

ORIGINAL ARTICLE

Knowledge about MERS (Middle Eastern Respiratory Syndrome) among Doctors in Holy Family Hospital, Rawalpindi

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ABSTRACT

Background: MERS is one of the newly emerging infectious diseases. Since it is confined mostly to the Arabian Peninsula, all those returning from this region are likely to bring this infection. Hence, with the huge number of Hajj/Umrah pilgrims returning each year from Saudi Arabia, health care workers should be well aware of the various aspects of this disease.

Objective: To measure the level of awareness of doctors about Middle Eastern Respiratory Syndrome (MERS) Infection.

Study Design: A cross-sectional, descriptive study.

Place and Duration of Study: The study was conducted in the medical and pediatric units of Holy Family Hospital, Rawalpindi from 24th August to 5th September, 2014.

Materials and Methods: Study population consisted of qualified and registered medical practitioners. Demographic details about the respondents of the study were collected. Awareness about MERS infection was assessed by a questionnaire. Responses were classified as correct/ incorrect, enumerated and converted into percentages.

Results: Eighty five percent of the respondents knew about the causative organism. Most of the doctors were aware of the signs and symptoms (75%), mode of spread (51%) and the treatments available (51%). However, most of them lacked knowledge about preventive methods (72%) and diagnostic techniques (59%).

Conclusion: Awareness about MERS among doctors working in medical and pediatric Units of Holy Family Hospital is quite high but knowledge regarding preventive measures is suboptimal.

Key Words: *Doctors, MERS (Middle Eastern Respiratory Syndrome), Mode of Transmission, Pakistan, Reservoir.*

Introduction

Middle East Respiratory Syndrome caused by Coronavirus (MERS-CoV) has been recognized as an emerging viral infection that is also potentially lethal. According to World Health Organization, by June 2015, as many as 1289 cases of MERS-CoV had been identified and confirmed on laboratory reports.¹ Since the first reported case in September 2012 in Saudi Arabia² 455 deaths have occurred worldwide and almost 300 cases have been identified within Saudi Arabia.³ It is the sixth Corona virus with the potential to cause severe acute respiratory syndrome and multiorgan failure in humans. This viral infection is potentially lethal with a mortality

rate of 40%.⁴ The symptoms include complaints like fever, chills, cough, dyspnoea and muscle aches and pains. Gastrointestinal symptoms are also reported like diarrhoea and vomiting as well as abdominal pain. Patients older than 40 years of age had higher mortality rates than younger patients.^{4,5} Those suffering from co-morbidities like diabetes, renal failure and heart failure are more likely to die from this infection.^{6,7} Diagnosis requires detection of MERS-CoV nucleic acid by polymerase Chain Reaction (RT-PCR) in upper and lower respiratory tract secretions, such as in sputum, tracheal aspirate and in bronchoalveolar lavage.⁸

Although most of these cases are clustered in countries of the Arabian Peninsula with Saudi Arabia as the hub, yet travellers to this region can carry this infection far and wide as shown by the appearance of secondary cases in UK, Jordan, Egypt, Austria, etc. The source of this infection is the dromedary camel, known to harbor the virus causing MERS but the mode of transmission, whether direct or indirect, is still unclear.⁹

Human-to-human transmission has been brought to

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notice with the appearance of hospital-acquired and community acquired cases. In a study that followed up 280 contacts of 26 index patients, the transmission rate was found to be 5% (i.e. 12 cases of MERS-CoV were identified).¹⁰ Health care workers (HCW) are shown to be at greatest risk of acquiring the infection. According to a study in Jeddah, HCW constituted 20.9% of the patients diagnosed with MERS. Those who were symptomatic were also found to have had contact with a health care facility or a confirmed case of MERS or with someone who had fever with respiratory complaints within the last 14 days.¹¹

To date, there is no vaccine available against MERS nor is there any specific treatment being offered.¹² Investigators have found that nosocomial and zoonotic transmission is the most important mode of spread of this infection.¹³ The preventive measures that are recommended for those coming in contact with animals particularly camels in the Arabian Peninsula include rigorous hygienic measures such as hand-washing and avoiding contact with diseased animals. Consuming raw meat or milk from camels should be strictly avoided and animal products must be subjected to pasteurization and cooking or other processing that renders it safe for consumption. Moreover all those who suffer from immune-compromising conditions, diabetes, chronic lung diseases and renal failure are considered at high risk for developing MERS-CoV infections.¹⁴ Health care workers are recommended to wear personal protective equipment including mask, gown, gloves and goggles besides practicing hand washing before and after handling MERS-CoV infected/ suspected patients or his/her surroundings.¹⁵

The most recent outbreak of MERS-CoV has occurred in South Korea. This is also the largest outbreak outside Kingdom of Saudi Arabia. The most important feature of this outbreak is that the transmission of infection was not limited to South Korea alone but MERS was exported to a third country, China; thus highlighting the existence of human-to human transmission of this virus. It is a third generation transmission of infection- from index case to contacts, and from the secondary case to another person who had no contact with the index case.¹⁶ This outbreak in Korea highlights the fact that even a single imported case of MERS-CoV can be a

huge risk that can trigger the spread of infection.^{17,18}

Since transmission of MERS is mainly nosocomial, knowledge about control of infection and preventive measures in order to intercept the transmission of the virus particularly in hospitals, is extremely crucial in containing an epidemic.^{18,19}

With millions of hajj and umrah pilgrims returning from Saudi Arabia in addition to a regular turnover of expatriates visiting throughout the year, Pakistan is at particularly high risk of developing such epidemics. With the arrival of even a single case, an epidemic can be triggered and MERS can spread like wildfire all over Pakistan. In addition, the low literacy level of the Pakistani population and a general lack of awareness about health issues especially newly emerging diseases make Pakistan more vulnerable to the threat of MERS. In Pakistan's context, knowledge and training of doctors and health personnel in the control of newly emerging infections like MERS is also suboptimal since refresher courses and continued medical education is not mandatory. To the best of our knowledge, no studies regarding assessment of knowledge about MERS virus/ MERS syndrome have been undertaken except one study conducted in Saudi Arabia. Keeping this rationale/scenario in mind, this study aimed to assess level of knowledge among doctors regarding Middle Eastern Respiratory Syndrome (MERS-CoV) in a tertiary care hospital of Rawalpindi.

Materials and Methods

This was a cross-sectional, descriptive study in which the study population consisted of doctors including House Officers, Postgraduate Trainees, Medical Officers (MOs), Woman Medical Officers (WMOs), Assistant Principal Medical Officers/ Woman Medical Officers (APMO/APWMO), Registrars, Assistant and Associate Professors. All these doctors were registered with Pakistan Medical and Dental Council and were working in Medical and Paediatric units of Holy Family Hospital, Rawalpindi. Holy family Hospital is a multidisciplinary 850-bedded hospital located in the densely populated city of Rawalpindi close to its junction with the capital, Islamabad. It provides both out-patient and in-patient facilities. Data was collected from 24th August to 5th September, 2014. Informed written consent was taken from the respondents and anonymity was maintained.

Using the prevalence of insufficient knowledge about MERS i.e. 4%20, margin of error 4.99%, significance level 95%, the sample size calculated using Sample Size Calculator was 60. Convenience sampling technique was used.

The questionnaire was developed to assess the knowledge of the doctors about Middle East Respiratory Syndrome (MERS). The questions asked were about the causative organism, mode of spread of infection, clinical signs and symptoms, diagnostic tests available, awareness about treatment options, and prevention of MERS. Multiple choice questions were designed and included in the questionnaire. The questionnaire was approved by the research supervisor and was distributed and collected by medical students.

Data collected was non-parametric and was entered in SPSS version 20.0. Those giving the correct answers were enumerated and percentages were calculated.

Results

A total of 60 questionnaires were distributed. Among these 41 were Postgraduate Trainees, 14 were Medical Officers/ Woman Medical Officers, 3 were Senior Registrars/ Consultants and 2 were APMO/ APWMO. Regarding the age distribution, majority (56%) were 21-30 years of age. Only 5% were 51-60 years of age. Most of them (63%) had been working for a period of one to five years as a doctor (Table I).

Table I. Demographic data of study participants

| Distribution of doctors according to their characteristics (n=60) | |
|---|-------------|
| Age in Years | % (Number) |
| 21-30 | 58.3%(35) |
| 31-40 | 30%(18) |
| 41-50 | 6.7%(4) |
| 51-60 | 5%(3) |
| Years of Experience | |
| Less than 1 | 25%(15) |
| 1-5 | 63%(38) |
| 6-10 | 6.6%(4) |
| 11-15 | 5%(3) |
| Designation | |
| Postgraduate Trainees | 68.34% (41) |
| Woman Medical Officer/Medical Officer | 23.33%(14) |
| APWMO/APMO | 5%(3) |
| Senior Registrar/Consultant | 3.33%(2) |

95% (n=57) of the doctors were aware of the abbreviation while 5% (n=3) did not know what MERS stands for. Of the 57 doctors who knew about the abbreviation, 48(85%) knew that the causative organism was corona virus. Most of the respondents were aware of the clinical picture but the most apparent knowledge gap was observed regarding the methods of prevention. Only 11 (18.3%) knew about the appropriate methods of prevention to be adopted while handling a case of MERS infection. The percentage and number of doctors who gave the correct answers are given in Table II.

Table II: Percentage and Number of doctors who were knowledgeable about different aspects of MERS (n=60)

| Knowledge about | Percentage(%) | Number (n=60) |
|-----------------------|---------------|---------------|
| Abbreviation of MERS | 95% | 57 |
| Causative Organism | 85% | 51 |
| Mode of Spread | 51.6% | 31 |
| Signs and Symptoms | 75% | 45 |
| Diagnostic Method | 41.6% | 25 |
| Treatment | 51.6% | 31 |
| Methods of Prevention | 18.3% | 11 |

Discussion

In our study, despite the fact that only a small percentage of our sample consisted of senior consultants, the majority of the doctors were aware of the newly emerging infectious disease of MERS. The most important knowledge gap was regarding the preventive measures required for the containment of this infection. Less than one-third of the respondents were aware of the appropriate methods of prevention.

To the best of our knowledge, there has been only one similar study on the subject of awareness about MERS-CoV conducted in the Kingdom of Saudi Arabia among Health Care Workers (HCWs) including nurses, pharmacists and technical staff besides doctors.²⁰ In contrast, our study population consisted of only doctors.

Since MERS is a major public health problem in the Arabian Peninsula, it is no wonder that the knowledge of HCWs in KSA is better in almost all aspects of the disease than in our study. Like the study in KSA with 96% respondents correctly

identifying the signs and symptoms of MERS, in our study the most correct answers (75%) were about the clinical signs and symptoms of MERS. Whereas 94% of the HCWs in Saudi study were aware of the important preventive measures, only 18% answered correctly in our study. The next important knowledge gap is regarding the diagnostic method most suitable for detection of MERS infection. Only 41% Pakistani doctors are aware of it, whereas 76.5% HCWs replied correctly about the diagnostic method in the Saudi study. In contrast, the participants (doctors) in our study are more knowledgeable about management in MERS infection (51%) whereas among HCWs in KSA, only 40% knew appropriate management. This is to be expected since the educational background is much broader for doctors than for nurses, pharmacists and technical staff who were also included in the participants of the study in KSA.

Conclusion

Our study shows that although the awareness among doctors regarding signs and symptoms and treatment of MERS virus/syndrome is high, the level of knowledge about preventive methods is suboptimal.

Recommendations

Our study has highlighted the fact that the major emphasis in our clinical setup is laid on treatment and not on prevention. There is an urgent need to educate the medical community about new and re-emerging infections that can spread rapidly. For this purpose, continued medical education programmes must be instituted.

REFERENCES

- World Health Organization. Global Alert and Response: Disease outbreak news. Middle East Respiratory Syndrome Coronavirus (MERS-CoV) – Republic of Korea. [Updated on 12 June 2015]. [Accessed on 13 June 2015]. <http://www.who.int/csr/don/12-june-2015-mers-korea/en/>
- Zaki AM, Boheeman S, Bestebroer TM, Osterhaus AD, Fouchier RA. Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. *N Engl J Med*. 2012; 367: 1814–20.
- World Health Organization: Middle East Respiratory Syndrome Coronavirus (MERS-CoV). Summary and Literature Update as of 9 May 2014. [http://www.who.int/csr/disease/coronavirus_infections/MERS_CoV_Update_09_May_2014.pdf] [accessed on 13 June 2015].
- Alsahafi AJ, Cheng AC. The epidemiology of Middle East respiratory syndrome coronavirus in the Kingdom of Saudi Arabia, 2012–2015. *Int J Infect Dis*. 2016; 45: 1–4.
- Zumla A, Hui DS, Perlman S. Middle East respiratory syndrome. *Lancet* 2015; 386: 995–1007.
- Assiri A, Al-Tawfiq JA, Al-Rabeeh AA, Al-Rabiah FA, Al-Hajjar S, Al-Barrak A, et al. East respiratory syndrome coronavirus disease from Saudi Arabia: a descriptive study. *Lancet Infect Dis*. 2013; 13: 752–61.
- Arabi YM, Arifi AA, Balkhy HH, Najm H, Aldawood AS, Ghabashi A, et al. Clinical course and outcomes of critically ill patients with Middle East respiratory syndrome coronavirus infection. *Ann Intern Med* 2014; 160: 389–97.
- World Health Organization. Laboratory testing for novel coronavirus. Interim Recommendations, 21 December 2012. Available at: http://www.who.int/csr/disease/coronavirus_infections/LaboratoryTestingNovelCoronavirus_21Dec12.pdf.
- Memish ZA, Cotten M, Meyer B. Human infection with MERS coronavirus after exposure to infected camels, Saudi Arabia, 2013. *Emerg Infect Dis*. 2014; 20: 1012–5.
- Drosten C, Meyer B, Müller MA, Corman VM, Al-Masri M, Hossain R, et al. Transmission of MERS-coronavirus in household contacts. *N Engl J Med*. 2014; 371: 828–35.
- Oboho IK, Tomczyk SM, Al-Asmari AM, Banjar AA, Al-Mugti H, Aloraini MS, et al. 2014 MERS-CoV outbreak in Jeddah—a link to health care facilities. *N Engl J Med*. 2015; 372: 846–54.
- Du L, Tai W, Zhou Y, Jiang S. Vaccines for the prevention against the threat of MERS-CoV. *Expert Rev Vaccines*. 2016 Mar 17.
- Shehata MM, Goma MR, Ali MA, Kayali G. Middle East respiratory syndrome coronavirus: a comprehensive review. *Front Med*. 2016 Jan 20.
- World Health Organization. Middle East respiratory syndrome coronavirus (MERS-CoV) Fact sheet N°401. [Updated June 2015]. <http://www.who.int/mediacentre/factsheets/mers-cov/en/> [Accessed on July 25, 2015].
- World Health Organization. Infection prevention and control during health care for probable or confirmed cases of novel coronavirus (nCoV) infection. Interim guidance 6 May 2013. http://www.who.int/csr/disease/coronavirus_infections/PCnCoVguidance_06May13.pdf. [Accessed on July 27, 2015].
- Korea Centers for Disease Control and Prevention. Middle East Respiratory Syndrome Coronavirus Outbreak in the Republic of Korea, 2015. *Osong Public Health Res Perspect*. 2015; 6: 269–78.
- WHO. MERS-CoV outbreak largest outside Kingdom of Saudi Arabia: Briefing notes on MERS-CoV (Updated on 2 June 2015). Available from: <http://www.who.int/mediacentre/news/mers/briefing-notes/2-june-2015-republic-of-korea/en/> (Accessed on 19 March, 2016).
- Liu S, Chan TC, Chu YT, Wu JT, Geng X, Zhao N, et al. Comparative Epidemiology of Human Infections with Middle East Respiratory Syndrome and Severe Acute Respiratory Syndrome Coronaviruses among Healthcare

- Personnel. PLoS One 2016; 11: e0149988.
19. Assiri A, McGeer A, Perl TM, Price CS, Al Rabeeah AA, Derek MD, Cummings AT, et al. Hospital outbreak of Middle East Respiratory Syndrome coronavirus. N Engl J Med 2013, 369: 407–16.
 20. Khan MU, Shah S, Ahmad A, Fatokun O. Knowledge and attitude of healthcare workers about Middle East Respiratory Syndrome in multispecialty hospitals of Qassim, Saudi Arabia. BMC Public Health 2014; 14: 1281.
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