown in details through Table 1.

Etiology and symptoms of cholera

Participants were asked about the symptoms and causes of cholera infection. 43.8% of the responders knew that the causative organism of cholera is bacteria, while 9% of responders thought it was a parasitic infection. The responses of participants are shown in Figure 1.

Regarding cholera symptoms, 55.5% of the participants thought that the most common symptom for cholera infection is frequent loose stool; while only 16.3% of participants knew that the most common symptom is acute watery diarrhea as shown in Figure 2.

Knowledge about cholera infection

Responders were asked questions to evaluate their knowledge toward cholera infection and its prevention. 52.3% of participants knew that cholera can be transmitted by contaminated water, while 64.8% believed that cholera is not transmitted by contaminated food and more than 70% thought that it is spread by flies, mosquitoes, poor hygiene, and poor sanitation. Moreover, more than 90% of responders believed that cholera cannot be contracted and does not spread by others. All responses are detailed in Table 2.

Table 1: Socio-demographic characters of participants

	Frequency	Percent
Age		
less than 20	115	28.8
20 to 40	222	55.5
41 to 60	54	13.5
greater than or equal 61	9	2.3
Gender		
Male	177	44.3
Female	223	55.8
Educational level		
Illiterate	22	5.5
primary school	45	11.3
secondary school	137	34.3
university degree or above	196	49.0

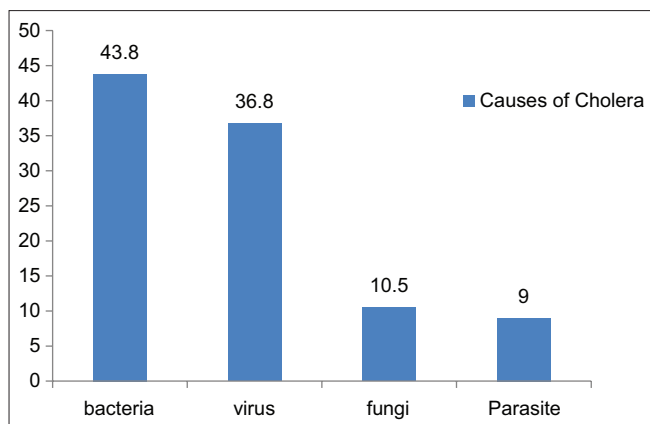


Figure 1: Causes of cholera infection

Attitude about cholera infection

The questionnaire included questions about the attitude toward cholera infection. More than half the participants thought that cholera is contagious and can be fatal, although it can be prevented. Also, they believed that cholera can be contracted by travelling to a place with cholera outbreak, and that cultural background can influence the cholera spreading. Additionally, 65.3% believed that cholera vaccination can prevent infection. All responses are shown in Table 3.

Practice about cholera infection

The final section in the questionnaire included questions to evaluate the practice of the general public toward cholera infection. Only 81.8% mentioned that they will go to the hospital if they get cholera. While the responses to the rest of the questions revealed that more than half of the participants had poor attitude toward good hygiene and sanitation. All answers are detailed in Table 4.

Comparison of level of knowledge among different sociodemographic variables

The total score for knowledge section was calculated and compared over different sociodemographic variables using one-way ANOVA at level of significance P value <0.05 . The mean score for knowledge section was 1.86 ± 0.990 , with a minimum score of zero and a maximum score of six.

The comparison revealed that there was statistically significant difference (P -value = 0.003) between different educational levels. A direct and positive correlation was found between educational level and level of knowledge about cholera, where individuals with higher level of education showed a higher level of knowledge.

Although mean score for knowledge section in different age group and gender were below average, the difference among groups did not show a statistical significance as shown in Table 5.

Comparison of practice among different socio-demographic variables

The total score for practice questions was calculated and compared over different sociodemographic variables using

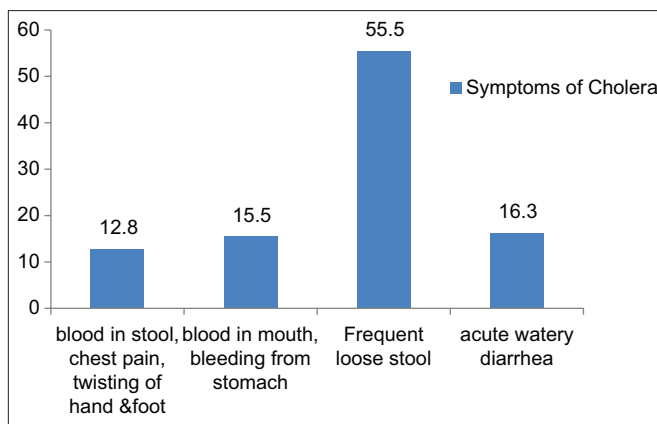


Figure 2: The most common symptom of cholera

	Yes	No
Does the cholera spread by contaminated water	52.5	47.5
Does the cholera spread by contaminated food	35.3	64.8
Does the cholera spread by flies& Mosquitoes	29	71
Does the cholera spread by poor hygiene	23	77
Does the cholera spread by poor sanitation	17.8	82.3
Did not know cholera is contracted	3.5	96.5
Does the cholera spread by others	8.5	91.5

	Yes	No
Do you think cholera can be contagious	70	30
Do you believe cholera can be fetal	67.5	32.5
Do you think the spread of cholera can be prevented	80	20
Do you think travelling to an area having an outbreak of cholera can make you contract the disease	72.3	27.8
Do you think your cultural practice may encourage or influence the spread of cholera	73.8	26.3
Do you believe habits of eating in groups observed in families may promote the spread of cholera	10	90
Do you think drinking from local road will encourage the spread of cholera	34.8	65.3
Do you think poor hand washing habits in restaurants will promote the spread of cholera	26	74
Do you believe un hygienic circumstance surrounding jazan city will encourage the spread of cholera	30.8	69.3
Do you think inappropriate use of latrines will encourage the spread of cholera	21.3	78.8
Do you think the presence of animal faeces and the practice of setting in the sand will encourage the spread of cholera	13.3	86.8
Are you satisfied with the approach by the hospital	49.5	50.5
Do you think vaccination can prevent cholera	65.3	34.8

one-way ANOVA at level of significance P value <0.05 . The mean score for practice section was 5.07 ± 1.353 , with a minimum score of two and a maximum score of 10.

The comparison revealed that there was statistically significant difference (P -value = 0.034) between different genders. Females showed a significantly improved practice toward cholera infection compared to males.

Although mean score for practice section in different age group and educational level were below average, the difference among groups did not show a statistical significance as shown in Table 6.

Comparison of attitude among different sociodemographic variables

The total score for attitude questions was calculated and compared over different sociodemographic variables using one-way ANOVA at level of significance P value <0.05 . The mean score for attitude section was 6.14 ± 2.346 , with a minimum score of zero and a maximum score of 13.

The comparison revealed that the mean score for attitude section in different age group, genders, and educational level were below average, and the difference among groups did not show a statistical significance as shown in Table 7.

Discussion

Cholera is considered a highly contagious infection that can lead to an epidemic outbreak. This type of infection is more common in areas with inadequate sanitary facilities and inadequate hygienic measures. Hence, it is mandatory to improve the knowledge and awareness of the public toward cholera infection and the actions to prevent cholera infection.

The present study aimed to investigate the level of knowledge, practice, and attitude of Saudi population living in Jazan city toward cholera infection etiology, manifestations, and prevention. The study revealed that the mean score for knowledge section was 1.86 ± 0.990 , for practice section was 5.07 ± 1.353 , and for attitude section was 6.14 ± 2.346 , where all of them were below average rating.

Moreover, there was statistically significant difference (P -value = 0.003) between different educational levels, with a direct and positive correlation between educational level and level of knowledge about cholera. Also, there was a statistically significant difference (P -value = 0.034) between different genders. Females showed a significantly improved practice toward cholera infection.

These findings represent a guidance for primary care clinicians such as general practitioners and family medicine physicians during their practice particularly in developing countries. It can provide them with an understanding for the community perception to the risks and mode of transmission of cholera. This understanding can improve the communication of doctors to patients and informing them with important information that the patients might not know about. Furthermore, this would guide public health decision makers in the development of national awareness campaigns for the public to improve their knowledge and reduce the spreading of the disease, especially in pandemics.

Level of knowledge and attitude of the general population toward cholera infection have been studied in different setting.

Table 4: Responses to practice questions

	Yes	No
“Will you go to hospital to treat yourself if you suspect you have cholera	81.8	18.3
Will you pray to treat yourself if you suspect you have cholera	22	78
Will you seeking traditional medicine to treat yourself if you suspect you have cholera	8.5	91.5
Will you consume OTC to treat yourself if you suspect you have cholera	7.3	92.8
use the toilets properly	23.8	76.3
always wash your hand soap	47	53
drink chlorinated water or boiling water only	29.3	70.8
Collect the rubbish and do not throw it in the wrong place	21	79
Store water in clean and airtight bottles	16	84
Do not eat foods from public places	25.5	74.5

Table 5: Comparison of level of knowledge compared over different socio-demographic variables

		Mean	Standard deviation	P
Age	less than 20	1.81	0.945	0.106
	20 to 40	1.81	0.922	
	41 to 60	2.17	1.209	
	greater than or equal 61	1.78	1.481	
Gender	Male	1.84	1.018	0.701
	Female	1.87	0.969	
Education	Illiterate	1.36	0.848	0.003*
	primary school	1.51	0.869	
	secondary school	1.98	0.951	
	university degree or above	1.91	1.029	

* P value at level of significance <0.05

Table 6: Comparison of practice compared over different socio-demographic variables

		Mean	Standard deviation	P
Age	less than 20	5.03	1.301	0.697
	20 to 40	5.07	1.414	
	41 to 60	5.20	1.188	
	greater than or equal 61	4.67	1.500	
Gender	Male	4.90	1.355	0.034*
	Female	5.19	1.340	
Education	Illiterate	4.73	0.985	0.382
	primary school	4.84	0.824	
	secondary school	5.12	1.531	
	university degree or above	5.11	1.350	

* P value at level of significance <0.05

In Tanzania, Nauja *et al.*^[15] explored the knowledge and practice of the community in Tanzania toward cholera prevention and spreading.

Nauja *et al.*^[15] showed that the level of knowledge of the Tanzani population is inferior, with recommendation for awareness programs to improve this level. Also, the study highlighted the limited resources available in the country for proper sanitation

Table 7: Comparison of attitude compared over different socio-demographic variables

		Mean	Standard deviation	P
Age	less than 20	6.03	2.228	0.190
	20 to 40	6.04	2.347	
	41 to 60	6.61	2.543	
	greater than or equal 61	7.22	2.333	
Gender	Male	5.93	2.417	0.105
	Female	6.31	2.280	
Education	Illiterate	5.77	1.926	0.242
	primary school	5.91	1.844	
	secondary school	5.93	2.378	
	university degree or above	6.38	2.456	

*P value at level of significance < 0.05

and hygiene. These findings were also compliant with the results of Williams *et al.*^[16]

Although the present study did not investigate the resources available in Saudi Arabia, yet the findings of Nauja *et al.*^[15] are compliant with the current study in terms of the reduced level of knowledge and practice of the public toward cholera infection and its preventive measures.

Moreover, another study from Bangladesh performed by Wahed *et al.*^[17] examined the knowledge and attitude of the public toward cholera infection and its prevention using cholera vaccine. The study included 2,830 participant who responded to the questionnaire used in this study.

Wahed *et al.*^[17] revealed a significant correlation between level of knowledge and age, gender, and level of education. Similarly, the present study showed a significantly positive relationship between level of awareness toward cholera and level of education, where more educated individuals had a better level of knowledge about cholera.

Furthermore, Ncube *et al.*^[18] evaluated the knowledge and practice of the community in South Africa toward cholera prevention. Ninety six participants were included in this study. Ncube *et al.*^[18] showed that the level of knowledge of the South African population about cholera was below the satisfactory level, and that the community is not prepared for the prevention of the disease. These findings were compliant with Tappero *et al.*^[19]

In the present study, the sample size recruited was higher than that recruited by Ncube *et al.*^[18] which increases the reliability of the current work. Additionally, the present study also showed a low level of knowledge about cholera infection and its prevention.

Additionally, the present study had some limitations; it included individuals in only one city in Saudi Arabia which could affect the external validity of the results. To our knowledge, this is the first study to evaluate the level of knowledge, attitude and practice of Saudi population toward cholera infections.

Conclusion

The level of knowledge of the public in Saudi Arabia is poor and requires serious actions to be improved. Also, the attitudes and practices of people in Jazan area, Saudi Arabia are considered unsatisfactory.

Therefore, policy makers in Saudi Arabia should take into consideration these findings and implement awareness campaigns and educational programs in schools, clubs, and universities to improve the level of knowledge toward the importance of proper sanitation, as well as vaccination against cholera, and to warn from the hazards of cholera outbreaks.

Further similar studies in other areas in Saudi Arabia are highly recommended to figure out the real picture for knowledge about cholera in Saudi Arabia.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Elimian KO, Mezue S, Musah A, Oyebanji O, Fall IS, Yennan S, *et al.* What are the drivers of recurrent cholera transmission in Nigeria? Evidence from a scoping review. *BMC Public Health* 2020;20:1-3.
- Al-Ghabban SI, Ubaid HA, Abd-Aun SI. Knowledge, attitude, and practice of women regarding waterborne diseases and cholera in rural areas in Holy Kerbala. Presented at 1st International Medical Sciences Congress (IMSC), Dec 2016 (Vol. 7, p. 9).
- Tutu RA, Gupta S, Busingye JD. Examining health literacy on cholera in an endemic community in Accra, Ghana: A cross-sectional study. *Trop Med Health* 2019;47:31.
- Alkhaledi FA. Knowledge, attitude and Practice on cholera epidemic in AL-Diwaniya province. *Al-Qadisiyah Med J* 2016;12:98-105.
- Deen J, Mengel MA, Clemens JD. Epidemiology of cholera. *Vaccine* 2020;38:A31-40.
- Orimbo EO, Oyugi E, Dulacha D, Obonyo M, Hussein A, Githuku J, *et al.* Knowledge, attitude and practices on cholera in an arid county, Kenya, 2018: A mixed-methods approach. *PLoS One* 2020;15:e0229437.
- Talaei M, Holakouie-Naieni K, Rahimi-Foroushani A, Masoumi-Asl H. Knowledge, attitude and practice of people about foodborne outbreak in Isfahan city, Iran. *J Food Hyg Saf* 2015;1:39-45.
- Mutreja A, Dougan G. Molecular epidemiology and intercontinental spread of cholera. *Vaccine* 2020;38:A46-51.
- Taylor DL, Kahawita TM, Cairncross S, Ensink JH. The impact of water, sanitation and hygiene interventions to control cholera: A systematic review. *PLoS One* 2015;10:e0135676.
- Aneter GO, Abraham F. Knowledge of cholera and its prevention amongst urban residents of a district in Abuja: The pivotal role of health education. *Res J Health Sci*

- 2020;8:102-12.
11. Scobie HM, Phares CR, Wannemuehler KA, Nyangoma E, Taylor EM, Fulton A, *et al.* Use of oral cholera vaccine and knowledge, attitudes, and practices regarding safe water, sanitation and hygiene in a long-standing refugee camp, Thailand, 2012-2014. *PLoS Negl Trop Dis* 2016;10:e0005210.
 12. Rosdi MA, Rahman NA, Haque M. Knowledge, attitude, and practice regarding cholera among non-academic staff of International Islamic University Malaysia Kuantan medical campus. *Bangladesh J Med Sci* 2019;18 (3):527-35.
 13. Burnett E, Dalipanda T, Ogaoga D, Gaiofa J, Jilini G, Halpin A, *et al.* Knowledge, attitudes, and practices regarding diarrhea and cholera following an oral cholera vaccination campaign in the Solomon Islands. *PLoS Negl Trop Dis* 2016;10:e0004937.
 14. Gallandat K, Huang A, Rayner J, String G, Lantagne DS. Household spraying in cholera outbreaks: Insights from three exploratory, mixed-methods field effectiveness evaluations. *PLoS Negl Trop Dis* 2020;14:e0008661.
 15. Nauja RH, Bugoye FC, Rongo LM. Knowledge, perceptions and practices on cholera transmission and prevention measures among heads of household members in Kigamboni municipality, Dar Es Salaam, Tanzania. *Int J Res GRANTHAALAYAH* 2020;7:28-48.
 16. Williams L, Collins AE, Bauaze A, Edgeworth R. The role of risk perception in reducing cholera vulnerability. *Risk Manag* 2010;12:163-84.
 17. Wahed T, Kaukab SS, Saha NC, Khan IA, Khanam F, Chowdhury F, *et al.* Knowledge of, attitudes toward, and preventive practices relating to cholera and oral cholera vaccine among urban high-risk groups: Findings of a cross-sectional study in Dhaka, Bangladesh. *BMC Public Health* 2013;13:242.
 18. Ncube A, Jordaan AJ, Mabela BM. Assessing the knowledge, attitudes and practices regarding cholera preparedness and prevention in Ga-Mampuru village, Limpopo, South Africa. *Jamba* 2016;8:164.
 19. Tappero JW, Tauxe RV. Lessons learned during public health response to cholera epidemic in Haiti and the Dominican Republic. *Emerg Infect Dis* 2011;17:2087.