

Brucellosis Awareness in University of Hail Students

Mohammed Kuddus¹, Bassam Ibrahim Aljohani^{1*}, Hashim Zarea Alharbi¹,
Hatem Bakheet Alaufi¹, Mosab Abdullah Althaqafi¹, Youssef Ayedh Alrehili¹,
Taher Ahmed Babkr², Abdullah Mohammed ALSaikhi¹

¹ College of Medicine, University of Hail, Kingdom of Saudi Arabia

² King Abdulaziz University, Kingdom of Saudi Arabia

ABSTRACT

Brucellosis is a worldwide infectious disease, transmitted to humans through contact with infected animals or animal products. A cross sectional study was performed to know the level of knowledge about brucellosis among Hail University students in Hail Region, Saudi Arabia. Out of 324 volunteer participants, who responded to questionnaire-based survey, only 73.8% were aware about this disease. Medical college students having more knowledge in comparison to other college students. About 58.9% of the participants showed at least 50% basic knowledge about brucellosis. However, only 13.3% know about brucellosis in depth.

Key words: Brucellosis, Turkey, Saudi Arabia, MCQs

HOW TO CITE THIS ARTICLE: Mohammed Kuddus, Bassam Ibrahim Aljohani, Hashim Zarea Alharbi, Hatem Bakheet Alaufi, Mosab Abdullah Althaqafi, Youssef Ayedh Alrehili, Taher Ahmed Babkr, Abdullah Mohammed ALSaikhi, Brucellosis Awareness in University of Hail Students, J Res Med Dent Sci, 2022, 10(8):100-104.

Corresponding author: Bassam Ibrahim Aljohani

e-mail ✉: dr.bjuhani@gmail.com

Received: 29-July-2022, Manuscript No. JRMDS-22-71444;

Editor assigned: 01-August-2022, **PreQC No.** JRMDS-22-71444(PQ);

Reviewed: 16-August-2022, QC No. JRMDS-22-71444 (Q);

Revised: 19-August-2022, Manuscript No. JRMDS-22-71444 (R);

Published: 26-August-2022

INTRODUCTION

Brucellosis is a worldwide infectious disease, transmitted to humans through contact with infected animals or animal products [1] and affecting multiple systems with different clinical signs and symptoms. Human brucellosis can be acute or chronic with most common symptoms of lymph nodes enlargements, fever, splenomegaly, and muscle aches. In the areas of livestock grazing, brucellosis has higher incidence rate, mostly as foodborne diseases by eating unpasteurized dairy products, or by direct contact with the infected livestock [2,3]. In the Middle East region, a few epidemiological investigations conducted show a widespread distribution of human brucellosis [4]. The highest annual incidence in the world is in Syria, 1603 incidents for each million every year, followed by Turkey with 1500 patients in 2004. In Kuwait, however, the cases had been the same for 20 years, 500 incidents for each million peoples [5]. In Saudi Arabia, a national study revealed that the prevalence of human brucellosis in the Kingdom increased up to 400 incidents for each million [6]. Even though human brucellosis cases were reported in the previous few decades in the Saudi

Arabia, brucellosis was not a major health problem until the 1980s. Studies showed that lower level of knowledge about disease, increase number of infection [7,8], hence the objective of the study was to access knowledge level about brucellosis among Hail University students.

METHODOLOGY

Study area and subjects

The study was conducted in Hail University, Hail, Kingdom of Saudi Arabia. The university campus was selected for study because it has students from all over the region including small villages. A cross sectional survey was conducted in the university with 324 participants (both male and female), out of 1257 requested students. The questionnaire contains 29 questions in MCQs form in both Arabic and English languages which contains both basic and in-depth knowledge questions about brucellosis. The data was collected during March-April 2021.

Ethical statement

All participants were informed about the purpose of the study and the participating consent was taken from all the participants.

Data processing and statistical analysis

The level of knowledge among the students in the different groups was determined by using SPSS statistical analysis software.

RESULTS AND DISCUSSION

Out of 324 participants, 55.2% of participants were

males (n=179) and 44.8% (n=145) were females, and includes 33.1% (107) medical students and 66.9% (217) non-medical students (Figure 1). The participant's knowledge level was assessed by two types of questions viz. basic knowledge awareness and in-depth knowledge. Among the male and female non-medical participants, 59% of non-medical male and 67% female participants are heard about brucellosis. Regarding brucellosis as an infectious disease, only 41% of non-medical male and 40% of non-medical female are aware about this. About 46% of non-medical male participants know that both humans and animals are affected by brucellosis. However, 56% non-medical female participants are familiar with this. Brucellosis can be transmitted from animals to humans, 46% of non-medical male and 57% of non-medical female students are familiar which indicates that female students are more knowledge than male. Hands washing are necessary to prevent brucellosis especially after dealing closely with animals

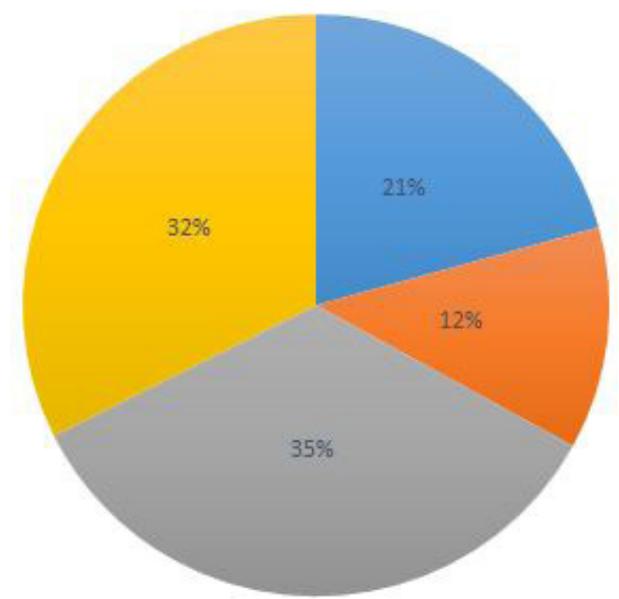


Figure 1: Participants groups.

and their products. Non-medical female students had more awareness (77%) than the male (55%). The details about non-medical male and female knowledge level are presented in Table 1.

The data comparison is between medical participants and non-medical participants showed that regarding basic knowledge of brucellosis, 96% of medical participants are aware about brucellosis, however, only 63% non-medical participants heard about it. Also 87% medical students know that brucellosis is an infectious disease, while only 41% of non-medical participants are familiar. The detail results about basic knowledge of brucellosis amount medical and non-medical students are presented in Table 2. The results showed that medical students have good knowledge about brucellosis in comparison to non-medical students.

Regarding in-depth knowledge, 57% of medical participants know that it is caused by bacteria, while only 23% of non-medical participants are aware about this. About most common complications of brucellosis such as endocarditis, meningitis and arthritis, less than 50% of medical students (43%) having this knowledge and only 19% of non-medical participants are familiar. Further analysis with various objectives recommends that medical students have good in-depth knowledge about brucellosis disease in comparison to non-medical students.

Data analysis

The first comparison is between both male and female non-medical responders which was as following

59% of non-medical male participants heard about brucellosis, while non-medical female participants 67% of them heard about it. Brucellosis is an infectious disease, 41% of non-medical male responders and 40% of non-medical female responders know that. 46% of non-medical male responders know that both humans

Table 1: Basic knowledge and awareness of the participants.

Basic Knowledge	Categories of Students							
	Medical Male (n=67)		Non-Medical Male (n=112)		Medical Female (n=40)		Non-Medical Female (n=105)	
	No.	%	No.	%	No.	%	No.	%
Have you Heard about brucellosis?	63	94	66	59	40	100	70	67
What type of disease is brucellosis?	55	82	46	41	38	95	42	40
Who is affected by brucellosis?	50	75	52	46	27	68	59	56
Is brucellosis contagious in between humans?	35	52	32	26	15	38	30	29
The most common way to get the infection is from?	46	69	40	36	19	48	39	37
Can brucellosis be transmitted from animals to humans?	55	82	51	46	30	75	60	57
Can brucellosis be transmitted from animal to animal?	46	69	28	25	30	75	56	53
The most common animals that transmit brucellosis are?	44	66	29	26	22	55	33	31
Do you think eating raw or under cooked meat can cause brucellosis?	56	84	45	40	35	88	65	62
Do you believe drinking unpasteurized milk may cause brucellosis?	55	82	60	54	32	80	65	62
Do you believe hands washing is necessary to prevent brucellosis especially after dealing closely with animals and their products?	62	63	61	55	39	98	81	77
Do you believe families that graze cattle have more tendency of getting brucellosis?	59	88	57	51	36	90	69	66
Do you believe that cattle must be vaccinated to control the infection?	49	73	56	50	35	88	70	72

Table 2: In-depth knowledge and awareness of the participants.

In-depth Knowledge	Categories of Students							
	Medical Male (n=67)		Non-Medical Male (n=112)		Medical Female (n=40)		Non-Medical Female (n=105)	
	No	%	No	%	No	%	No	%
What is the type of the microorganism that causes brucellosis?	44	66	22	20	17	43	28	27
What type of bacteria causes brucellosis?	21	31	16	14	10	25	5	5
Most common type of brucellosis?	15	22	3	3	3	8	8	8
What is the Distribution of brucellosis?	37	55	31	28	18	45	37	35
Is there a human vaccine for brucellosis?	34	51	21	19	10	25	15	14
The most jobs at higher risk of getting brucellosis are?	60	90	63	56	34	85	74	70
The most common symptoms of brucellosis?	31	46	35	31	16	40	42	40
Could the symptoms disappear while the infection is still present?	43	64	24	21	12	30	25	24
The most common symptoms of brucellosis in animals?	16	24	12	11	11	28	4	4
Is it possible to differentiate between symptoms of brucellosis and other infectious disease like (Flu, Etc.)? At early stages without medical investigations?	26	39	16	14	14	35	14	13
Can brucellosis be diagnosed by blood culture?	52	78	25	22	31	78	39	37
What is the complication of brucellosis?	36	54	23	21	10	25	19	18
What is the complication of brucellosis doxycycline and?	12	18	9	8	8	20	3	3
The best way to prevent brucellosis is?	29	43	21	19	20	50	18	17
What to do with animals infected by brucellosis?	15	22	13	12	7	18	15	14
Can brucellosis reoccur	39	58	34	30	17	43	30	29

and animals are affected by brucellosis; on the other hand 56% non-medical female responders know that. Brucellosis is not contagious disease in between humans, 26% of the non-medical male participants and 29% non-medical female participants know that.

36% of non-medical male participants and 37% of non-medical female participants know that the most common way to get the infection is from animals. Brucellosis can be transmitted from animals to humans, 46% of non-medical male responders and 57% of non-medical female responders know that.

25% of the male non-medical responders know that brucellosis can be transmitted from animal to animal while 53% of the non-medical females know about it. Cattle are the most common animals that can transmit brucellosis, 26% of the male non-medical responders knows that while 31% of non-medical female responders know it. 40% of non-medical male responders know that eating raw or undercooked meat can cause brucellosis; on the other hand 62% of non-medical female responders know that. Drinking unpasteurized milk may cause brucellosis 54% of non-medical male participants know that, while 62% of non-medical female participants female know that?

Hands washing are necessary to prevent brucellosis especially after dealing closely with animals and their products, 55% of non-medical male responders and 77% of non-medical female responders know that. 51% of non-medical male responders know that families that graze cattle have more tendency of getting brucellosis; on the other hand 66 % of non-medical female responders know that. Cattle must be vaccinated to control the infection, 50 % of non-medical male participants know

that, while 72 % of non-medical female participants know that.

The second comparison is between medical responders and non-medical responders which was as following

Basic knowledge questions

96% of medical participants heard about brucellosis, while non-medical participants 63% of them heard about it. Brucellosis is an infectious disease, 87% of medical responders and 41% of non-medical responders know that.

72% of medical responders know that both humans and animals are affected by brucellosis; on the other hand 51% non-medical responders know that. Brucellosis is not contagious disease in between humans, 47% of the medical participants and 29% non-medical participants know that. 61% of medical participants and 36% of non-medical participants know that the most common way to get the infection is from animals. Brucellosis can be transmitted from animals to humans, 79% of medical responders and 51% of non-medical responders know that. 71% of the medical responders knows that brucellosis can be transmitted from animal to animal while 39% of the non-medical know about it.

Cattle are the most common animals who can transmit brucellosis, 62% of the medical responders knows that while 29% of non-medical responders know it.

85% of medical responders know that eating raw or undercooked meat can cause brucellosis; on the other hand 51% of non-medical responders know that.

Drinking unpasteurized milk may cause brucellosis 81% of medical participants know that, while 58% of non-medical participants female know that? Hands washing are necessary to prevent brucellosis especially after

dealing closely with animals and their products, 94 % of medical responders and 65% of non-medical responders know that.

89 % of medical responders know families that graze cattle have more tendency of getting brucellosis; on the other hand 58 % of non-medical responders know that.

That cattle must be vaccinated to control the infection, 79 % of medical participants know that, while 61 % of non-medical participants know that.

In-depth knowledge questions

The microorganism that causes brucellosis is bacteria, 57% of medical participants know that, while only 23% of non-medical participants know that.

29% of medical responders know that brucellosis is a (Gram-) bacterium, while only 10% of non-medical responders know that. Only 17% of medical participants and 5% of non-medical participants know that brucellosis melitensis is the most common type of brucellosis. 51% of medical responders know that brucellosis is a worldwide disease, and just 31% of non-medical responders know that. There is no human vaccination for brucellosis, 41% of medical responders and only 17% of non-medical responders know that.

88% of medical participants and 63% of non-medical participants know that jobs involved in a direct contact with animals and their products are at higher risk of getting brucellosis. Muscle's pain, fever and sweating are considered one of the most common symptoms of brucellosis, only 44% of medical participants and 45% of non-medical participants know that. 51 % of medical responders and 23 % of non-medical responders know that symptoms can disappear while the infection is still exists. 25% of medical responders know that the most common symptoms of brucellosis in animals is recurrent abortions, while only 7% of non-medical responders know about it.

38% of medical participants know that it is difficult to differentiate between symptoms of brucellosis and other infectious disease like (Flu. Etc.) at early stages without medical investigations while only 14% of non-medical participants know that. 78% of medical responders know that brucellosis can be diagnosed by blood culture while, while just 30% of non-medical responders know that.

The most common complications of brucellosis are endocarditis, meningitis and arthritis, 43% of medical participants know that, on the other hand only 19% of non-medical participants know that. 19% of medical responders know that the best combination treatment for brucellosis is doxycycline and rifampicin, and only 5% of non-medical responders know that.

The best way to prevent brucellosis is by avoiding unpasteurized milk and raw or undercooked meat, 46% of medical participants know that, while just 18 % of non-medical participants know that.

21% of medical responders know that there is no

treatment for animals infected by brucellosis, and most be isolated, while 13% of non-medical responders they know that. Brucellosis can reoccur, 52% of medical responders and only 29% of non-medical responders know that.

The third comparison is between all the groups involved in this study which are medical male, medical female, non-medical male, and non-medical female

There is a low level of knowledge about brucellosis among students of Hail University; male students have a bit better knowledge about brucellosis in general. The level of knowledge about brucellosis increases with Medical students and is almost equal between male Medical students and Female Medical students [9-20].

CONCLUSION

There is a low level of knowledge about brucellosis among students of Hail University. However, male students have better knowledge about brucellosis in general. The level of knowledge about brucellosis in medical students is higher than non-medical students, and is almost equal between male female students. Public health education program about brucellosis must be considered by the concern authority to prevent and control infection among population.

REFERENCES

1. Kaufmann AF, Wenger JD. Brucellosis. In: Last JM, Wallace RB. Public health and preventive medicine. 13th Edn. 1992; 263.
2. Madkour M, Gargani G. Epidemiology aspects. In: Madkour M. Brucellosis. London: Butterworth's 1985; 11-28.
3. Memish ZA, Venkatesh S. Brucellar epididymo-orchitis in Saudi Arabia: A retrospective study of 26 cases and review of the literature. BJU Int 2001; 88:72-76.
4. Al-Eissa YA. Brucellosis in Saudi Arabia: Past, present and future. Annals Saudi Med 1999; 19:403.
5. Doganay M, Aygen B. Human brucellosis: An overview. Int J Infect Dis 2003; 7:173-182.
6. Seleem MN, Boyle SM, Sriranganathan N. Brucellosis: A re-emerging zoonosis. Vet Microbiol 2010; 140:392-398.
7. https://ec.europa.eu/food/sites/food/files/safety/docs/sci-com_scah_out59_en.pdf
8. Zvizdić Š, Čengić D, Bratić M, et al. Brucella melitensis review of the human infection case. Bosnian J Basic Med Sci 2006; 6:15.
9. Kaoud HA, Zaki MM, El-Dahshan AR, et al. Epidemiology of brucellosis among farm animals. Nature Sci 2010; 8:190-197.
10. Al-Sekait MA. Epidemiology of brucellosis in northern Saudi Arabia. Saudi Med J 1992; 6:29-31.

11. Bagheri Nejad R, Krecek RC, Khalaf OH, et al. Brucellosis in the Middle East: Current situation and a pathway forward. PLOS Neglected Tropical Dis 2020; 14:e0008071.
12. Díez JG, Coelho AC. An evaluation of cattle farmers' knowledge of bovine brucellosis in northeast Portugal. J Infect Public Health 2013; 6:363-369.
13. Memish Z. Brucellosis control in Saudi Arabia: Prospects and challenges. J Chemotherapy 2001; 13:11-17.
14. http://apps.who.int/iris/bitstream/10665/43790/1/9789241596176_eng.pdf
15. <http://www.fao.org/docrep/012/i1402e/i1402e00.pdf>
16. Pappas G, Papadimitriou P, Akritidis N, et al. The new global map of human brucellosis. Lancet Infect Dis 2006; 6:91-99.
17. <http://www.hail.gov.sa/en/Pages/Hail/Geo.aspx>
18. <https://www.worldcat.org/title/kumar-clark-clinical-medicine/oclc/60605265>
19. <https://www.mhbooklibrary.com/doi/book/10.1036/9780071808309>
20. https://archive.org/stream/DavidsonsPrinciplesAnd-PracticeOfMedicine22ed2014_201804/Davidsons%20Principles%20and%20Practice%20of%20medicine%2022ed%202014_djvu.txt