

AWARENESS ABOUT MIDDLE EAST RESPIRATORY SYNDROME-CORONA VIRUS (MERS-CoV) AMONG DENTAL STUDENTS IN RIYADH, SAUDI ARABIA

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ABSTRACT

The objective of the present study was to assess the awareness of Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) in students at College of Dentistry, King Saud University, Riyadh, Saudi Arabia. This cross-sectional study was conducted in 250 dental students between January to March 2016. A questionnaire's was utilized to assess the knowledge of the dental students. A single-items scale was used to record the respondents' replies. More than one-third of the dental students (42%) interviewed had good knowledge about the definition of MERS-CoV. Measures for infection control and protection were also known to 80.4% of the students. The sources of the information for the students were: media (31.9%), college of dentistry (18.7%), community (11.1%), and Ministry of Health (2.1%), while 36.2% of the students had no clear idea about protection from MERS-CoV. More than two-third (77%) of the students knew that MERS-CoV is contagious and 53.6% were aware of the related symptoms such as severe acute respiratory illness, fever, cough, and gastrointestinal disturbances. Dental students at College of Dentistry in King Saud University had satisfactory knowledge about MERS-CoV. However, more information is needed in some areas.

Key Words: Middle East Respiratory Syndrome, Corona Virus, MERS-CoV, Dental Students, Awareness.

INTRODUCTION

Middle East Respiratory Syndrome - Coronavirus (MERS-CoV) is a novel beta-coronavirus associated with a broad spectrum of respiratory illnesses; the infection results in death in approximately 35-40% of the affected cases.¹ MERS-CoV was first reported in Saudi Arabia in September 2012, when a novel beta-coronavirus was isolated from a Saudi Arabian patient in Jeddah, who died of severe pneumonia and multiple organ failure in June 2012.² This condition caused by novel coronavirus has been named Middle East Respiratory Syndrome-Coronavirus (MERS-CoV).³ MERS-CoV can also infect nonhuman primate, porcine, bat, civet, rabbit, and horse cell lines.⁴⁻⁶

Since April 2016, 1728 cases of MERS-CoV have been reported to World Health Organization (WHO) with at least 624 related deaths.⁷ Most cases have been reported from the Arabian Peninsula particularly the Kingdom of Saudi Arabia (KSA). Excluding the outbreak in Republic of Korea; over 88% of all reported cases of MERS-CoV have been reported from KSA.⁸ However, the risk factors for the mode of transmission have not been well described. Camels (*Camelus dromedarius*) are suspected reservoirs of MERS-CoV as suggested by case investigations^{9,10}, serologic studies^{11,12}, and isolation

of live infectious MERS-CoV.^{9,11,13} Most of the cases are now due to human-to-human transmission. The epidemiological picture is consistent with sporadic zoonotic infections that are then amplified within healthcare center buildings.⁸ The large number of reported cases from KSA also reflects the transmission of this infection in healthcare settings.¹⁴ A study conducted earlier in 2013 reported the transmission of the virus through a hospital cluster, suggesting the mode of spread through contact and in the form of droplets.¹⁵ In addition, a recently imported case to Jordan from KSA has been associated with local onward transmission in Jordan, and is another indicator of the overall risk within KSA.⁸

In KSA, cases of MERS-CoV occur throughout the year, with occasional reported peaks, such as in April-May 2014 (coinciding with several large hospital outbreaks). During February and March 2015, a second peak of cases occurred, although the real numbers reported were significantly lower than during the 2014 peak.¹⁵ Recently there has been a marked increase in cases reported from KSA, particularly from Riyadh. As of September 2015, 166 cases have been reported from Riyadh, many of which are considered related to a particular health care facility. Although this reflects previous epidemiological patterns related to nosocomial exposures, there are other community cases in Riyadh, highlighting MERS-CoV transmission within KSA.¹⁶

Health care workers (HCWs) are at a great risk of acquiring this infection or become a source of transmission to patients and their co-workers. The presence of this fatal virus among HCWs underscores a need for continuing efforts towards MERS-CoV awareness

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programs among personnel (including the students) in health care facilities.¹⁷ The aim of this study was to assess the knowledge and awareness of students at College of Dentistry in King Saud University about MERS-CoV.

METHODOLOGY

Participants: The information about awareness of the students about MERS-CoV was collected through a self-administered questionnaire. The sample included undergraduate students from 3rd, 4th and 5th year, interns and postgraduate students. The study was conducted between the January to March 2016. The inclusion criterion was those students who were in direct contact with the patients. The study was approved by the ethical committee of the College of Dentistry Research Centre. A written consent was obtained from all the participating students.

Questionnaire: A questionnaire designed by Kharma et al (2015)¹⁸, with some modifications was utilized in the present study. The questionnaire was used in 20 students, not participating in the main study to test its comprehensibility, and appropriate changes were made. The questionnaire consisted of questions based on the information provided by MOH for MERS-CoV in English language.¹⁸

The questionnaire was divided into six sections to evaluate awareness about definition, symptoms, source of infection, infection control, protection, and treatment of MERS-CoV. The questionnaire also included specific questions exploring the knowledge, such as rate of mortality, period of incubation, and way of spreading. A single-item scale was used to record the respondents' answers.

Statistical analysis: The data were analyzed using the IBM SPSS Statistics for Windows (Version #20) [IBM Corp, Armonk, NY, USA]. Descriptive statistics (frequencies, and percentages) were used to describe the quantitative and categorical variables. Chi-square tests were used to determine any significant association between the students' responses and independent variables such as gender and educational level of the students.

RESULTS

A total of 250 questionnaires were distributed, and 235 (94%) were returned back. Demographic information of the respondents is detailed in Table 1. No significant associations were found between the students' responses and their gender or the educational level. Table 2 describes the general knowledge of the students about MERS-CoV. Less than half (42.1%) of the dental students knew the definition of MERS-CoV as Middle East Respiratory Syndrome - Coronavirus. Media was the most common (31.9%) source of information about MERS-CoV followed by the College (18.7%); more than one third (36.2%) of the students did not have any clear idea about MERS-CoV. A majority (77%) of

the respondents considered MERS-CoV as contagious and more than half (53.6%) knew the related symptoms such as acute respiratory illness, fever, cough, and gastrointestinal symptoms (Table 3).

More than half (52.3%) of the respondents were correctly aware that the period of incubation for MERS is about 2-14 days; and similarly 53.6% of them were aware that the main source of MERS-CoV was camels

TABLE 1: DEMOGRAPHIC INFORMATION OF THE DENTAL STUDENTS

Demographics		Number (%)
Gender	Male	80 (34.0)
	Female	155 (66.0)
Educational level	Third year	59 (25.1)
	Fourth year	74 (31.5)
	Fifth year	47 (20.0)
	Intern	31 (13.2)
	Postgraduate	24 (10.2)

TABLE 2: DENTAL STUDENTS' GENERAL KNOWLEDGE ABOUT MERS-CoV

Question	Number	%
Are you aware of the definition of MERS-CoV?		
Yes	99	42.1
Not sure	67	29.5
No	69	29.4
From where did you hear about MERS-CoV?		
Our college	44	18.7
Media	75	31.9
Ministry of Health	5	2.1
Community	26	11.1
Not heard	85	36.2

TABLE 3: DENTAL STUDENT'S KNOWLEDGE OF INFECTION AND SYMPTOMS OF MERS-CoV

Question	Number	%
Is MERS-CoV contagious?		
Yes	181	77.0
No	56	33.0
What are symptoms of MERS-CoV?		
Acute respiratory illness	31	13.2
Fever and cough	14	6.0
Gastrointestinal symptoms	1	0.4
All the above	126	53.6
Don't know	63	26.8

TABLE 4: DENTAL STUDENTS' KNOWLEDGE ABOUT PERIOD OF INCUBATION AND SOURCE(S) OF INFECTION FOR MERS-CoV

Question	Number	%
What is the incubation period for MERS-CoV?		
2-14 days	123	52.3
Three weeks	45	19.1
One month	33	14.0
Source of infection for MERS-CoV?		
Bats	9	3.8
Camels	126	53.6
Other domestic animals	14	6.0
Don't know	86	36.6

TABLE 5: KNOWLEDGE ABOUT SPREAD AND PROTECTION OF MERS-CoV IN HUMANS

Question	Number	%
How does the MERS-CoV spread?		
From an infected person through close contact	124	52.8
Fast foods	3	1.3
Contact with domestic animals	29	12.3
Don't know	79	33.6
How the infection from MERS-CoV can be protected?		
Washing hands with alcohol-based sanitizers	20	8.5
Covering nose/mouth with tissue paper when coughing/sneezing	10	4.3
Avoid personal contact (kissing, sharing utensils etc)	16	6.8
All the above	189	80.4

TABLE 6: DENTAL STUDENTS' KNOWLEDGE ABOUT TREATMENT OF MERS-CoV

Question	Number	%
Is MERS-CoV is same as SARS virus?		
Yes	49	20.9
No	186	79.1
Do you know fatality rate with MERS-CoV?		
50 percent	36	15.3
30 percent	49	20.9
5 percent	24	10.4
Don't know	125	53.4
Treatment for MERS-CoV?		
Supportive Treatment	116	49.4
Vaccination	10	4.3
No treatment	25	10.6
Don't know	84	35.7

(Table 4). More than half (52.8%) of the dental students knew that close contact with confirmed MERS patient spreads the infection; and a vast majority (80.4%) was aware of various methods to protect spread of MERS-CoV (Table 5). More than three-fourth (79.1%) of the respondents could distinguish between SARS and MERS. One in every five (20.9%) dental students knew that the fatality rate of MERS-CoV is about 30% (Table 6). About half of the dental students (49.4%) were aware that the management of MERS-CoV at this stage is basically supportive in nature (Table 6).

DISCUSSION

The MERS-CoV continues to pose a serious challenge to all HCWs in the area. Dental profession is among those at highest risk due to proximity with patients; and exposure to blood and saliva during the treatment. The present study has described the knowledge of dental students at various levels of their education. The results of the present study; though could be called satisfactory, have highlighted a need for enhancement of knowledge about MERS-CoV in the dental students. The results of the present study in general were similar to that of Kharma et al¹⁸ which was conducted among dental students in Alfarambi College of Dentistry, Jeddah. The results of the present study were also similar to a study by Liu et al¹⁹ conducted among medical students.

A majority of the dental students was aware about the methods of protection from MERS-CoV, which indicates that the information related to contamination and spread of MERS-CoV and protection measures was well known among the study sample. The infection prevention and control measures for managing acute viral respiratory tract infection are well documented.²⁰⁻²²

Droplet precaution by wearing a surgical mask when within one meter of the patient; and contact precaution by wearing gown and gloves on entering the room and removing it on leaving are of prime importance. Eye-protection should be added when caring for probable or confirmed cases of MERS-CoV infection. More than three-fourth of the study sample was aware that MERS-CoV is contagious, and therefore, it is very important to use these methods of protection.

The present study has shown satisfactory knowledge of MERS-CoV (etiology, symptoms, and protection) among the dental students and this reflects the successful distribution of the information about MERS-CoV by Media and the College. However, there is a need for further continuing education among the dental students, as well as improving public education about infection control. It has also been suggested that HCWs be provided information about such diseases as part of their training in controlling infectious diseases.²³

The MERS-CoV outbreaks in some cities and the increasing number of HCWs workers getting affected remind us of a need to acquire the basic information of infection control, which is the main principle for

protection from MERS-CoV.⁹ Kim et al have provided a guideline in infection control and prevention for healthcare facilities.²⁴ In addition, the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have also issued recommendations for the prevention and control of MERS-CoV infections in healthcare settings.¹⁸ The prevention of MERS-CoV includes hand hygiene, wearing personal protective equipment, and appropriate patient placement.²⁵ In terms of general training, courses on new acute diseases, field epidemiology, and tropical medicine can be provided.^{26,27} In terms of specific outbreaks, a special course to improve the students' knowledge of MERS should be provided. Massive efforts from all the concerned quarters are underway to educate and protect the general public and health care workers from MERS-CoV. There is a need to continue these efforts with full zeal. It is hoped that the present study has provided useful information that can be utilized in designing the programs for enhancement of knowledge on MERS-CoV in the dental students.

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