Assess the Effectiveness of Self-Instruction Module on Knowledge Regarding Nipah Virus Infection and Its Prevention among General Population

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Abstract

Introduction: NipahVirus infection is a newly appear animal disease that develop a serious disease in both animal group and human being. NiV is a contagious agent which develops the serious illnesses by the Nipah (genus Henipavirus). NiV may be spread from animal (e.g. bats or pigs) or infected foodstuffs to man and may also be spread directly from mans to mans. Case mortality levels are reported at 40% to 75%, based on epidemiological monitoring and clinical intervention. This incidence can vary by epidemic. A self-instruction module on knowledge regarding Nipah virus infection and its prevention among general population helps to improve and update the knowledge regarding Nipah virus infection. Hence the investigator felt the need to develop a self instruction module for preventing Nipah virus infection.

Aim: To determine the effectiveness of self instruction module on knowledge regarding Nipah virus infection and its prevention among general population.

Materials and Methods: A quasi-experimental research design was used to conduct this study. Non probability convenient sampling technique used to collect data from general population on the basis of structured knowledge questioner. After collecting pretest data, self-instructional module was given for intervention on knowledge regarding Nipah virus infection and its prevention among general population. Seven days were given to the samples for utilizing self instructional module which was organized for 45-50 minutes. Post-test information was gathered after seven days from the day of intervention. The sample characteristics were described by frequency, percentage and t-test was used to describe the difference between pre-test and post-test knowledge score. Chi-square test was also used to find out the association between knowledge of general population regarding Nipah virus infection and its prevention with selected demographic variables.

Result: The findings showed that in pretest 112 (93.33 %) general population had average knowledge, 08(6.67%) general population had good knowledge, whereas post test 7(5.8 %) had good knowledge, 113 (94.17%) had excellent knowledge.

Conclusion: Nipah Virus is a newly emerging animal disease that leads to a serious disease in both animals and humans. Nipah virus may be transmitted to mans from animals (e.g. bats or pigs) or infected foods, and may also be transmitted directly from mans to mans so as this intervention will helpful to aware the general population to prevent Nipah virus infection and its complication.

Key word: *efficacy, general public, Nipah virus infection, self learning module, skill.*

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Introduction

Nipah Virus is a newly emerging animal disease that causes a serious disease both species as well as

in humans. Nipah Virus Infection (NiV), an infectious agent that has caused significant illnesses in humans and animals caused by Nipah (genus Henipavirus). [1]

Nipah virus may be communicated to mans from animals (e.g. bats or pigs) or infected foods, and may also be communicated directly from mans to mans. The mortality rate of cases is estimated at 40% to 75%. This rate may different by outbreak on the basis of epidemiological monitoring and clinical management. Infection with Nipah virus in humans causes a range of clinical occurrences; from asymptomatic (subclinical) infection to acute respiratory illness and fatal encephalitis. The Pteropodidae family of fruit bats are the natural hosts of the Nipah virus. Newly, no vaccine had been discovered for humans or animals. Strictly supportive care is the essential treatment for human cases .The 2018 annual review of the WHO R&D Blueprint list of priority diseases indicates that accelerated research and development on the Nipah virus is needed urgently. [2]

The earliest moment was found in fruit bats of the Pteropodidae family, Pteropus genus, i.e. besides natural hosts of the virus [3] and NiV was mainly discovered and acquired during a disease eruption in Kampung Sungai Nipah,Malaysia village in 1998 to 1999 Wherever the pig farmers get ill with encephalitis. In the case, the intermediate hosts were pigs. But, in later NiV outbreaks no intermediate hosts were present. In Bangladesh, the peoples got contaminated with NiV because of consuming date palm sap contaminated by infected fruit bats in 2004. Man-to man transmission had also been reported, including by the hospital situation in India. Out of a 582 human cases infected by Nipah virus, 54% were lethal.[4, 3]

Nipah virus infected humans has a variety of medical presentations, ranging from asymptomatic disease to the acute respiratory problems and fatal encephalitis. Pigs and other domestic animals also may infected by Nipah virus. Nipah virus is placed at "top of the list" and explores 10 priority diseases recognized by the World Health Organization as potentials for the next major outbreak.[5]

Nipah virus has caused only a few recorded outbreaks in Asian it infects a wide variety of species and causes serious disease and death in humans, thereby making it a public health concern. [1]

This virus was also identified and isolated during the outbreak of encephalitis among pig breeders and people with close contact with virus infected pigs in the following year. But shockingly this outbreak triggered a fairly mild disease in pigs, but almost 300 people were infected by NiV and more than 100 deaths were reported for the first time. No subsequent cases (in neither swine nor human) have been recorded in Malaysia or Singapore since this outbreak.[6] Study showed that the association of NiV to Hendra virus, bat species was quickly handpicked for investigation and flying foxes of the genus Pteropus were later identified as NiV reservoir.[7]

In India NiV outburst reported in 2001 and 2007 in West Bengal with symptoms of acute respiratory distress associated with febrile illness and/or neurological manifestations causing 50 deaths out of 71 cases (70% mortality rate). All fatal cases were identified to be NiV positive. In 2007 outbreak, a clump of bats were seen hanging from the trees around a patient's home.[8] The 2018 again there was an outbreak of the NiV in the Kerala pointed out its origin to fruit bats in that area specifically localized in the districts of Kozhikode and Malappuram districts which declared 17 lives.[9] This is the third outburst reported in India.[9] More than 2,000 people in these two districts were isolated and kept under observation during the period of the outburst.[10]

The epidemicity of NiV is distinct in different countries. In the 1998 outbreak in Malaysia, first the pigs were infected by the virus perhaps after consuming fruit contaminated with bat saliva.[11] After spreading widely on pig farms, the virus began advancing to humans who came in contact with the animals. As a result around 300 people fell ill but no person-to-person transmission seems to have occurred in Malaysia, unlike in Kerala.[12]

Human infections vary from asymptomatic infections to acute respiratory illness (mild, severe), and fatal encephalitis. Initially those people who having infection may develop symptoms like fever, headaches, muscle ache, nausea, vomiting and pharyngitis followed by unsteadiness, , somnolence, impaired consciousness, and symptoms of neurology suggesting acute encephalitis;. Some people may also develop atypical pneumonia and extreme respiratory illness, such as acute respiratory distress. In extreme cases, inflammation of brain and epilepsy occur, and progress to coma

within 24 to 48 hours. The incubation time is from 4 to 14 days. However incubation time of as long as 45 days is reported. The majority of people who survive acute inflammation of brain make a full recovery, but long term neurologic conditions have been reported in survivors. About 20 % of patients are left with residual neurological symptoms such as seizure disorder and changes in personality. A small number of people who recover subsequently relapse or develop delayed onset encephalitis.[2]

The mortality rate of cases is estimated at 40% to 75%.This rate may different by outbreak depending on epidemiological surveillance and clinical management. [1]

Newly, no vaccines discovered for Nipah virus. In 1999 outbreak of Nipah acquired involving pig farms as for preventing infection routinely thorough cleaning and disinfecting the pig farms with appropriate detergents can be effective.

If an outburst is suspected, the animal house should be immediately separated. Contaminated animals should be destroying – with close supervision of funeral or incineration of cadaver – may be important to reduce the risk of transmission to people. Strictly restricting the movement of animals from contaminated farms to other areas may reduce spread of infection.

In the absence of a vaccine, the only way to reduce or prevent infection in people is by raising awareness of the risk factors and educating people about the measures they can take to reduce exposure to the Nipah virus.

Newly, no vaccines discovered for Nipah virus so awareness program regarding risk factors and heath education regarding preventive measures can prevent the infection in people.

Before consumption fruits should be washed thourouly and fresh palm date juice should be boil for preventing bat to human transmission. Close unprotected physical contact should be avoided while giving care to the Nipah virus infected patients. Regularly hand washing is necessary after and before caring of sick people for preventing human to human transmission. While handling suspected or confirmed patients health team member should follow the standard infection control measures all time.[2]

While there is no vaccine that can avoid the spread of Nipah Virus infection, certain steps can also be taken to prevent it. Farmers with domesticated animals can avoid their animals from eating fruits that are vulnerable to bat infection, such as date palms. Individuals should also avoid eating date palms close to the areas affected by the bat. It is important to prevent close interaction with pigs and bats. In order to cope with NiV contaminated patients, hospitals should establish appropriate facilities so that it cannot be further spread to other individual. People in health care should wear gloves and high-quality masks. [13]

Research study showed that 17 cases were confirmed, the case fatality rate was 82%. 10 patients had a history of close contact with horses or of horse meat consumption. Deaths of 10 horses were reported in the same time period, of which nine showed neurological symptoms. However, samples from horses were not tested for NiV. Five patients, including two healthcare personnel, acquired the disease through person to person transmission. [14]

Research study concluded that the case-fatality varies from 40% to 70% depending on the severity of the patient's condition, such as encephalitis and availability of adequate healthcare facilities. Till now no antiviral drug available for Nipah virus disease and the treatment is just supportive. NiV infection can be considered an emerging disease and a public health problem as a consequence of the lack of effective vaccines and therapies and of the evidence that NiV can infect pigs.[15]

Aim of the study was to determine the effectiveness of self instruction module on knowledge regarding Nipah virus infection and its prevention among general population.

Assumption:-

General population may have some knowledge regarding Nipah virus infection and its prevention.

Hypothesis:-

H1: There will be significant difference between pre and post-test knowledge scores of general population regarding Nipah virus infection and its prevention.

H0: There will be no significant difference between pre and post-test knowledge scores of general population regarding Nipah virus infection and its prevention.

Materials and Methods: - A pre-experimental pre-test, post-test research design was used to conduct this study. The data gathering method began from July 2018 to December 2018 and the setting was selected in the Sawangi (M)Wardha (Maharashtra) after getting ethical permission.(Ref. no: DMIMS(DU)/IEC/2018-19/7306). By using a convenient sampling technique, 120 general populations were selected. General populations were informed and explained the objective of the study. The written informed consent dully signed individually by them was obtained. The inclusion criteria, (i)those who were willing to participate in the study.(ii)Those who were aged between 18-more than 58 years, (iii)those will be able to read and understand Marathi and (iv)included Male and female general population. (i)Those who had participated in similar type of research and (ii) those who were not available when the data was collected were excluded from the study. Demographic variables were collected in terms of age, gender, education, occupation and residence. A structured questionnaire, which is attached in Annexure 1, has 20 multiple choice questions was used. Each sample required mean time of 30 minutes to complete the pre test structured questionnaire. Then the self instructional module was intervened to the sample. The post test structured questionnaire was administered after 7 days. Based on the 20 questions each study participant was asked individually for his / her answers with the same questionnaire. As collected, the responses were arranged in tabular form to conduct statistical analyzes which are mentioned in the following sections.

Statistical Analysis

The collected data were coded, tabulated, and analyzed by using descriptive statistics (mean percentage, standard deviation) and inferential statistics. Significance difference between pre and posttest readings was tested by using a t-test; association of knowledge with demographic variables was done by one way ANOVA test and independent t-test. For statistical analysis SPSS version 16.0 was used.

Result

Table 1: Knowledge regarding nipah virus infection and its prevention. Pre test

n=120

Level of knowledge score	Score Range	Percentage score	Pre test	
			Frequency	Percentage %
Poor	1-5	1-25	00	00
Average	6-10	26-50	112	93.33
Good	11-15	51-75	08	6.67
Excellent	16-20	76-100	00	00
Minimum score			6	
Maximum score			13	
Mean satisfaction score			8.68 ±1.402	

The above table shows that 93.33% sample shows average score, and 6.67 % had good level of satisfaction score. Minimum satisfaction score was 6 and maximum satisfaction score was 13.Mean satisfaction score was 8.68 ±1.402.

Table 2: Knowledge regarding nipah virus infection and its prevention

Post test n=120

Level of knowledge score	Score Range	Percentage score	Post test	
			Frequency	Percentage %
Poor	1-5	1-25	00	00
Average	6-10	26-50	00	00
Good	11-15	51-75	07	5.8
Excellent	16-20	76-100	113	94.17
Minimum score			14	
Maximum score			19	
Mean satisfaction score			17.30±1.089	

The above table shows that 5.8% sample shows that good score, and 94.17 had excellant level of satisfaction score .Minimum satisfaction score in was 14 and maximum satisfaction score was 19.Mean satisfaction score was 17.30±1.089.

Table 3: Percentage wise distribution of effectiveness of self instructional module on knowledge regarding nipah virus infection and its prevention among general population.

Test	Mean	SD	t- Value	Degree of freedom	p- value	significan
Pre test	8.68	±1.402	67.84	119	0.000	S,P< 0.05
Post test	17.30	±1.089				

The table no.3 shows that there is a significant difference between pretest and post test knowledge score interpreting effective self instructional module on knowledge regarding nipah virus infection and its prevention among general population**.** Mean value of pretest is 8.68 and post test is 17.30 and standard deviation value of pretest ±1.402 and post test ±1.089. The calculated t value is 67.84 and p- value is 0.000. Hence it statistically interpreted that the self instruction module on knowledge regarding nipah virus infection and its prevention among general population.

Discussion

Researcher concluded that Nipah Virus outbreaks

are seen mainly in Asian countries. The effect has also been widely seen in India. Depending on the extent of the infection, the mortality rate varies from 35 to 65 %. The mortality rate attributed to the Nipah Virus 2018 The outburst crossed 17 in the Kerala district of India and separated persons associated with untreated patients, thus avoiding the dissemination of disease. So far there has been no vaccine or treatment created that can treat this lethal illness, but the study continues. Preventive steps should be taken in areas vulnerable to infection, and close contact with fruits that could be infected by fruit bats should be avoided for domesticated animals.[13]

In 2014, in two villages on Mindanao, an island in the Philippines, the Philippines National Epidemiology Center received a survey on human deaths. Additional human deaths and nonfatal illnesses with concurrent neurological illness, and unexplained deaths of some horses were reported through an epidemic investigation. 17 people fulfilled the meaning of the case by (11 with encephalitis, 5 with influenza-like illness, and 1 with meningitis. For all agents, except for henipaviruses, testing for a number of neurotropic pathogens was negative. Neutralizing antibodies were also found in 3 patients against NiV and IgM against NiV.[16]

Limitation:-

The study was limited to sample size i.e. 120, which might be inadequate to generalize the study findings. More time duration would give more relevant results with variations of any research, but the investigator planned to complete the research work within one week to get more feasibility of getting sample. Therefore, sufficient number of sample and time duration was required to establish the effect of structure instructional module, in general.

Conclusion

The study concluded that before intervention general population have some knowledge regarding nipah virus infection and its prevention but after intervention they improved their knowledge. So the self instructional module is proved to be improving their knowledge regarding nipah virus infection and its prevention.

Recommendations

- A research study may be conducted to assess knowledge and attitude regarding nipah virus infection among staff nurses.
- A research study may be compare in urban and rural area on knowledge regarding nipah virus infection and its prevention among general population.
- A research study may be conducted to assess knowledge regarding nipah virus infection and its prevention among staff nurses.
- A research study may be conducted to assess knowledge regarding nipah virus infection and its prevention among nursing students.

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