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RESEARCH ARTICLE

ASSESSMENT OF AWARENESS OF MEDICAL STUDENTS IN THE CLINICAL PHASE IN KSAU-HS, COM, RIYADH TOWARDS ZIKA VIRUS

Mohammed Sambas¹, Mohammed Alshareef¹, Salem Alshimemeri¹, AbdulrahmanAlshareef¹, Sajida Agha²,
Emad M. Masuadi².

1. College of Medicine/King Saud bin Abdulaziz University for Health Science, Saudi Arabia.
2. Department of Medical Education, College of Medicine/King Saud bin Abdulaziz University for Health Science, Saudi Arabia

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Abstract

To assess the level of awareness of medical students in clinical years regarding Zika Virus, and to compare the level of awareness among male and female student.

This is a cross sectional survey of medical students in the clinical years in KSAU-HS, Riyadh, College of Medicine. Assessment was done by a self-administered questionnaire, and data entry analysis was done by using SPSS version 20.

Of the 152 participants out of 293 students, 114 were male (75%) and 38 were female (25%). 29 out of 152 reported that they had never heard of the virus before (19.1%). 36 (29.3%) of participants chose an infected Aedes species mosquito's bite, 40 (32.5%) chose that maternofetal transmission occurs during pregnancy, and only 9 (7.3%) chose that it can be transmitted through sexual contact. When asked about previous Zika disease outbreaks, 76 (61.8%) students said that they have heard of the 2015 Brazil outbreak, 6 (4.9%) students said that they had heard about the 2013 French Polynesia outbreak, and not a single student said that they had heard about the 2007 Yap outbreak.

In conclusion, a low level of knowledge regarding Zika virus was found amongst medical students especially when compared to their knowledge of MERS-COV.

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Introduction:-

Zika virus is a single stranded RNA virus of the Flaviviridae family and the genus Flavivirus. It was first identified in 1947 in rhesus macaque monkeys in the Zika forest of Uganda. [1] Since then, reports of human cases were infrequent until an outbreak in 2007 in the island of Yap occurred where 49 confirmed serologically over a 4 month period and, over three years, an estimated 73% of the island's population were infected. [1] Two other outbreaks occurred afterwards, first in 2013 in French Polynesia with 294 confirmed cases over 10 weeks and more recently in May 2015 in Brazil where the Brazilian Ministry of Health estimates that the number Zika infections since the outbreak began is 0.5 – 1.5 million as of the 22nd of January 2016. [1-2]

The vector by which Zika virus is transmitted is the Aedes mosquito. Other confirmed modes of transmission include maternofetal, perinatal, and sexual transmission. [1, 3] The symptoms of Zika infections include fever, skin

Corresponding Author:-Mohammed Sambas.

Address:-College of Medicine/King Saud bin Abdulaziz University for Health Science, Saudi Arabia.

rashes, conjunctivitis, muscle and joint pain, malaise, and headache which usually last 2 – 7 days and are mainly mild, as such; no specific treatment is required. Presently, there is no vaccine for the Zika virus. Microcephaly and Guillain-Barré syndrome are potential complications of Zika virus infection. [3]

Based on what has been mentioned and since medical students are future physicians who are supposed to play an effective role in spreading awareness regarding Zika Virus in the community and seeing how rapidly the most recent outbreak has spread and the huge number of people infected, the study is aimed to assess the awareness and background knowledge of medical students at King Saud Bin Abdulaziz University for Health Sciences' (KSAU-HS) Riyadh College of Medicine and specifically targeting those in the clinical years regarding Zika Virus.

Methods:-

This is a cross sectional survey of all male and female medical students (approx. 293) in the clinical years (Fifth and sixth year medical students) at the College of Medicine (COM) of King Saud bin Abdulaziz University for Health Science (KSAU-HS) Riyadh, Saudi Arabia. Awareness of medical students regarding Zika Virus was assessed by a self-administered questionnaire and data entry analysis was done by using SPSS version 20.

Results:-

Out of 293 students in the clinical years, 152 participated in our study. Of the 152 participants, 114 were male (75%) and 38 were female (25%), while 84 were fifth year medical students (55.3%) and 68 were sixth year medical students (44.7%) (Table 1). 29 out of 152 reported that they had never heard of the virus before (19.1%).

Of the 123 students who have heard of the virus, when presented with multiple possible modes of transmission and spread of the virus (more than 1 answer can be chosen), 36 (29.3%) chose an infected Aedes species mosquito's bite (daytime biter), 40 (32.5%) chose that maternofetal transmission occurs during pregnancy, and only 9 (7.3%) chose that it can be transmitted through sexual contact as seen on table 2 which also includes the frequencies of the incorrect choices. When presented with multiple possible symptoms and signs of Zika infection (more than 1 answer can be chosen), 49 (39.8%) chose coughing, 16 (13.0%) chose joint pain, 22 (17.9%) chose conjunctivitis, and 37 (30.0%) chose sore throat as seen on table 3 which also includes the incorrect symptoms presented to the students and the number of times each symptom was chosen.

When presented with eleven knowledge assessing questions which include multiple choices in each question where only 1 choice is correct per question, the most correctly answered question was "Which of the following is a known complication of Zika virus" where 58 (47.2%) students answered Microcephaly which is the correct answer. The second most correctly answered question was "Is there a vaccination for Zika virus disease" where 52 (42.3%) students answered "No" which is the correct answer. The third most correctly answered question was "How is Zika disease infection treated" where 45 (36.6%) students answered "Supportive" which is the correct answer. All knowledge assessing questions and the percentage of correct answers for each question can be seen on Table 4.

When asked about previous Zika disease outbreaks, 76 (61.8%) students said that they have heard of the 2015 Brazil outbreak, 6 (4.9%) students said that they had heard about the 2013 French Polynesia outbreak, and not a single student said that they had heard about the 2007 Yap outbreak (Table 5).

The students were graded for each question and for the entire questionnaire according to their correct answers; however, no statistically significant difference was found between the students' grades when compared by age, gender, and medical year (Table 6).

Table 1:- Demographics.

		N	%
Age (Years)	22	41	27.0%
	23	63	41.4%
	24	22	14.5%
	25+	26	17.1%
Gender	Male	114	75.0%
	Female	38	25.0%

Medical year	Sixth Year	68	44.7%
	Fifth Year	84	55.3%
Have you ever heard of Zika virus	No	29	19.1%
	Yes	123	80.9%

Table 2:- Spread and Transmission

	Correct	N	%
Infected Aedes Species mosquito's bite (daytime biter)	Yes	36	29.3%
Infected Anopheles species mosquito's bite (nighttime biter)	No	27	22.0%
Air droplet	No	15	12.2%
Mother to fetus during pregnancy	Yes	40	32.5%
Breast feeding	No	7	5.7%
Sexual Contact	Yes	9	7.3%
Skin contact	No	2	1.6%
I do not know		40	32.5%

Table 3:-Symptoms

	Correct	N	%
Fever	Yes	49	39.8%
Coughing	No	19	15.4%
Joint pain	Yes	16	13.0%
Vomiting	No	14	11.4%
Conjunctivitis	Yes	22	17.9%
Sore throat	No	22	17.9%
Rash	Yes	15	12.2%
Diarrhea	No	16	13.0%
I don't know		64	52.0%

Table 4:-General Knowledge Assessing Questions

	Correct	N	%
What is the virus genera	Flavivirus	12	9.80%
What is the virus genome	Single stranded RNA	6	4.90%
What is the severity of the symptoms	Mild	20	16.30%
What is the estimated duration of the symptoms	2 - 7 days	7	5.70%
What is the mortality rate of Zika disease	No reported death	11	8.90%
Which of the following is a known complication of Zika virus	Microcephaly	58	47.20%
When was the virus first discovered	in 1947	4	3.30%
Where was the first discovered	Africa	26	21.10%
The first human case of Zika virus was detected in	in 1952	7	5.70%
How is Zika disease infection treated	Supportive	45	36.60%
Is there a vaccination for Zika virus disease	No	52	42.30%

Table 5:- Outbreaks

		Count	%
Yap in 2007	No	123	100.0%
	Yes	0	0.0%
French Polynesia in 2013	No	117	95.1%
	Yes	6	4.9%
Brazil in 2015	No	47	38.2%

	Yes	76	61.8%
I do not know	No	79	64.2%
	Yes	44	35.8%

Table 6:- Grade Summary and Comparison

Variable	Category	SP(Out of 8)		SM(Out of 9)		KN(Out of 11)		Total(Out of 28)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (Years)	22	4.1	2.6	3.2	3	2.4	1.7	9.7	5.5
	23	3.2	2.9	2.7	3	1.8	2	7.7	6.4
	24	4.3	2.8	2.1	2.7	2.2	2.6	8.5	5.4
	25+	3.7	2.4	2.1	3	1.7	1.2	7.5	4.8
	P-value	0.359		0.464		0.396		0.401	
Gender	Male	3.4	2.8	2.6	3.1	1.9	1.9	7.9	6
	Female	4.3	2.3	2.8	2.5	2.4	1.6	9.6	4.8
	P-value	0.066		0.689		0.141		0.146	
Medical year	Sixth Year	3.6	2.7	2.6	2.9	2	2.2	8.2	5.9
	Fifth Year	3.7	2.7	2.7	3	2	1.6	8.4	5.7
	P-value	0.816		0.977		0.858		0.855	

Discussion:-

Even though Zika virus has been identified in Africa since 1947, its most recent outbreak in Brazil affecting the lives of many has brought it to the center of attention. In that light, serious measures need to be taken in order to spread awareness regarding this virus in case of a local outbreak, especially since more cases are reported in areas outside Brazil including Germany, France and United States of America. Since medical students play a major role in public education and are future health care providers, this study was done in order to assess the knowledge level of Zika virus amongst medical students in their clinical years in terms of basic science, symptoms, diagnosis, treatment and preventive measures.

This study included 152 male and female medical students 75% and 25% respectively in their fifth or sixth medical years. 19.1% of our population never heard of Zika virus. When comparing this result to a study conducted by Al-Mohrej, measuring level of awareness of MERS-COV which showed only 3% never heard of MERS-COV, we find significant difference. [4] In addition, when asked about modes of transmission, 32.5% of our population didn't know how the disease is spread. This result was compared to Al-Mohrej sample which showed only 2.9% didn't know how the disease is transmitted compared to 32.5% in our study. Out of the remaining students, 32.5% answered correctly with maternal-fetal transmission, which can be explained by the prevalence of microcephaly as one of the major and known complications of Zika. Also, while 29% were able to answer Aedes mosquito (daytime biter) correctly, 22% included Anophelis mosquito (nighttime biter) as another source of infection. Which indicates that although students recognized mosquitos as a major mode of transmission, they weren't able to identify which type of mosquitos are associated with the disease. Surprisingly, only 7.3% knew that sexual contact is a source of transmission.

The results also demonstrated around 48% of our students were familiar with Zika virus symptoms. However, when presented with multiple choices of symptoms (more than 1 answer can be chosen) there was marked inconsistency in answers. For example, although 39.8% identified fever as a major symptom, only 17.2% chose conjunctivitis which is a correct and 17.2% chose sore throat which is incorrect. Another example of inconsistency only 13% chose joint pain even though it's correct, and 13% chose diarrhea which is not a symptom of Zika. Likewise, 12.2% chose rash which is correct, and 11.4% chose vomiting which is incorrect. This can be explained by the non-specificity and vagueness of Zika virus symptoms. In comparison, in Al-Mohrej study 97.7% of their population knew the typical symptoms of MERS-COV. [4]

The questionnaire also included questions on basic sciences and general knowledge of Zika virus in which our students performed less than expected. While the students could fairly recognize Zika virus complications,

treatment and availability of vaccine with 36%-47% able to answer correctly, when presented with basic questions such as genera, genome and when the virus was discovered less than 10% of the students were able to answer. This could be attributed to the fact that the study population is composed of students in their clinical years.

Each student was graded for each question and for the entire questionnaire and then the students' grades were compared according to age, gender, and medical year, but no statistically significant difference was found in their grades. This could be explained by the general lack of knowledge about and exposure to the Zika virus in our population when compared to their knowledge about MERS-COV as seen in Al-Mohrej's study which has found a significant difference between males and females when asked about the possibility of people infected with MERS-COV to be asymptomatic. [4]

We compared our results to Al-Mohrej's study that tested medical students' knowledge of MERS-COV and found significant differences. Both studies showed low level of knowledge in terms of basic science and general knowledge questions, which can be explained by college's and students' heavy emphasis and focus on clinical aspect of the disease and lack of interest on basic sciences during the clinical years of medical college. Still from a clinical aspect, diagnosis and treatment, students showed better knowledge of MERS-COV. These differences can be attributed to the recent outbreak in Saudi Arabia, especially in Riyadh at King Abdul-Aziz Medical City where most of medical students spent their rotation. During the outbreak, students were informed about the risk of exposure in case of direct contact with patients infected with MERS-COV. Also, the ministry of health has made multiple efforts to educate the public regarding this disease, such efforts included public campaigns at malls and schools, infection control workshops and posts on multiple media outputs.

Our study has some limitations. First, we weren't able to compare our results to other studies that test Zika knowledge, since we couldn't find any while searching literature. Secondly, since the study only included students in their clinical years at KSAU-HS it might not be a representative of medical students in Saudi Arabia. The study can be expanded by comparing results from medical student from different universities. Also, our results can be compared to a control group from general population.

Conclusion:-

The results of this study demonstrated a low level of knowledge regarding Zika virus amongst medical students especially when compared to their knowledge of MERS-COV. Which might indicate the need for an intervention in order to spread Zika virus awareness.

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