

Zika Virus and its Impact

Binu Joe¹, Anu Joy Kutty²

Zika is a virus that is spread mostly by the bites of mosquitoes. A pregnant mother can pass it to her baby during pregnancy or around the time of birth. It can spread through sexual contact also. There have also been reports that the virus has spread through blood transfusions. There have been outbreaks of Zika virus in the United States, Africa, Southeast Asia, the Pacific Islands, parts of the Caribbean, and Central and South America.

History of Zika

Zika virus was first discovered in 1947 and is named after the Zika Forest in Uganda. In 1952, the first human cases of Zika were detected and since then, outbreaks of Zika have been reported in tropical Africa, Southeast Asia, and the Pacific Islands. Zika outbreaks have probably occurred in many locations. Before 2007, at least 14 cases of Zika had been documented, although other cases were likely to have occurred and were not reported. Because the symptoms of Zika are similar to those of many other diseases, many cases might not have been recognised. The species which carries the Zika virus is *Aedes aegypti* mosquitoes. The *Aedes aegypti* mosquitoes also cause dengue, yellow fever and chikungunya. This mosquito usually bites in the day time.

Review of Literature

Zika virus has main two families African and Asian. Congenital Zika virus incidence has caused the World Health Organisation to notify that the Zika virus has a public health crisis to the world. The massive pandemic of Zika virus is spreading throughout America and causing public health emergency. The virus was initially found in African and Asian regions but has now spread vastly across the globe. The natural history of Zika virus infection needs to be better characterised. There is knowledge gap regarding immune response developed during the course of infection. The international scientific community is making efforts to deal with this important public health concern by conducting studies on clinical and epidemiological aspects of the Zika virus to find accurate laboratory diagnosis, drugs and vaccines to control the vector.

Researchers' estimate on baseline prevalence of birth defects observed with Zika virus in the United

States identified 747 infants and fetuses with one or more birth defects which included microcephaly, neural tube defects, brain malformations, eye defects and other central nervous system problems.

A cross-sectional study was conducted among 249 nursing students from 3 nursing colleges located in 3 Korean cities. A questionnaire was developed to assess knowledge, attitude and practice. The level of knowledge for Zika virus was 54.5 of 100 points and that of practice was 4.5 of 5 points. The infection prevention attitude score was 4.4 of 5 points and the risk perception score was 2.3 of 5 points. The study concluded that there is a need in improvement in knowledge of Zika virus to improve the nurses' attitude which in turn can promote effective practice for taking care of Zika virus patients.

A study was done to assess the knowledge of Zika virus among dental practitioners in Chandigarh, Panchkula and Mohali. A total of 412 dental professionals were randomly selected, among them 254 (61.6%) responded to take part in the study. A structured questionnaire was administered to each participant to record demographic and professional characteristics. The sample consisted of 59.9 percent male and 40.1 percent female. Majority of participants belonged to the age group of 25-34 years (66.1%); 38.2 percent had high knowledge. Most of the participants knowledge came from television (37.8%). Zika virus is a new public health emergency which needs to be carefully assessed. All health care professionals should have adequate knowledge regarding the Zika virus and needs to update their knowledge continuously.

About the Zika virus (ZIKV)

It is a member of the virus family *Flaviviridae*. Its name comes from the Zika Forest of Uganda, where the virus was first isolated in 1947. Zika virus is related to the dengue, yellow fever, Japanese encephalitis, and West Nile viruses. Since the 1950s, it has been known to occur within a narrow equatorial belt from Africa to Asia. From 2007 to 2016, the virus spread eastward, across the Pacific Ocean to the Americas, leading to the 2015-16 Zika virus epidemic. Zika is spread mostly by the bite of an infected *Aedes* species of mosquito (*Ae. aegypti* and *Ae. albopictus*). These mosquitoes bite during the day and night. Zika can be passed from a pregnant woman to her fetus. Infection during pregnancy can cause certain birth defects. There is no vaccine or medicine for Zika.

The authors are: 1. Principal, and 2. Asst. Professor, at Christ College of Nursing, Rajkot (Gujarat).

Mode of Transmission

Zika can be transmitted: Through mosquito bites; From a pregnant woman to her fetus; Through sex; Through blood transfusion (very likely but not confirmed).

Pathogenesis: Zika virus replicates in the mosquito's midgut epithelial cells and then its salivary gland cells. After 5–10 days, the virus can be found in the mosquito's saliva. If the mosquito's saliva is inoculated into human skin, the virus can infect epidermal keratinocytes, skin fibroblasts in the skin and the Langerhans cells. The pathogenesis of the virus is hypothesised to continue with a spread to lymph nodes and the bloodstream. Flaviviruses replicate in the cytoplasm, but Zika antigens have been found in infected cell nuclei.

Symptoms: Many people infected with Zika virus shall have no symptoms or will only have mild symptoms (Fig 1). The most common symptoms of Zika are:

- Fever
- Rash
- Headache
- Joint pain
- Red eyes
- Muscle pain
- Low back pain

Symptoms can last for several days to a week. People usually don't get sick enough to go to the hospital, and they very rarely die of Zika. Once a person has been infected with Zika, they are likely to be protected from future infections.

Complications

Zika infection during pregnancy can cause a birth defect of the brain called microcephaly and other severe brain defects. It is also linked to other problems, such as miscarriage, stillbirth, and other birth defects. There have also been increased reports of Guillain-Barré syndrome, an uncommon sickness of the nervous system, in areas affected by Zika.

Prevention

There is no vaccine to prevent Zika. The best way to prevent diseases spread by mosquitoes is to protect yourself and your family from mosquito bites.

Clothing: Wear long-sleeved shirts and long pants to cover the skin prevent from mosquito bite (Fig 2). Treat your clothing and gear with permethrin or buy pre-treated items.

Insect repellent: Use Environmental Protection Agency (EPA)-registered insect repellents with one of the following active ingredients: DEET, picaridin, IR3535, oil of lemon eucalyptus or para-menthane-diol, or 2-undecanone. Always follow the product label in-

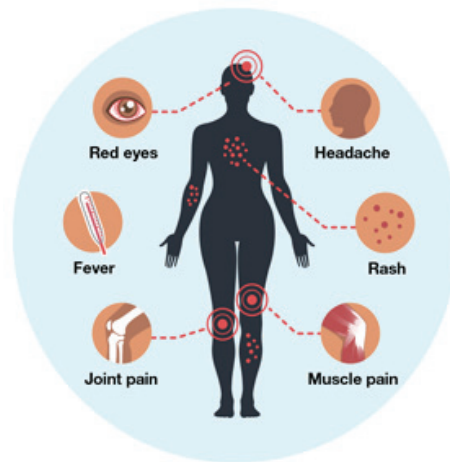


Fig 1: Symptoms of Zika.



Fig 2: Clothing for Zika prevention.

structions. These insect repellents are proven safe and effective even for pregnant and breastfeeding women. Do not use insect repellents on babies younger than 2 months old. Do not use products containing oil of lemon eucalyptus or para-menthane-diol on children younger than 3 years old.

At Home: Stay in places with air conditioning and window and door screens to keep mosquitoes outside. Take steps to control mosquitoes inside and outside your home. Mosquito netting can be used to cover babies younger than 2 months old in carriers, strollers, or cribs. Sleep under a mosquito bed net if air conditioned or screened rooms are not available or if sleeping outdoors.

Sexual transmission: Prevent sexual transmission of Zika by using condoms or not having sex. Health authorities may also advise that spraying of insecticides be carried out.

Diagnosis

- Diagnosis of Zika is based on a person's recent travel history, symptoms, and test results.
- A blood or urine test can confirm a Zika infection.

- Symptoms of Zika are similar to other illnesses spread through mosquito bites, like dengue and chikungunya.

Treatment

There is no specific medicine or vaccine for Zika virus. Treat the symptoms:

- Get plenty of rest.
- Drink fluids to prevent dehydration.
- Take medicine such as acetaminophen to reduce fever and pain.
- Do not take aspirin or other non-steroidal anti-inflammatory drugs (NSAIDs).
- If you are taking medicine for another medical condition, talk to your healthcare provider before taking additional medication.

Care for Affected Persons

Take steps to protect yourself from exposure to the person's blood and body fluids (urine, stool, vomit). If you are pregnant, you can care for someone with Zika by following these steps.

- Do not touch blood or body fluids or surfaces with these fluids on them with exposed skin.
- Wash hands with soap and water immediately after providing care.
- Immediately remove and wash clothes if they get blood or body fluids on them. Use laundry detergent and water temperature specified on the garment label. Using bleach is not necessary.
- Clean the sick person's environment daily using household cleaners according to label instructions.
- Immediately clean surfaces that have blood or other body fluids on them using household cleaners and disinfectants according to label instructions.

If you visit a family member or friend with Zika in a hospital, you should avoid contact with the person's blood and body fluids and surfaces with these fluids on them. Helping the person sit up or walk should not expose you. Make sure to wash your hands before and after touching the person.

Nurses' Role in Managing Zika Virus

Nurse should be aware of the basic characteristics of Zika virus that the effects of virus are relatively mild and require no specific treatment. People infected with Zika virus require proper rest and plenty of fluids. Management of pain and fever should be carried out properly by nursing measures. Administration of analgesics and antipyretics are prescribed. Nurses should

plan to involve strategies which involve going door to door to educate individuals and entire community about preventing transmission and protecting themselves from the disease. Nurse should provide counselling of women of reproductive age and their sex partners to delay pregnancy as advocated by World Health Organisation. Engaging sex partners in discussions is helpful so that both persons understand the benefit of delaying pregnancy and are active and positive participants in safer sex to achieve disease prevention.

Nurses should advise couples who are planning to conceive that they should not travel to Zika-affected areas if avoidable. If the visit is very much necessary couples should take steps to prevent mosquito bites during the trip. If the patient has Zika infection he or she must wait for at least 4 weeks before donating blood. Nurses should recommend use of insect repellent as directed. Wear permethrin treated clothing to prevent Zika virus. Wear long sleeved shirts and pants. Empty standing water from flower pots, buckets, or other containers.

Conclusion

Zika is a disease caused by the Zika virus that is spread to people mainly from the bite of an infected *Aedes* species mosquito. About one in five people infected with Zika will get sick. The illness is usually mild with symptoms lasting for several days to one week. Most people will not realise they have been infected. Proper timely prevention and treatment can keep away us from zika impacts.

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