



## RESEARCH ARTICLE

## Knowledge of Health Care Workers Regarding *Zika* Virus Infection in Baghdad City / Iraq

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### Abstract

**Background:** WHO declared that *Zika* virus infection as a global public health emergency of international concern. **Objectives:** To determine the level of knowledge of Health care workers regarding *Zika* virus in Baghdad city. **Subjects and Methods:** A descriptive; cross sectional study conducted at 41 randomly selected (multistage sample) hospitals and primary health care centers in Baghdad city, included 600 health care workers, The data collection continued for the period starting on 11th November-2018 ending on 3th March 3, 2019. **Results:** The results of demographic data was conducted on health care workers with their mean age ( $37.8 \pm 10.7$ ) years ranging from (20-66) years and the highest percentage (34.2%) were in the age group (30-39) years and the lowest percentage (3.3) were in the age group (age > 60) years, most of studied sample were females (73%) and married (71%), regarding Educational qualification the highest percentage (57%) from College and higher educational level, the lowest percentage from secondary school, the majority of studied sample (60%) were medical staff and not well informed regarding the association of *Zika* virus and Guillain-Barre syndrome, the diagnostic test, and management options, There knowledge was mainly gained from Internet, Radio and T.V. **Conclusion:** This study concluded that the health care workers had fair and acceptable knowledge regarding *Zika* virus in Baghdad city during the period of study . **Recommendation:** Co-ordinate educational programs are needed to increase the knowledge level of health care workers about *Zika* virus and other emerging diseases, these programs can be extended to include the medical students, travelers and pregnant women.

**Key words:** *Zika* virus, Knowledge, Health care workers, Baghdad city.

### Introduction

*Zika* virus is a single-stranded RNA virus of the Flaviviridae family, transmitted primarily through the bite of an infected *Aedes* species mosquito (*Aedes aegypti* and *Aedes albopictus*) [1]. While approximately 80% of those infected do not develop symptoms, 20% of individuals develop a self-limited illness onset usually 2-7 days after the mosquito bite characterized by fever with maculopapular rash, arthralgia, and conjunctivitis [2].

More importantly, neurological manifestations can occur as *Zika* infection has been identified as a trigger of Guillain-Barre Syndrome (GBS), an acute paralyzing (neurological) condition that causes the body's immune system to attack the nervous system, resulting in varying degrees of

weakness, tingling, and/or paralysis [3, 4]. WHO declared *Zika* virus infection as a global public health emergency of international concern at an alarming pace, *Zika* virus becoming public health issue because of the severe consequences of infection that can occur, infection in pregnant women specifically is of major concern as it is linked to catastrophic fetal abnormalities including Microcephaly [5].

Although *Zika* virus is primarily transmitted through the bite of *Aedes aegypti* mosquitoes, Sexual transmission has been documented as *Zika* virus RNA has been detected in a number of body fluids including Blood, Urine, Saliva, and Amniotic fluid [6, 7], Thus transmission associated with occupational exposure to these body fluids is largely seen ,

there is a potential for exposure to large volumes of body fluids to *Zika* virus during the labor and delivery process, blood transfusion, and dental procedures [8]. Hence it is necessary for all health-care workers to have sufficient Knowledge to screen potential carrier and prevent the spread of *Zika* from patients to health-care personnel by the following Standard Universal Precautions [9], as recommended by WHO that the Well-informed of health care workers can play a crucial role in spreading and enhancement awareness regarding such diseases [10].

### Objective of the Study

To determine the level of knowledge of Health care workers regarding *Zika* virus in Baghdad city.

### Subjects and Methods

#### Study Design

A cross sectional study conducted at 41 randomly selected (multistage sample) hospitals and primary health care centers (PHCC) in Baghdad city.

#### Duration of Study

The data collection continued for a period of five months starting on 11<sup>th</sup> November-2018 ending on 3<sup>th</sup> March, 2019.

### Place of Study

The place of study was in 16 hospitals, 4 health sectors and 21 primary health care centers in Baghdad city.

### Inclusion and Exclusion Criteria of Study

Inclusion criteria: Health care workers in selected hospitals and primary health care centers in Baghdad city.

Exclusion Criteria: health care workers out Baghdad city and health care workers who refuse to participate.

### Statistical Analysis

Analysis of data was carried out using the available statistical package of SPSS-25 (Statistical Packages for Social Sciences-version 25). Data were presented in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values). The significance of different percentages (qualitative data) were tested using Pearson Chi-square test with application of Yate's correction or Fisher Exact test whenever applicable. Statistical significance was considered whenever the P value was equal or less than 0.05.

### Results

**Table 1: Distribution of Studied Sample according to their Knowledge about *Zika* Virus**

General info. Knowledge of Health Care Workers regarding <i>Zika</i> Virus		No=600	100%
Causative agent of <i>Zika</i> disease	Virus	265	44.17
	Mosquito	219	36.50
	Polluted water	20	3.33
	Dirty environment	96	16.00
Mosquito bite is the commonest route of transmission	Yes	442	73.67
	No	120	20
	Don't No	38	6.33
Can be transmitted by blood borne.	Yes	475	79.17
	No	100	16.66
	Don't No	25	4.17
Can be transmitted by sexual route.	Yes	359	59.83
	No	200	33.33
	Don't No	41	6.83
Cannot be transmitted through air borne.	Yes	256	42.67
	No	199	33.167
	Don't No	145	24.16
Cannot be transmitted through food	Yes	275	45.83
	No	275	45.83
	Don't No	50	8.33
Diagnosis of <i>zika</i> is based on person's recent travel history, symptoms, and Blood test results.	Yes	536	89.33
	No	40	6.67
	Don't No	24	4.00

Only (44 %) of current studied sample answered correctly about the causative agent of *Zika* virus disease, (73 %) of them know correctly that the Mosquitos bite is the commonest route of transmission of *Zika* virus, Regarding their knowledge about

possible mode of transmission of *Zika* virus, (79%) answered correctly that the virus Can be transmitted by blood - borne transmission route, While only (42 %) answered correctly about its not transmission through air borne route, and only (45%) answered correctly

about its not transmission through food. The Majority of studied Sample (89.33%)

answered correctly that the Diagnosis based on person's recent travel history, symptoms, and Blood test results.

**Table 2: Knowledge of Health care workers about Zika virus Risks at Pregnancy:**

Part 2: Knowledge of Health care workers about Zika virus Risks at Pregnancy		No	%
If a pregnant woman has zika, what are the risks she faces, she may be sick	Yes	464	77.33
	No	100	16.67
	Don't No	36	6
She is at risk of miscarriage	Yes	442	73.67
	No	90	15
	Don't No	68	11.33
She may have difficulty giving birth	Yes	323	53.83
	No	190	31.67
	Don't No	87	14.50
There are risks for her baby\ fetus?	Yes	563	93.83
	No	20	3.33
	Don't No	17	2.83
Is there a link between Zika virus and the birth defect microcephaly	Yes	398	66.33
	No	198	33
	Don't No	4	0.67
Should all newly pregnant mothers be screened for Zika	Yes	397	66.17
	No	186	31
	Don't No	17	2.83
Pregnant women who have visited a Zika Virus infected area should be tested for ZIKa virus whether they have symptoms	Yes	562	93.7
	No	30	5
	Don't No	8	1.3

The majority of health care workers (77%) answered correctly that the pregnant women became sick when infected with the virus,(73%) answered (yes) about that the pregnant women at risk of miscarriage, (53%) incorrectly answered (yes) about She may have difficulty giving birth.

The Majority of them (93%) know that there are risks for her baby\ fetus if get Zika during pregnancy, (66%) of them know there is a link between Zika virus and the birth defect microcephaly, while (66%) answered incorrectly that all newly pregnant women should screened for Zika.

**Table 3: Distribution of Studied Sample regarding their Knowledge about Zika Virus possible Preventive measures and Management**

Part 3: Knowledge of Health care workers about Zika virus regarding preventive measures and management options:		No=600	100 %
Can Zika been prevented	Yes	485	80.83
	No	100	16.67
	Don't No	15	2.5
Prevent Zika by: Use mosquito net at night	Yes	383	63.83
	No	200	33.33
	Don't No	17	2.83
Use mosquito repellent or spray on your body	Yes	320	53.33
	No	180	30
	Don't No	100	16.67
Use condom	Yes	305	50.83
	No	270	45
	Don't No	25	4.17
Abstain from sexual intercourse	Yes	217	36.17
	No	300	50
	Don't No	83	13.83
Remove standing water	Yes	418	69.67
	No	160	26.67
	Don't No	22	3.66
Do not use insect repellents on babies younger than 2 months old	Yes	494	82.33
	No	100	16.67
	Don't No	6	1
Is There a treatment for Zika?	Yes	297	49.5
	No	250	41.67
	Don't No	53	8.83
is There a link between Zika and Guillain-Barre syndrome	Yes	276	46
	No	210	35
	Don't No	114	19

The Majority of health care workers (80%) answered correctly that Zika infection can be prevented, also (63.83%) answered correctly

that using mosquitoes net at night as possible preventive measures, half of them encouraged the use of mosquito repellent or

spray, and answered correctly about using of condom,(69%)of them answered correctly about the necessity of remove standing water, While only (41%) know correctly that

there isn't effective treatment for *Zika* Virus infection, and only (46%) of them answered correctly regarding association between *Zika* virus and Guillain-Barre syndrome.



Figure 1: the knowledge score of Zika Virus among Health Care Workers

The overall all score for knowledge is shown in Figure 3-1 in which, approximately half of studied sample were (57.0%) with fair and acceptable knowledge of Zika virus, While a

small percentage (21.2%) were with Good knowledge, while the rest (21.8) have poor knowledge about the virus.

Table 4: The distribution of studied samples according to knowledge score about Zika Virus by the demographic characteristics

Distribution of knowledge score by demographic characteristics		Knowledge Score						P value
		Poor (<81)		Acceptable (81-94)		Good (=>95)		
		No	%	No	%	No	%	
Age (years)	20---29	38	24.2	84	53.5	35	22.3	0.656
	30---39	35	17.1	124	60.5	46	22.4	
	40---49	29	23.8	69	56.6	24	19.7	
	50---59	23	24.0	56	58.3	17	17.7	
	=>60y	6	30.0	9	45.0	5	25.0	
Gender	Male	33	20.5	82	50.9	46	28.6	0.026*
	Female	98	22.3	260	59.2	81	18.5	
Educational qualification	Secondary	17	28.8	35	59.3	7	11.9	0.004*
	Diploma	54	27.4	94	47.7	49	24.9	
	College	60	17.4	213	61.9	71	20.6	
Years of experience	<5y	36	24.0	78	52.0	36	24.0	0.662
	5---9	31	20.8	90	60.4	28	18.8	
	10---14	18	18.0	63	63.0	19	19.0	
	=>15y	46	22.9	111	55.2	44	21.9	
Marital status	Single	40	26.1	83	54.2	30	19.6	0.201
	Married	88	20.5	245	57.1	96	22.4	
	Others	3	16.7	14	77.8	1	5.6	

Regarding the knowledge score and demographic variables significant association was found between knowledge score and gender, educational level and studied sample opinion about having or not having enough information on *Zika* virus.

### Discussion

Health-care workers are the key persons in delivering health-care services, as these health-care providers are the first to come in contact with the patient, so It is essential that the Health care workers to be more aware about new and re-emerging threats to health to update educational program, the current study showed that approximately half of studied sample were with fair knowledge, while a small percentage (21.2%) were with Good knowledge, the rest (21.8) have poor knowledge about the virus, these

result in line with other study in Indonesia by Harapanet.al.

Were only (39%) of participants had a good knowledge on *Zika* [11], also with line with research in Saudi Arabia by NahlaK.Ibrahimet.al. were medical students had limited knowledge about *Zika* virus [12], but differ to what had been founded in India among dental students by Singh et.al. were revealed that all the participants had adequate knowledge on *Zika* virus, which reflects a high awareness level [13], these differences in results may be due to

differences in societies .only (44%)Know a causative agent of Zika virus disease, these results differ to what had been founded in America (Martinique) by Deletet.al.

Were 86% knew correctly that the virus is the causative agent [14].Regarding their knowledge about possible mode of transmission of *Zika* virus, (73.67%) of the studied samples know correctly that the Mosquitoes bite is the commonest route of transmission of *Zika* virus, these in agreement with the research in Qatar by cheemaet.al. were (73.3%) of participants answered correctly about the commonest route of transmission [15],(59.83%) of current studied sample answered correctly that the virus can transmitted sexually, these similar to what had been reported in Jordan by Abu-rishet.al. were (60%) of participants know that *Zika* virus is sexually transmitted [16] and (66%) of current studied sample know the link between *Zika* virus and the birth defect microcephaly, these differences may be due to what had been reported in Greece by Mouchtouriet.al. Were only (47.1%) of 573 pregnant women knew the link between *Zika* and microcephaly [17], these differences may be due to differences in studies samples and societies.

The Majority of health care workers in current study (80%) answered correctly that *Zika* virus infection can be prevented, these in line with other study in United Arab Emirates by Rabbaniet.al. [18], but these result differ to what had been reported in Jordan by Abu-rishet.al. were only (40%) of participants know that zika infection can be prevented, While (75%) of current studied sample answered incorrectly regarding

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drinking of clean water, these differ to what had been reported in Philippines by Gregorio et.al. were the participants knew that misconception and only (11%) answered (yes) for drinking clean water [19],these differ may be due to differences in studies samples educational level only (41.67%) of current studied sample know correctly that there isn't effective treatment for *Zika* Virus infection, these disagreement to what had been founded in United Arab Emirates by Rabbaniet.al. were (57.7%) of future health care providers know that there isn't effective treatment, these differ in results may be due to that the study in Emirates done among interested medical student.

Finally, less than half (46%) of current studied sample answered correctly regarding association between *Zika* virus and Guillain-Barre syndrome, these result disagreement with the study in New York by Samuel et.al. were (66%) of participants know that there was a link between *Zika* virus and GBS [20], these differ may be because that New York area of active transmission of *Zika* infection and many accelerated educational campaigns were conducted there.

## Conclusion

We concluded that the health care workers had fair and acceptable knowledge score regarding *Zika* virus.

## Recommendation

Co-ordinate educational programs are needed to increase the knowledge level of health care workers about *Zika* virus and other emerging diseases; these programs can be extended to include the medical students, travelers and pregnant women.

sexual contact with travelers to areas of ongoing transmission-Continental United States, 2016. MMWR Morb Mortal Wkly Rep., 65: 215-6.

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