Erciyes Med J 2020; 42(1): 89–92 • DOI: 10.14744/etd.2019.72473
ORIGINAL ARTICLE – OPEN ACCESS

Microcephaly Agent of Zika Virus and Unknowns by Healthcare Personnel

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ABSTRACT

Objective: The Zika virus is an important viral agent that presents the risk of pandemic disease. Infection with the virus can cause microcephaly in infants, as well as other potential effects. The aim of this study was to evaluate the level of knowledge about the Zika virus among healthcare personnel in Turkey.

Materials and Methods: A total of 290 healthcare personnel from a secondary and a tertiary health institution were included in this study. The data were collected using a survey form prepared by the researchers and statistically analyzed.

Results: Among the respondents, there was awareness of the Zika virus in 68.7%, 75.0%, 75.9%, and 77.0% of women, individuals over 35 years of age, doctors, and those with a healthcare career of at least 10 years, respectively. The results revealed that 58.9% knew the true means of transmission, 36.0% were aware of prevention efforts, 41.1% were familiar with potential complications, 0.5% reported knowledge of treatment, and 16.8% responded correctly regarding the availability of a vaccine. The primary source of information about the virus was TV and radio for 68.5% of the participants, and 3.6% cited scientific papers.

Conclusion: The Zika virus is a potential pandemic agent. The knowledge level of the healthcare personnel studied was insufficient to meet such a challenge. The ministry of health and universities should provide the appropriate training to healthcare personnel.

Keywords: Health personnel, knowledge, Zika virus

Cite this article as: Balkan Bozlak ÇE, Bekis Bozkurt H. Microcephaly Agent of Zika Virus and Unknowns by Healthcare Personnel. Erciyes Med J 2020; 42(1): 89-92.

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Submitted 23.08.2019

Accepted 18.11.2019

Available Online Date 19.12.2019

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INTRODUCTION

The Zika virus is a member of the genus *Flavivirus* and the family *Flaviviridae*. It is transmitted to humans primarily through the bite of an infected *Aedes* mosquito (1, 2). The virus also has the ability to spread from person to person through body secretions (3, 4, 5). Outbreaks have been reported in Africa, Southeast Asia, the Americas, and the Pacific. The most feared feature of this virus is that infection during pregnancy can be a cause of microcephaly and other congenital abnormalities in the developing fetus and newborn, as well as pregnancy complications. There is currently no specific treatment for Zika virus infection and there is no vaccine (6, 7). Prevention efforts include personal measures to protect against mosquito bites and larger initiatives to control the mosquito population (8–12). In the study done by Kafkas University researchers, their knowledge on the geographical spread of these species, they have performed field work in September 2015 to collect data on the distribution of invasive *Aedes* mosquitoes in Georgia and north-eastern Turkey. Significant findings of these studies have been (13) the presence of both *Ae. aegypti* and *Ae. albopictus* over extended areas of Georgia including *Ae. aegypti* in the capital city Tbilisi, and (14) the spread of both species into north-eastern Turkey. (15)

Although the outbreaks have thus far been relatively limited, the appearance of the disease in Turkey and the potential for it to spread prompted an assessment of the knowledge of healthcare personnel about this virus.

Aim of our study is measure the knowledge level of healthcare personnel about zika virus

and point out the danger is not far away and healthcare personnel should be prepared for a possible outbreak of the virus in our region.

MATERIALS and METHODS

The universe of the present study was the doctors and midwives/nurses of the Kafkas University Faculty of Medicine and Kars State Hospital. The Kafkas University Medical Faculty Ethical Committee granted approval for this study on 26/12/2018 (no: 80576354-050-99/12). The total population of the universe was 676 individuals: In all there were 224 physicians and 452 midwives/nurses. Because of the study questionnaire was conducted by

volunteers most of personel don't want to answer the questions. Since the duration of the study is long, with the same participants it is thought that the situation will not change. While all of the potential respondents were targeted, the study data consisted of replies from 290 (42.9%) members of the universe.

Data Collection

Physicians and midwives/nurses at both institutions were informed about the research and that participation was optional. The data collection form was distributed and a total of 290 were completed and collected between January 7, 2019 and January 11, 2019.

Preparation of the Data Form

The data form was prepared based on a literature search performed by the researchers. It consisted of 2 parts. The first requested age, gender, occupation, and years in their profession, as well as simple awareness of the Zika virus. The second part consisted of questions designed to elicit more specific knowledge about the virus: the means of transmission, prevention, potential complications, treatment, and vaccination.

Knowledge of the path of transmission was determined based on responses to the following question:

The Zika virus is transmitted to humans by ticks

A- True

B- False (It is transmitted by……)

C- I don't know

Those who selected A or C were counted as not knowing the correct means of transmission of the virus, as well as those who responded incorrectly in choice B.

Prevention asked in a different question:

Is there any protection against Zika virus?

A- Yes

B- No not yet

C- I don't know.

Those who selected B were counted as not knowing the correct means of protection of the virus, as well as those who responded incorrectly in choice A and C. And other questions like that.

The data were analyzed with IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY, USA). The Kolmogorov-Smirnov test was used to assess normality and a chi-square test was used in categorical analyses. Descriptive statistics were also formulated. Statistical significance was set at $p<0.005$.

RESULTS

The mean age of the healthcare personnel surveyed was 31.3 years (±0.5 years) and the median age was 30 years (range: 18–60 years). Of the study participants, 68.3% were female, 27.2% were physicians, 23.4% were under the age of 24, 46.2% were 25-34 years old, 30.3% were over the age of 35, 68.6% had worked less than 10 years in the profession, and 30% had more than 10 years of professional experience.

Table 1. The distribution of the level of knowledge of Zika virus disease according to demographic characteristics

Demographic features	Awareness of Zika virus disease				Total		p
	Yes		No				
	n	%	n	%	n	%	
Gender***							
Female	136	68.7	62	31.3	198	100	0.733
Male	60	66.7	30	33.3	90	100	
Age (years)							
<24	40	58.8	28	41.2	68	100	
25–34	91	67.9	43	32.1	134	100	**0.033#**
>35	66	75.0	22	25.0	88	100	
Profession							
Medical doctor	60	75.9	19	24.1	79	100	0.073
Midwife/nurse	137	64.9	74	35.1	211	100	
Professional experience (years)							
<10	129	64.8	70	35.2	199	100	**0.041**
>10	67	77.0	20	23.0	87	100	
Total**	197	68.1	92	31.9	290	100	

*Row percentage; **Column percentage; ***Two data points missing; #Slope chi-square; ##Four data points missing

Table 2. Specific knowledge related to the Zika virus

	Knowledge						Total	
	Correct		Incorrect		Don't know			
	n	%	n	%	n	%	n	%
Transmission	116	58.9	15	7.6	66	33.5	197	100
Prevention	71	36.0	11	5.6	115	58.4	197	100
Complications	81	41.1	49	24.9	67	34	197	100
Treatment	1	0.5	24	12.2	172	87.3	197	100
Vaccine status	33	16.8	6	3	158	80.2	197	100
Total	116	58.9	15	7.6	66	33.5	197	100

Table 3. Sources of information about the Zika virus

Resource	n	%
Television/radio news	135	68.5
Internet	42	21.3
Newspaper/magazine	6	3.0
Scientific papers	7	3.6
Friends, social groups	7	3.6
Total	197	100

As demonstrated in Table 1, 68.1% of all of the respondents knew of the Zika virus and associated disease: 68.7% of women, 75.0% of those over the age of 35, 75.9% of physicians, and 77.0% of those who had been working for 10 years or more.

A statistically significant difference was found regarding age and the length of occupational experience and knowledge of the disease (p=0.033 and p=0.041). There was no statistically significant difference between gender and occupation type and awareness of the virus (p=0.733 and p=0.073, respectively).

Table 2 shows the level of knowledge about some of the features of virus. In all, 58.9% knew the correct transmission route, 36.0% were familiar with methods of prevention, 41.1% were aware of potential complications, 0.5% of treatment, and 16.8% knew of the status of a vaccine. Total means the number of personnels answering each questions like correct, incorrect and I'don't know.

Table 3 illustrates the information sources of healthcare personnel who participated in the study. TV and radio were the sources for 68.5%, while 3.6% replied that they had learned about the virus from scientific papers.

DISCUSSION

A statistically significant difference was determined with respect to age and the length of professional experience and knowledge of the Zika virus. These variables are often related; it is not unexpected that those who were over the age of 35 knew more about the virus. Almost 70% of those who knew of the Zika virus cited receiving information from the news on television/radio, which may suggest that they are greater consumers of media about current political, economic, and social events. Similar findings were obtained in a study with dentists in India. It was reported in India, most of the knowledge of the practitioners came from television (37.8%) while journals only represented 4.7% of the total information gained (11).

Approximately 40 of every 100 healthcare personnel surveyed were unaware of the means of transmission of the Zika virus, 65% did not know of precautionary measures, 60% did not know of the primary potential complications of infection, and only 0.5% (n=1) demonstrated correct knowledge of treatment. It is important to note that 80% of respondents did not know if there is a vaccine or not. In addition, only some 4 out of 100 healthcare personnel had learned about the virus from scientific academic articles. These results indicate that the Zika virus-related knowledge of health professionals in the population studied was both generally and scientifically insufficient.

The reporting on babies born with Zika virus-related central nervous system anomalies that emerged in 2015–2016 changed the approach to this important public health problem (16). Vaccination studies have gained great importance and phase I studies are in progress (17).

According to a report published by the World Health Organization in June 2016, this virus had been reported in 67 countries. As of 2019, microcephaly and central nervous system anomalies associated with congenital Zika syndrome had been reported in over 100 countries (18–20).

The Zika virus was first identified in Turkey in October 2017 in a couple who had recently visited Cuba (21). Individuals who travel to places where the virus is active are at risk. The detection and evaluation of the virus is very important, especially in pregnant women.

CONCLUSION

Although the virus was previously only perceived as a regional threat, the risk of a pandemic gives it great significance (1, 2, 3). Studies point out that the danger is not far away and healthcare personnel should be prepared for a possible outbreak of the virus in our region (5, 7, 13–15). The appropriate education and training programs should be coordinated by the ministry of health and universities and initiated without delay.

Ethics Committee Approval: The Kafkas University Medical Faculty Ethical Committee granted approval for this study on 26.12.2018 (No: 80576354-050-99/12).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – ÇEBB, HBB; Design – ÇEBB; Supervision – ÇEBB, HBB; Resource – ÇEBB, HBB; Materials – ÇEBB; Data Collection and/or Processing – ÇEBB; Analysis and/or Interpretation – ÇEBB, HBB; Literature Search – ÇEBB, HBB; Writing – ÇEBB, HBB; Critical Reviews – ÇEBB, HBB.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

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