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KNOWLEDGE, ATTITUDE AND PRACTICE OF MIDDLE EAST RESPIRATORY SYNDROME CORONA VIRUS (MERS-COV), AMONG MALE PRIMARY SCHOOL STUDENTS IN ALMAJMAAH CITY, SAUDI ARABIA, 2017

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ABSTRACT

Background: Corona virus is a disease that affects the respiratory system. Becoming a global health problem that is primarily detected in KSA with progressive increase in cases and deaths, **Objective:** The aim of our research is to determine Knowledge, attitude and practice of Middle East Respiratory Syndrome Corona virus (MERS-CoV), among male primary school students in Almajmaah City, Saudi Arabia, 2015. **Methodology:** It is an observational cross-sectional study, in which 384 participants representing students from deferent schools were included in this study. Data collected using An interview questionnaire from researchers built by them. The data were analyzed by the use of Statistical Package for Social Sciences (SPSS). **Results:** The Results about Knowledge: 252(65.6%) of students knew that MERS-CoV can be transmitted by cough and sneeze, 110(28.6%) agreed on that the virus is transmitting by touch, 92(24%) agreed on that only humans are affected by the virus. For Attitude: 294(76.6%) students agreed on the importance of reporting the suspected cases to the authorities ,regarding the importance of using the mask in the crowded areas, 292(76%) students agreed to it, 220 (76%) students thought corona is preventable. For Practice: 206(53.6%) students are covering their faces by tissue while coughing and sneezing, 222(57.8%) students wash their hands by water and soap continuously, avoiding touching the eye, nose and mouth is done by 165(43%) of the students all the time, regardless of their hands hygiene, 177(46.1%) keep on eating healthy food and lifestyle all the time. **Conclusion:** In conclusion, the study showed that there was knowledge

gap, negative attitude and poor practice among primary school student in Almajmaah towards MERS-CoV infection.

KEYWARDS: Corona, Infectious diseases, URTI, Almajmaah, KAP.

INTRODUCTION AND LITERATURE REVIEW

Coronavirus is a disease that affects the respiratory system. Most of it spread the same way as other cold viruses do, Through infected people coughing and sneezing, by touching an infected person's hands or face, or by touching contaminated things such as doorknobs that infected people have touched.[1]

The symptoms in most coronaviruses are similar to any other respiratory infection including runny nose, coughing, sore throat, and sometimes a fever. In most cases, you won't know whether you have a coronavirus or a different cold-causing virus, such as rhinovirus. Lab tests include culture from nose and\or throat and blood work, to find out whether it is a cold of coronavirus.[1]

One type of novel corona virus was reported in Saudi Arabia in September 2012, and the case is a man who was admitted to the hospital with pneumonia and acute kidney injury in June 2012.[2]

A few days later, another case reported with identical virus, the patient suffered from acute respiratory syndrome and kidney injury.[3]

Another study shows that MERS-CoV infects lower respiratory, kidney, intestinal, and liver cells, as well as histiocytes.[4] In another study, human bronchial epithelial cells were susceptible to infection.[5] It was initially termed human coronavirus-EMC (for Erasmus Medical Center), then it has been named Middle East respiratory syndrome coronavirus (MERS-CoV).[6]

MERS-CoV also infects nonhuman primate, porcine, bat, civet, rabbit, and horse cell lines.[4] After analysis of MERS-CoV obtained from 21 infected patients in Saudi Arabia between June 2012 and June 2013, there was sufficient heterogeneity to support multiple separate animal-to-human transfers.[7]

In September 2012 was the first case to be identified and reported to WHO that is infected by

MERS-CoV. In January 23, 2015, 956 laboratory-confirmed cases of MERS-CoV by WHO, in which at least 351 patients died because of it. All reported cases have been directly or indirectly linked through travel or residence to nine countries: Saudi Arabia, the United Arab Emirates, Qatar, Jordan, Oman, Kuwait, Yemen, Lebanon, and Iran.[8]

In the United States, two patients tested positive for MERS-CoV in May 2014, each of whom had a history of fever and one or more respiratory symptoms after recent travel from Saudi Arabia.[9]

A cross-sectional, KAP study conducted in Riyadh, Saudi Arabia. The study participants were recruited from several constituent colleges of King Saud University and secondary schools in Riyadh. Among the 1109 students who answered the questionnaires, 53.1% were male, and 46.9% were female. Level of knowledge about clinical presentation of MERS is generally similar among university and school students. The most frequently reported source of transmission is entering crowded spaces and being exposed to coughing and sneezing. Additionally, hand washing was the most commonly reported method of protection against the infection. More emphasis should be placed on educating the student participants about preventive measures such as using tissues when sneezing and coughing and proper tissue disposal.[10]

Other similar cross-sectional study was conducted in Makkah public hospitals from September 2014 to April 2015. A total of 281 participants representing healthcare providers were included in this study. Data representing knowledge, attitude and practices were collected using structured self-administered questionnaires. The mean age of the participants was 30.8 ± 6.3, years ranged from 21 to 57. More than half of them were females (57.7%) and 46.3% were nurses. In general, the findings showed that only one third of them (32.4%) acquired good knowledge about the infection with mean knowledge score 18.3 ± 3.9 (out of 28) and most of them (91.8%) showed negative attitude towards the infection with mean attitude score 5.4 ± 1.6 (out of 11). However, 87.9% reported good practices with mean practice score 7.2 ± 1.5 (out of 8). The mean knowledge score was significantly higher among those with age ≥ 30 years, physicians and those with > 10 years of experience and the mean practice score was significantly more among females.[11]

Other study, conducted by Australian researchers that involved two cross-sectional surveys among Australian pilgrims aged ≥ 18 years, before and after Hajj in 2014. The first survey

was conducted 1 month before Hajj among departing pilgrims. Participants were met at weekly pre-Hajj seminars run by travel agents and were invited to take part in the survey. The second survey was conducted immediately after the pilgrims' return to Australia (post-Hajj study). During the pre-Hajj survey, 350 (92%) pilgrims aged 18–79 (median 39) years agreed and finally completed the survey. Over one-fifth (22%) reported having one or more chronic diseases: 8% had diabetes, 7% asthma, 7% hypercholesterolemia and 5% hypertension. Most pilgrims (82%) were travelling to Hajj for the first time and planned to stay in Saudi Arabia for a median of 27 (range: 7 to 40) days. About two-thirds of respondents (64%) received 'travel health advice' before Hajj, including from general practitioners (GPs) (81%), travel clinics (24%) and specialist websites (e.g. Saudi Ministry of Health [MoH] website) (12%).[12]

Infection prevention and control measures are critical to prevent the possible spread of MERS-CoV in health care facilities. It is not always possible to identify patients with MERS-CoV early because like other respiratory infections, the early symptoms of MERS-CoV are non-specific. Therefore, health-care workers should always apply standard precautions consistently with all patients, regardless of their diagnosis.[13]

Until more is understood about MERS-CoV, people with diabetes, renal failure, chronic lung disease, and immunocompromised persons are considered to be at high risk of severe disease from MERS-CoV infection. Food hygiene practices should be observed. People should avoid drinking raw camel milk or camel urine, or eating meat that has not been properly cooked.[13]

No vaccine or specific treatment is currently available. The only Treatment that is available so far is supportive and based on the patient's clinical condition. So, prevention is very important step with health education[5]

OBJECTIVES

General objective

- To asses the knowledge, attitude and practice of Middle East Respiratory Syndrome Corona Virus (MERS-CoV), among male primary school students in Almajmaah City, Saudi Arabia, 2015.

Specific objectives

- To identify the knowledge about MERS-CoV among the students.

- To identify the attitude of the students towards MERS-CoV.
- To assess the practice fostered by the students and whether or not it is affected by others.
- To know KAP within different factors and associations.

METHODOLOGY

Study design

It is an observational cross-sectional study to know KAP of CoV infection among male primary school students in Almajmaah city from February 2017 to March 2017.

Study area

The study conducted in Almajmaah city which is an area of 30,000 km2 and has a population of 133 thousand people. It has 16 small cities and villages that belong to Riyadh region, bordered on the north and north-west by Zulfi, the eastern region and south by Thadig and Shaqra province, from the middle by Remah province and from the west by Ghat province. Prince / Abdul Rahman bin Abdullah bin Faisal bin Farhan Al Saud, serves as the Governor. Almajmaah City is the capital city of the province. Of population 73,000.

Study population

There are 21 male primary schools in Almajmaa city in which 1625 of all the students are in the seniority years (fourth, fifth and sixth year).

Ethical consideration

Ethical clearance was obtained from the research ethical committee at Almajmaah university, Letters of cooperation were written from the supervisor involved in the study. Furthermore, oral consent was obtained from the school authority, represented by the principle himself, prior to participation in the study with brief explanation on the objectives and benefits of the study with emphasis that personal data would be confidential and used for the scientific work only.

Data collection

An interview questionnaire from researchers built by them. Created both in Arabic and English after a thorough search in the literature based on the most recent available information.

Inclusion

1. 4^{th},5^{th} and 6^{th} grade primary school students
2. Male students

Exclusion

1. 1^{st},2^{nd} and 3^{rd} grade students
2. Female students

Sample size

$N= Z^2 \times PQ / D^2$

Where: Z= 1.96, D=0.05, Q= 1-P , P= 0.5

So, the sample size for this research is 384 person

N: Sample size

Z: standard normal deviate =1,96

P: prevelance

Q:1-P

D: Error accepted = 0.05

Sample size was calculated by standard normal deviate in power of two (1.96^2) multiply by prevalence (0.5) then multiply by Q (1-0.5) then divided on error accepted (0.05), and it was found equals to 384 students.

Sample technique

The researchers followed a cluster sampling type. In which ten schools had been chosen randomly in different areas in Almajmaah City.

From each school about 38 students were selected randomly from the higher classes (the 4^{th}, 5^{th}, and 6^{th}), and the total number collected was 384 students.

Analysis

The data was analyzed using SPSS 23.0.

RESULTS

The questionnaire contains three categories that represent the essence of this research and to fulfill our objectives, we divided the questionnaire into three categories:

- Knowledge. Composed of two parts: what do you know about MERS-CoV and what is the source of that knowledge.

- Attitude. Contains 5 questions.
- Practice. Contains 8 questions.

KNOWLEDGE

(Table 1), Shows A General Knowledge of Mers-Cov Among The Higher Classes, Primary School Male Students.

Knowledge	Yes	No	I don't Know
is MERS-CoV transmitted by cough and sneeze	252 (65.6%)	17 (4.4%)	115 (30 %)
is MERS-CoV is transmitted by touch	110 (28.6%)	136 (35.4%)	138 (35.9%)
Does it affect only man kind ?	92 (24%)	155 (40.4%)	137 (35.7%)
If no, does transmit between animals and humans?	97 (25.3%)	38 (9.9%)	51 (13.3%)
is MERS-CoV transmitted by animal products (milk and meat)	67 (17.4%)	55 (14.3 %)	66 (17.2%)
If yes for previous question. Is it transmitted in well cooked products?	23 (6%)	42 (10.9%)	26 (6.8%)
Do you think MERS-CoV is a dangerous disease	323 (84.1%)	31 (8.1%)	40 (7.8%)

The average in this category (37.5%) shows a poor knowledge between the students of MERS-CoV.

Attitude

In total, the sum percentage of the correct answers was 52.04%, which indicates that the attitude of the male primary students in Almajmaah city is almost in the minimum acceptable range.

Table 2: Different questions were asked to the students to figure their attitude towards MERS-CoV.

Attitude	Agree	Uncertain	Disagree
Is it Important to report a suspected case to health authorities	294 (76.6%)	56 (14.6%)	34 (8.9%)
Is it Important to use face mask in crowded place(In performing omra, stadiums)	292 (76%)	56 (14.6%)	36 (9.4%)
Corona infection is preventable	220 (76%)	111 (28.9%)	53 (13.8%)
Corona infection can be treated at home	74 (19.3%)	96 (25%)	214 (55.7%)
Health education has nothing to do with disease prevention(In T.V, brochures, symposiums)	116 (30.2%)	97 (25.3%)	171 (44.5%)

Practice

Table 3.

Table 3: Indicates where the students will seek treatment at, and whom he are going to tell if they got the infection.

Practices	**Private clinic**	**Governmental hospital or clinic**		**Traditional healer**	**Governmental & Private clinics**	**Governmental & traditional**		**All**
When you get sick, where do you seek treatment at	124 (32.3%)	209 (54.4%)		18 (4.7%)	25 (6.5%)	6 (1.6%)		2 (0.5%)
Practices	**Doctor or health worker**	**Parents**	**Close friend**	**Doctor & parents**	**Parents & close friend**	**Doctor & close friend**	**All**	**No one**
Who'd you talk to if you had the illness	91 (23.7%)	254 (66.1%)	3 (0.8%)	21 (5.5%)	2 (0.5%)	one (0.3%)	4 (1.0%)	8 (4.1%)

The association was between the TV as a source of knowledge and the level of knowledge as shown in table 4.

(Table-4) Shows the level of knowledge of MERS-CoV in relation to the TV as a source.

Knowledge	**T.V**		**Total**
	Yes N (%)	**No N (%)**	
Poor	150 (57.5)	111 (42.5)	261 (100)
Good	54 (62.8)	32 (37.2)	86 (100)
Very good	16 (48.5)	17 (51.5)	33 (100)
Excellent	2 (50)	2 (50)	4 (100)
Total	222 (57.8)	162 (42.2)	384 (100)
Pearson Chi Square =2.164 , P=.539			

There was no significant association observed between Knowledge and TV as a source of it, p=0.539.

The association between the level of knowledge of the students and the internet and social media as a source as shown in table 11.

Table 11: Shows the level of knowledge of MERS-CoV in relation to internet & social media as a source.

INTERNET & SOCIAL MEDIA	**Yes N(%)**	**No N(%)**	**TOTAL N(%)**
POOR	122(46.7%)	139(53.3%)	261 (100%)
GOOD	42(48.8%)	44(51.2%)	86(100%)
VERY GOOD	15(45.5%)	18(54.5%)	33(100%)
EXCELLENT	2(50%)	2(50%)	4(100%)
TOTAL	181(47.1%)	203(52.9%)	384(100%)
CHI-SQUARE=0.167, P= 0.983			

There was no significant association observed between the level of knowledge and internet and social media as a source of it, p= 0.983.

DISCUSSION

To our knowledge, this study is the first to attempt to measure the knowledge, attitude and practice of MERS-CoV among Primary school students specially among higher classes, forth, fifth, and sixth grades, in the city of Almajmaah. In general, our results showed relatively poor knowledge, negative attitude and reported poor practices towards MERS-CoV. We can explain such negative results by that The students have not gotten any health education about MERS-CoV and it's not a part of their curriculum at their school.

These findings correspond with recently published study that done in Makkah region.[20] Makkah region study was done among health care workers and the study reported poor knowledge, negative attitude and good practice towards the infection. Regarding our study, the total level of knowledge was found poor among 68% of the student (while 67.6% in Makkah study), and good to excellent among the remaining (32%) (32.4% in Makkah). The practice was poor among majority of the students (64%) in our study, while it was good among the majority of the health workers at Makkah study (87.9%). And this difference maybe due to the difference in the study population.

The general attitude was acceptably positive among the students (52.04%). The most positive attitude was observed when students agreed on the Importance to report a suspected case to health authorities, and Corona infection is preventable which correspond with the study in Makkah. According to the results, we can rely that, mostly, upon their appreciable knowledge about the disease and their practice in which the majority wash their hands frequently.

On the other hand, the negative attitude observed when the students replied regarding Health education has nothing to do with disease prevention which disagrees with the study that done in Makkah and this disagreement can be explained by the emphasize on the awareness programs by the health authorities on such issues regarding infection education and also may be ascribed to the cumulative experience from continuous exposure of healthcare providers to such cases related to the respiratory disease.

CONCLUSION

In conclusion, the study showed that there was knowledge gap, negative attitude and poor practice among primary school student in Almajmaah towards MERS-CoV infection.

Recommendation

1- Continued and strengthened educational programs are needed to improve their knowledge and change their attitudes toward infection that will be in the interest of global public health.
2- To include heath education in the curriculum.
3- To use different media tool for health education.
4- To utilize social media in empowering health education.

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