

ZIKA VIRUS, AN EMERGING THREAT: EVALUATION OF AWARENESS AMONG MEDICAL STUDENTS AND HEALTH CARE WORKERS IN A PUBLIC-SECTOR UNIVERSITY

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ABSTRACT

Objective: To find out awareness of Zika virus among medical students and health care workers.

Study design: Cross sectional survey.

Place and Duration of Study: A cross sectional survey was conducted in a Public Sector Medical College of Karachi to evaluate and compare knowledge between medical students, house officers and residents, during the period of May-Dec 2016.

Materials and Methods: Questionnaire was designed to assess participant's knowledge, attitude and approach towards this disease. The sample size was calculated by open epi online software giving a value of 587. The sampling technique used in this survey is nonrandom purposive type. The data was entered and analyzed on SPSS-version 16.0 using Chi-Square test and unpaired T-test. Interpretation was done using x and p values. Mean knowledge score for every group was then calculated to ascertain the level of existing knowledge.

Results: Total of 587 participants consented to fill the questionnaire in the study, out of which 523 questionnaires were completely responded to. The response rate is 89%. Among them 71% were females and 29% were male. 62.3% of the participants were aware about the threat of zika virus, with the most common source of information (51.5%) being internet.

Conclusion: The healthcare professionals have the awareness about the zika virus. On evaluation, a remarkably sound level of knowledge was ascertained among Residents, House Officers and medical students. However further awareness about disease control and diagnosis is of vital importance.

Keywords: Zika virus, Awareness medical students, Health care workers.

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INTRODUCTION

Zika is a single stranded RNA virus. Initial clue of Zika infecting human was reported in 1952 from East Africa [2]. First ever outbreak was reported in 2007 on Western Pacific land of Yap [3], as it gained momentum epidemics were reported in French Polynesia South Pacific in the year 2013 and 2014 during which 30,000 symptomatic infections were documented by physicians [4]. After a massive outbreak in Brazil in 2015 [5] a striking and consistent association with microcephaly was observed in neonates of mothers who were infected with Zika virus during pregnancy [6]. Zika is an acute febrile illness with symptoms of rash, arthralgia and conjunctivitis [7] other symptoms include maculopapular rash, dizziness and stomach ache [2], it affects both sexes equally but more detrimental consequences have been observed in pregnant women whose fetus presents with microcephaly due

to proven neurotrophic nature of virus [8].

In February 2016 WHO declared Zika an emerging public health emergency of international Concern (PHEIC) [1]. To date, spread of Zika through mosquito has influenced over sixty countries worldwide. Among those, 11 countries reported microcephaly as a major and detrimental condition and 3 of those were in mothers who travelled to Zika infected geographic regions during their period of gestation [9].

Pakistan, a country whose climate ranges from temperate to tropical with documented Dengue virus cases over the years, is also at an alarming risk of infection with Zika virus. Reason being prevalence and proven documentation of its host that is, *Aedes aegypti* and *A. albopictus* (common vectors for disease transmission of both viruses i.e., Dengue and Zika). Present study was conducted to find out the awareness of medical students and health care workers regarding the risk of Zika virus.

MATERIALS AND METHODS

A cross sectional survey was conducted in a Public Sector Medical College of Karachi to evaluate

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and compare knowledge regarding Zika virus between medical students, house officers and residents. Paramedics (nurses, dieticians, physiotherapists) were excluded from this study. The study was conducted during the period of May-December 2016. Questionnaire was designed to assess participant's knowledge, attitude and approach towards this disease. The sample size was calculated by open epi online software giving a value of 587. The questionnaires were distributed after taking consent. Among those, 523 questionnaires were received back, with a response rate of 89.09%. The sampling technique used in this survey is nonrandom purposive type.

The data was entered and analyzed on SPSS-version 16.0 using Chi-Square test and unpaired T-test. Interpretation was done using χ^2 and p values. Mean knowledge score for every group was then calculated to ascertain the level of existing knowledge.

RESULTS

Total of 587 participants consented to participate in the study out of which 523 questionnaires were completely responded to. Among them 70.9% were females and 29.1 % were

males. 77.2% were medical students, 12% house officers and 10.7% residents (Table-1).

Table-1: Demographics of participants.

Gender	Frequency	Percentage
Male	152	29.1
Female	371	70.9
Designation		
Medical students	404	77.2
House officers	63	12.1
Residents	56	10.7

In relevance to the data analyzed, 62.3% of the participants were aware of this term, with the most common source of information (51.5%) being internet. News reports and Medical journals contributed 39.6% and 4% of the respondents' knowledge source respectively (Table-2).

Table-2: The source used by participants to obtain information.

Source of information	Frequency	Percentage
News	129	39.6
Internet	168	51.5
Medical journals	13	4
Others	35	10.7

Table-3: Survey response of participants.

	Medical Students (%)	House Officers (%)	Residents (%)	χ^2 Value	P. value
Zika is a virus	95.90	92.70	100	2.85	0.24
Mosquito causes transmission of zika virus	71.80	63.40	80.00	2.75	0.25
Incubation period (3-12 days)	45.30	48.8	27.5	4.95	0.08
Most common symptoms	86.50	90.2	92.5	1.41	0.49
Transmission through blood transfusion	11.4	26.8	20	7.1	0.19
Sexual transmission	24.5	34.1	32.5	2.46	0.29
Is zika virus contagious?	33.1	39	15	6.38	0.04
PCR as an Efficient way of diagnosis	58	80.5	92.5	22.96	0.000
Prevention by vaccination	26.1	36.6	27.5	1.924	0.382
Significance of travel history	6.1	2.4	2.5	1.64	0.44
Role of Vaccine	60	61	65	0.36	0.835
Transmission to fetus of infected mother	8.6	4.9	5	1.13	0.56
Microcephaly, a possible fetal defect	82	85.4	82.5	0.26	0.87
Serological screening of pregnant woman in correlation with travel	80.4	63.4	77.5	5.89	0.05

*p value less than 0.05 is significant. (Is Zika contagious? p value 0.04; serological screening of pregnant women in correlation with travel holds a p value of 0.050)

**p value less than 0.01 is considered highly significant. (PCR as a diagnostic tool holds a p value of 0.00)

A remarkably sound level of knowledge was perceived with 100% residents, 95.90% students and 92.70% house officers knowing that Zika is a virus, refer table3(p value 0.24). Moreover 80% Residents, 71.8% Medical students and 63.4% House officers ascertained that mosquito is the vector transmitting this infection (Figure-1).

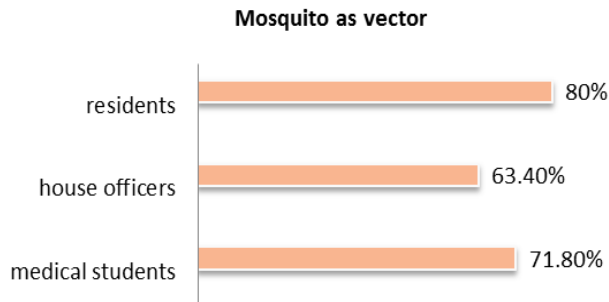
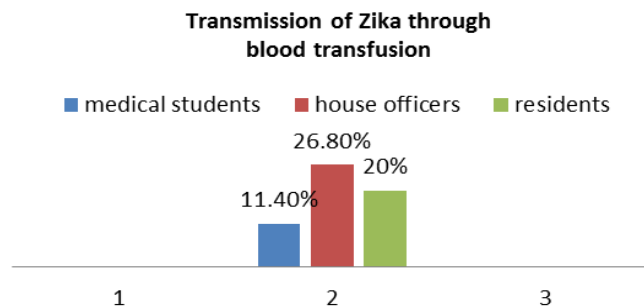
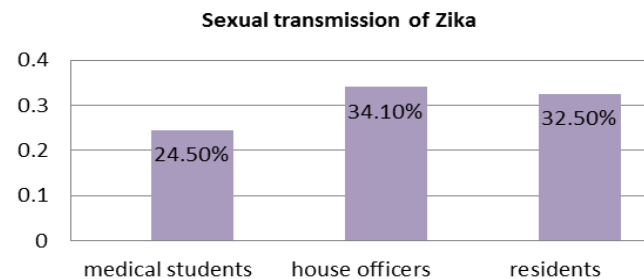


Figure-1: Knowledge about mosquito being zika vector.

Regarding alternative routes of infection, only 26.8% house officer, 20% residents and 11.4% medical students were aware of blood transfusion as a possible cause of contracting Zika infection. Moreover 34.1% House officer, 32.5% residents and 24.5% students opine correctly to Zika virus being a sexually transmitted infection (Figure-2a & b).



2a



2b

Graph 2a & 2b: Transmission knowledge of participants.

Incubation period being more of a theoretical question was answered correctly by 48.8% of house officers which is the most number of correct

responses amongst the three categories, others being 45.3% medical students and 27.5% residents.

Fever, joint pain and conjunctivitis were recognized as the commonest symptoms of Zika by 92.5% Residents, 90.2% house officers and 86.5% of Medical students.

Zika being contagious was affirmed significantly by 39% House officers, 33.1% Medical students and 15% Residents, (p < 0.04). Along with this, travel history of patient is also of prime importance (6.1% medical students, 2.5% residents, 2.4% house officers).

Only 4.9% of House officer, 5% residents and 8.6% students knew placental transfer as a possible cause of fetal acquisition of infection, amongst those 85.4% of house officer, 82.5% residents and 82% of students are privy to microcephaly and other associated brain anomalies as possible fetal defects of placental transfer of Zika.

In terms of preventive measures 36.6% of House officers, 27.5% Residents and 26.1% medical students claim that vaccine can be a possible preventive tool to break the chain of pathogenesis of Zika virus. Moreover, 65% of Residents, 61% House officers and 60% students agree correctly upon the use of mosquito repellents as a possible prevention technique from mosquito bite.

Of the three groups 92.5% Residents, 80.5% House officers and 58% students correctly chose PCR as the effective diagnostic modality for Zika virus infection (p=0.000). Furthermore 80.4% Medical students, 77.5% Residents and 63.4% House officers significantly affiliated screening of pregnant women 2-12 weeks after travel to a geographically endemic region with Zika virus infection (p< 0.05) (Table 3).

Among 523 participants, 201 did not answer the question regarding differential diagnosis one would take account of. However, from the rest 322, 81.1% selected Dengue virus as the most likely differential. Similar number of respondents i.e. 322 responded to question regarding its treatment option with 79.1% amongst them preferring symptomatic management of this disease.

DISCUSSION

To our knowledge, Zika virus infection has gained so much of spur that neglecting it unknowingly can cost us many lives, keeping in mind how taxing this notorious virus may become for our community, the urge to conduct a KAP survey in the hope of surpassing and outstripping all the knowledge gaps in our community could not hold us back.

Our survey procures a sound level of knowledge among medical personnel regarding the type and the transmission of organism. An equally good level of knowledge was perceived in the participants of another KAP survey [15]. Moreover, pregnant women and those women who are planning to conceive should opt preventive measures to protect themselves from such an infection. In this regard relevant knowledge concerning placental transfer of virus was feeble among the partakers in our study. This virus can be transmitted through placenta to the fetus, causing congenital anomalies [6]. Most of the participants of our study as well as of the other study were aware of microcephaly and other congenital anomalies as possible complications of Zika infection [15].

Concerning the proven sexual transmission of Zika, 24.5% Medical students, 34.1% house officers and 32.5% residents spotted this aspect. Pregnant women and those women who are planning to conceive should opt preventive measures to protect themselves from such an infection. In this regard relevant knowledge concerning sexual and placental transfer of virus was feeble among the partakers in our study, as compared to the participants of the other KAP survey who had good understanding of this. Evaluating various other aspects of Zika Virus transmission highlights the fact that, not all patients infected with Zika are symptomatic therefore transmission of unscreened infected blood can prove detrimental to the recipients [10]. Moreover, Immuno-based rapid tests often fail to distinguish between Zika and other Flaviviruses (Dengue) [11,12] therefore Reverse Transcription Polymerase Chain Reaction (RT-PCR) can be used for ZIKV testing [2] on urine samples, benefits of RT-PCR include its cost effectiveness. This Diagnostic modality is specific for Zika infection and does not cross react with other similar viruses like Dengue virus and Chikungunya Virus [11]. A significant proportion of partakers had the knowledge that PCR being the diagnostic tool for zika investigations, with the highest correct response being that of residents in our study.

Prime emphasis should also be laid on the signs and symptoms of this disease as this forms the foundation of its differential diagnosis and acts as a prime factor that helps scrutinize the causative virus clinically, thus its common symptoms are fever, joint pain and conjunctivitis, which were known better by participants of our survey as compared to that of the other survey [15]. Regarding its signs, severe thrombocytopenia is rare and shows a possible link

between infection and immune mediated thrombocytopenia [13]. An encouraging response was attained from our study participants with majority being aware of symptoms of this disease, an article stating the chances of viral transmission among people traveling to geographically endemic areas further strengthens the fact that travel history is of chief importance that helps in Zika virus diagnosis [14]. On view with this 6.1% of medical students, 2.4% house officers and 2.5% residents actually pointed out the significance of travel history.

Foundation of a healthy community can be achieved by communicating the information on the mosquito's life cycle, biting time, symptoms and methods of prevention as these forms an integral part of educational program and lack of awareness among general population leads to ineffective behavioral changes.

CONCLUSION

The healthcare professionals have the awareness about the zika virus. On evaluation, a remarkably sound level of knowledge was ascertained among Residents, House Officers and medical students. However further awareness about disease control and diagnosis is of vital importance.

AUTHORS CONTRIBUTION

Tooba Ali & Yameenah Farrukh: Data collection, literature review.

Fauzia Imtiaz: Overall supervision, manuscript writing.

Mukkarum Ali: Concept

Arif Ali: Statistical analysis

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