



## Effectiveness of Structured Teaching Program on Knowledge and Attitude Regarding Nipah Virus Infection and Its Prevention

Vanitha Chittaluri\*

Department of Obstetrics and Gynaecological Nursing, Mamata College of Nursing, Telangana, India

### Article info

Received 01 October 2021

Revised 04 November 2021

Available Online 20 Nov 2021

\*Corresponding author: Dr. Vanitha Chittaluri, Department of Obstetrics and Gynecological Nursing, Mamata College of Nursing, Telangana, India.

### Abstract

**Aim:** A study was conducted to assess the effectiveness of structured teaching programme on knowledge and attitude regarding nipah virus infection and its prevention among 3rd years nursing, students Khammam, Telangana.

**Objective:** Objectives were to describe the socio demographic variables, to assess the pre- test levels of knowledge and attitude scores, to assess the effectiveness of structured teaching programme on levels of knowledge and attitude scores, to find out the association between the post- test levels of knowledge and attitude scores of 3rd year Nursing students, with their selected socio demographic variables.

**Methodology:** Quantitative evaluative research approach was used for this study. The study was conducted at Mamata School and college of nursing, Khammam, Telangana. The sample comprised of 50, 3rd year nursing students and sample was selected by random sampling technique. The data was collected by self-administered questionnaire.

**Results:** The results revealed that Knowledge mean for pretest and post-test were 11.14 and 18.26 respectively. The standard deviation for pre-test and post-test were 0.41 and 2.06 respectively. The mean difference was 1.65 Hence the calculated 't' value 12.53 is greater than table value 3.35. It indicates structured teaching programme was effective at  $p < 0.05$  level.

**Conclusion:** The study concluded that most of the respondents had moderately adequate knowledge before educational intervention and majority of them increase that is adequate knowledge after educational intervention. There is a significant difference between pretest and post- test knowledge levels and attitude scores, which indicates that there is a need to conduct educational programmes to improve their knowledge regarding Nipah virus infection and its prevention.

**Keywords:** Nipah virus infection; Structured teaching program; Pre-test; Post- test; Knowledge levels; Attitude scores

### Introduction

Nipah virus infection is a zoonotic disease transmitted from animals to humans. Nipah virus is a single stranded RNA virus of the family paramyxoviridae (species of the genus Henipavirus). It is also called as Barking Pig Syndrome, porcine respiratory-encephalitis

Syndrome and porcine neurological-encephalitis syndrome [1].

The name 'NIPAH' is originated from a village name, sungaiNipah in the Malaysian peninsula where pig farmers became ill with encephalitis. Nipah virus is

reported in 4 countries Malaysia, Singapore, Bangladesh, India Nipah virus was first discovered in 1999 following a large outbreak in Malaysia and Singapore. Sizeable outbreaks also occurred in West Bengal, India in 2001 and in Bangladesh in 2004 [2].

In 2018 the outbreak of the Nipah virus in the state of Kerala, India. The outbreak was localized in Kozhikode and Malappuram districts of Kerala and claimed 17 lives, including that of Mohammed Sabith, the first suspected case. The outbreak was contained and declared over on June 10, 2018, but a case of a 23 year old student was detected again on 4 June 2019 with 5 people suspected to be affected. This is the fourth outbreak reported in India, with previous ones having occurred in 2001 (45 deaths) and 2007 (5 deaths) [3].

Nipah virus is transmitted from animals to humans [such as bats, pigs, horses, sheep, cats, dogs, goats] can also be transmitted through contaminated food or directly between people [4]. In subsequent outbreaks in Bangladesh and India, consumption of fruits or fruit products (such as raw date palm juice) contaminated with urine or saliva from infected fruit bats was the most likely source of infection [5].

The virus is highly contagious in pigs. An infected pig can exhibit no symptoms, but some develop acute feverish illness, labored breathing, trembling, twitching and muscle spasm. The incubation period for Nipah virus Infection usually varies from 5 to 14 days, in few cases as longer 45 days, and in humans ranged from 4 days to 2 months. Most people who survive acute encephalitis make a full recovery, but long term neurologic conditions have been reported in survivors [6].

General features of Nipah virus infection are fever, headache, dizziness, myalgia, altered level of consciousness, severe weakness and vomiting. The unique and interesting features of Nipah virus infection are the development of relapse and late onset encephalitis infection. Prominent signs of brain stem dysfunction including abdominal dolls eye reflex, pupillary reflex vasomotor changes, seizures and myoclonic jerks. Psychiatric features are depression, personality changes, and deficits in attention verbal and visual memory [7].

Nipah virus infection can be diagnosed together with clinical history during the acute and convalescent phase of the disease. The main tests to diagnose Nipah virus infection are RT-PCR Real Time Polymerase Chain Reaction), antibody detection via ELISA and virus isolation by cell culture. Other tests used include polymerase chain reaction assay, virus isolation by cell

culture and MRI (Encephalitis). General investigations like CBP with CRP, chest x-ray, S.creatinine, S.electrolytes, S.amylase and lipase [8,9]

There are no medicine or vaccine specific for Nipah virus infection. WHO was identified nipah as a priority disease for the WHO research and development blueprint. Ribavirin drug is effective for Nipah virus infection [10]. Intensive supportive care is recommended to treat severe respiratory and neurologic complications [11].

One of the best ways of prevention of Nipah virus infection is to bring awareness among the people regarding Nipah virus infection and its prevention. Educating about the measures that can take to reduce exposure to Nipah virus infection for those who are work in the field or on farms [Pigs, Horses] and has to follow barrier techniques like cap, mask, gloves, apron, leggings, chappals while handling infected animals. The preventing measures of decreasing bat axis to palm date sap and other fresh food products, by using a protective covering for date palm sap. Prevent exposure to infected sick pigs, bats and cows and avoid visit endemic areas [12].

Standard infection control practices should be enforced to prevent nosocomial infections. Patient to patient spacing is important for avoiding transmission of Nipah virus infection. Isolation has to done by health care personnel for infected cases. Deceased persons should be carried in air sealed bag, if not possible cover with clothes. Avoid close contact with face and respiratory secretions, during grieving situations. Wash hands with soap, immediately after performing ritual washing [12].

### **Need for the Study**

According to WHO 2018 report in the world Nipah virus outbreaks have been reported in Malaysia, Singapore, Bangladesh, India and Philippines. In the world wise statistics 1998 to 2015, more than 600 cases of Nipah virus human infection were reported. As of May 2018, about 700 human cases of Nipah virus (NIV) are estimated. Among those cases 50-75% mortality rate was identified [13].

In India and Bangladesh (Southeast Asia) 2001-12 Nipah has infected 263 people and resulting in 196 deaths. The case fatality rate of Nipah virus Encephalitis ranges from 0-100 and average case fatality rate was 74.5% [14].

NiV was first identified during an outbreak of disease that took place in Kampung Sungai Nipah, Malaysia in 1998. In 1999, more than 265 human cases of encephalitis including 105 deaths had been reported in

Malaysia and 11 cases of either encephalitis or respiratory illness with one fatality were reported in Singapore [15].

In 2001-2012 in Bangladesh the statistics of NIV was indicates 209 morbidity and mortality was 161(77%). In 2004, WHO has received reports of a total of 42 cases and 14 deaths attributed to Nipah-like virus infections in Bangladesh. The infections have occurred in Manikganj (7 cases, 4 deaths) and Rajbari provinces (35 cases, 10 deaths) [16]. An additional 45 cases are under investigation. The average case fatality rate is 74.5%. 2001-2018 Bangladesh reported 303 cases accounting for 21 deaths. In Bangladesh the outbreaks are typically seen in winter season. In Philippines in the year 2014, 17 cases are reported, and 9 deaths were occurred fatality rate is 53% [17].

In India reported 4 outbreaks of Nipah virus infection in the eastern state of west Bengal bordering Bangladesh in 2001 and 2007, 71 cases with 50 deaths (70% of the cases) were reported in 2 outbreaks. In Southeast Asia region, 2001-2012 with 280 total cases with 211 deaths with the 75% of fatality rate [18].

According to WHO in India the first outbreak was reported in Siliguri Jan-Feb 2001. In this outbreak the mortality of Nipah virus cases was 45, morbidity 66, Fatality rate is 68. Second outbreak was occurred in April 2007 Nadia district of West Bengal morbidity was 5 and mortality was 5 and fatality rate was 100%. As totally in 2001-2007, 71 cases with 50 deaths (70% cases) were reported in 2 outbreaks. Around 30 cases of fever with acute respiratory distress and neurological symptoms were reported and five cases [19]. In Kerala May 2018, an outbreak of the disease resulted in a total 19 Nipah virus (NiV) cases, 17 deaths in the Indian state of Kerala. This is the first outbreak of south India [20].

In Kerala (Kozhikode district) and mallapuram 17 were recorded included one health care worker (31 years old nurse who was treating patients infected with virus). In this incident two of the infected were completed cured on June 10, 2018, the outbreak was officially declared to be over. Again, by the end of May 2019 a young student was admitted with Nipah symptoms in Ernakulam district of Kerala and was confirmed Nipah infected on June 4, 2019. The disease was confirmed, and the student left the hospital cured of the disease after near 2 months of treatment on 23rd July 2019. No casualty related to Nipah has been in the second outbreak of Nipah till now and the infection seems contained due to the early identification and caution by health department of Kerala Government [21].

In India Two suspected cases of nipah virus infection have been reported from mangalum and casargod in Karnataka [21]. In Kolkata 1 case suspected and 1 case was death [22]. In Telangana in the place of Hyderabad 2 cases were suspected with Nipah or Nipah like virus encephalitis [23]. Now WHO is supporting affected and risk countries with technical guidance on how to manage outbreak of Nipah virus and how to prevent their occurrence. WHO has declared NIV to be a priority [24]. Currently there are no vaccines available for Nipah virus infection and prevention is only the way the preventive methods are educating the public and strengthening infection control practices [25].

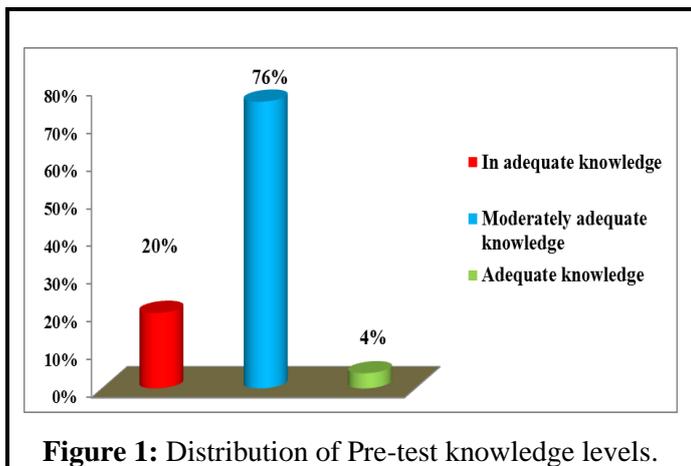
As it is contagious fatal disease nurses need to know the causes, spread, signs and prevention of such disease. So that they prevent the spread of NIV disease. So investigator was interested to find out how much the nursing students know about this disease. So that they can educate the society.

### **Methodology**

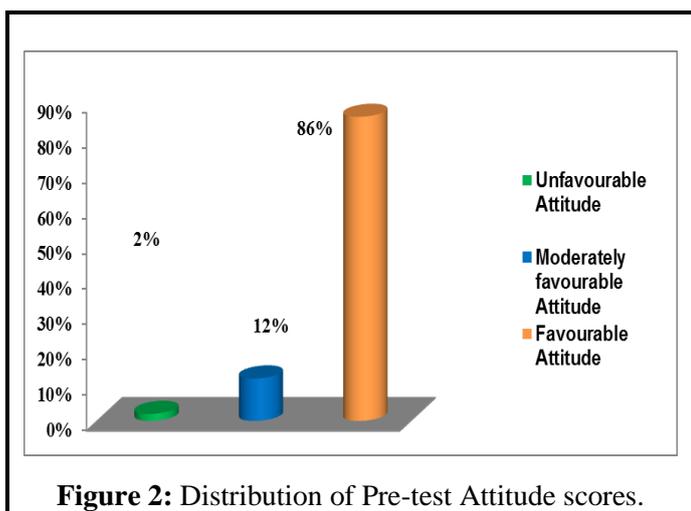
Quantitative evaluative approach was used with Pre-experimental research design (one group pre-test - post-test design). The study conducted at Mamata School and College of Nursing, Khammam, Telangana. The sample used for the study was 3<sup>rd</sup> year students, age group between 20-23 years and who fulfills the inclusion criteria. The sample size is 50 and the sample was selected by Simple random sampling technique. The method of data collection by Self-administered questionnaire and tool used for data was Structured questionnaire. Independent variable was Structured teaching programme on Nipah virus infection and its prevention, Dependent variables are knowledge and attitude, and Socio demographic variables are Base line Information of 3<sup>rd</sup> year Nursing students such as age in years, gender, religion, occupation of father or bread winner, family income per month and source of information regarding Nipah virus infection and its prevention. Split half method was used to find out the reliability of the tool. The research tool is organized into 3 sections (section A: socio demographic data, Section B: Questions on knowledge and Section C: Attitude rating scale).

### **Results**

The data themselves do not provide the answers to research questions. Ordinarily the amount of data collected in a study is extensive to be reliably described in a study by mere perusal. The data was organized, tabulated, analysed and interpreted by using descriptive and inferential statistics.



The above **Figure 1** reveals that majority of the 3<sup>rd</sup> year nursing students, 76% had moderately adequate knowledge, 20% had inadequate knowledge, 4% had adequate knowledge.



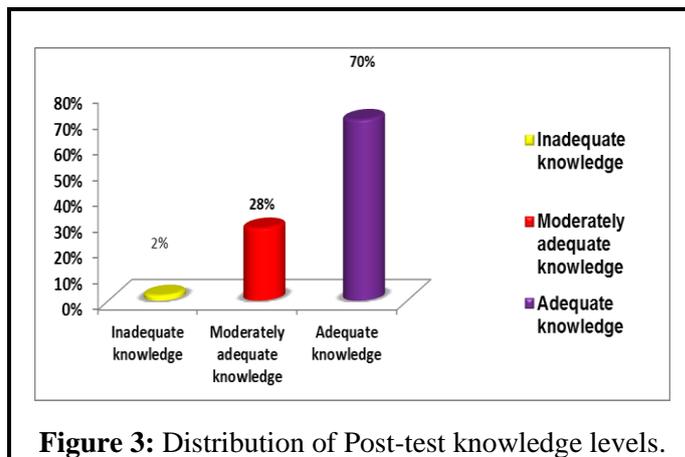
The above **Figure 2** reveals that the majority of the 3<sup>rd</sup> year nursing students 86% had Favourable attitude, 12% Moderately favourable attitude and 2% had Unfavourable Attitude.

**Table 1:** Effectiveness of structured teaching programme on knowledge levels (N= 50).

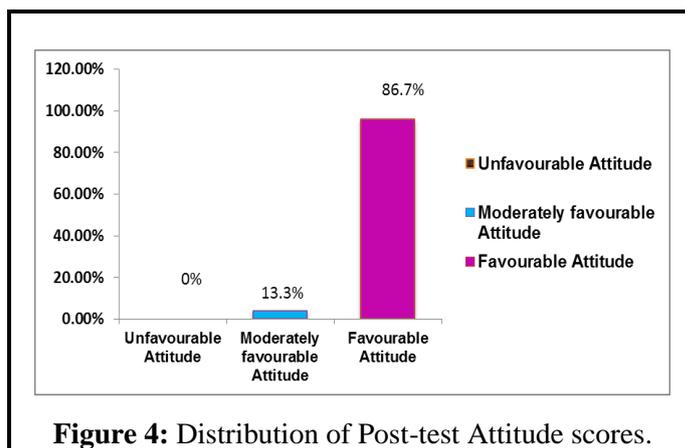
Knowledge	Mean	Standard Deviation	Mean difference	Paired 't' calculated value	Paired't' table value	Significant
Pre-test	11.14	0.41				
Post-test	18.26	2.06	1.65	12.53	3.35	S* df (n-1):49

S\*: Significant at  $p < 0.05$  level

The above table show that the pre-test and post-test knowledge mean was 11.14 and 18.26 respectively. The



The above **Figure 3** describes that the majority of 3<sup>rd</sup> year nursing students 70% had adequate knowledge, 28% had moderately adequate knowledge and 2% had inadequate knowledge.



The above **Figure 4** reveals that the majority of the 3<sup>rd</sup> year nursing students 96% had fair Favourable attitude 4% Moderately favourable attitude and none of them had Unfavourable attitude.

standard deviation for pre- test and post -test were 0.41 and 2.06 respectively. The mean difference was 1.65.

Hence the calculated 't' value 12.53 is greater than table value 3.35.

**Table 2:** Effectiveness of structured teaching programme on attitude score (N= 50).

Attitude	Mean	Standard Deviation	Mean difference	Paired 't' calculated value	Paired't' table value	Significant
Pre-test	43.42	1.32	0.67	4.35	3.35	<b>S*</b> <b>df(n-1):49</b>
Post-test	50.82	0.65				

S\*: Significant at  $p < 0.05$  level

The above **Table** show that the pre-test and post-test attitude mean were 43.42 and 50.82 respectively. The standard deviation for pre-test and post-test were 1.32 and 0.65 respectively. The mean difference was 0.67, Hence the calculated 't' value 4.35 is greater than table value  $p < 0.05$

Chi square is not applicable as the expected values are less than 5 at  $p$  value  $< 0.05$  level. Association between pre- test, post-test knowledge levels, attitude scores and selected socio demographic variables was not applicable in this study.

## Discussion

**Objective 1:** To describe the socio demographic variables.

Regarding distribution of 3<sup>rd</sup> year nursing students according to age, majority of them 88% were in the age group between 20-21 years and 12% of them were between age group 22-23 years, Gender majority of them 60% were females and 40% were males. Regarding religion, majority of them 70% were Hindus, 30% were Christian and none of them were Muslims. According to the occupational bread winner majority of them 34% belong to coolie 28% belong to government employee 80%, belong to business ,12% belong to others and 6% belong to private employee. Regarding distribution of 3<sup>rd</sup> year nursing students according to family income per month, majority of them 42% belongs to Rs above 10,000 are 26% belongs to Rs 3001-5000 are 22% belongs to Rs 8001- 10,000 and 10% belongs to 5001-8000. Regarding distribution of 3<sup>rd</sup> year nursing students according to source of information regarding Nipah virus infection and its prevention among majority of them 56% were getting information mass media, 34% were getting information from health care professional and 10% were getting information from family members.

**Objective 2:** To assess the pre- test levels of knowledge and attitude scores regarding Nipah virus infection and its prevention among 3<sup>rd</sup> year Nursing students.

Majority of the 3<sup>rd</sup> year nursing students, 38(76%) had moderately adequate knowledge, 10(20%) had inadequate knowledge, 2(4%) had adequate knowledge. Majority of the 3<sup>rd</sup> year nursing students ,43(86%) had Favourable attitude, 6(12%) Moderately favourable attitude and 01(2%) had Unfavourable Attitude

**Objective 3:** To assess the effectiveness of structured teaching programme on levels of knowledge and attitude scores regarding Nipah virus infection and its prevention among 3<sup>rd</sup> year Nursing students,

The pre-test and post-test knowledge mean were 11.14 and 18.26 respectively. The standard deviation for pre-test and post-test were 0.41 and 2.06 respectively. The mean difference was 1.65 Hence the calculated 't' value 12.53 is greater than table value 3.35. It indicates structured teaching programme was effective at  $p < 0.05$  level.

The pre-test and post-test attitude mean were 43.42 and 50.82 respectively. The standard deviation for pre-test and post-test were 1.32 and 0.65 respectively. The mean difference was 0.67, Hence the calculated 't' value 4.35 is greater than table value  $P < 0.05$ . It indicates structured teaching programme was effective at  $p < 0.05$  level.

**Objective 4:** To find out the association between the post- test levels of knowledge and attitude scores of 3<sup>rd</sup> year Nursing students, with their selected socio demographic variables. Chi square is not applicable as the expected values are less than 5 at  $P$  value  $< 0.05$  level.

## References

1. World Health Organization. WHO publishes list of top emerging diseases likely to cause major epidemics. 2005.

- <http://www.who.int/medicines/ebola-treatment/WHO-list-of-top-emerging-diseases/en/>.
- Woolhouse M, Gaunt E. Ecological origins of novel human pathogens. *Crit Rev Microbiol* 2007; 33: 231-242.
  - Centers for disease control and prevention. Outbreak of Hendra-like virus-Malaysia and Singapore, 1998-1999. *MMWR Morb Mortal Wkly Rep* 1999; 48: 265-269.
  - Gurley ES, Montgomery JM, Hossain MJ, et al. Person-to-person transmission of Nipah virus in a Bangladeshi community. *Emerg Infect Dis* 2007; 13: 1031-1037.
  - Islam MS, Sazzad HM, Satter SM, et al. Nipah virus transmission from bats to humans associated with drinking traditional liquor made from date palm sap, Bangladesh, 2011-2014. *Emerg Infect Dis* 2016; 22: 664-670.
  - Goh KJ, Tan CT, Chew NK, et al. Clinical features of Nipah virus encephalitis among pig farmers in Malaysia. *N Engl J Med* 2000; 342: 1229-1235.
  - Hsu VP, Hossain MJ, Parashar UD, et al. Nipah virus encephalitis reemergence, Bangladesh. *Emerg Infect Dis* 2004; 10: 2082-2087.
  - Wong KT, Grosjean I, Brisson C, et al. A golden hamster model for human acute Nipah virus infection. *Am J Pathol.* 2003; 163: 2127-2137.
  - Chang LY, Ali AR, Hassan SS, AbuBakar S. Quantitative estimation of Nipah virus replication kinetics in vitro. *Virol J* 2006; 3: 47.
  - Chong HT, Kamarulzaman A, Tan CT, et al. Treatment of acute Nipah encephalitis with ribavirin. *Ann Neurol.* 2001;49: 810-813.
  - Broder CC. Henipavirus outbreaks to antivirals: the current status of potential therapeutics. *Curr Opin Virol* 2012; 2: 176-187.
  - Hsu VP. Nipah and Hendra viruses In: Tabor E, ed. *Perspectives in Medical Virology. Emerging Viruses in Human Populations. Volume 16.* Netherlands: Elsevier Science Publisher; 2006: 179-199.
  - World Health Organization. Emergencies preparedness, response. Nipah virus-India. 2018. <http://www.who.int/csr/don/07-august-2018-nipah-virus-india/en/>.
  - Institute of Epidemiology, Disease Control and Research (IEDCR). 2018. Available at <http://www.iedcr.org/>.
  - Paton NI et al. Outbreak of Nipah-virus infection among abattoir workers in Singapore. *The Lancet* 1999; 354: 1253-1256.
  - Islam MS, Sazzad HM, Satter SM, et al. Nipah virus transmission from bats to humans associated with drinking traditional liquor made from date palm sap, Bangladesh, 2011-2014. *Emerg Infect Dis* 2016; 22: 664-670.
  - Luby SP, Rahman M, Hossain MJ, et al. Foodborne transmission of Nipah virus, Bangladesh. *Emerg Infect Dis* 2006; 12:1888-1894.
  - Hegde ST et al. Investigating rare risk factors for Nipah virus in Bangladesh: 2001-2012. *EcoHealth* 2006; 13: 720-728.
  - NIPAH Virus Disease Guidelines. National Centre for Disease Control (NCDC).2018; Available at <http://www.ncdc.gov.in/index4.php?lang=1&level=0&linkid=113&lid=228>.
  - WHO. Nipah Virus Infection. 2018; Available at <http://www.who.int/csr/disease/nipah/en/>
  - Arun kumar G, Chandni R, Mourya DT, et al.The Journal of Infectious Diseases. On Outbreak Investigation of Nipah Virus Disease in Kerala, India, 2018 (May 2019); 12: 219.
  - Lini Puthussery: BBC News. India's 'hero' nurse who died battling Nipah virus". Retrieved 22 May 2018.
  - After the outbreak. Frontline. Retrieved 10 July 2018.<https://frontline.thehindu.com/the-nation/public-health/article24200872.ece>
  - Nipah virus contained, last two positive cases have recovered: Kerala Health Min. The News Minute. 11 June 2018. Retrieved 10 July 2018.
  - <https://www.thehindu.com/news/national/kerala/on-e-confirmed-case-of-nipah-in-kochi/article27437677.ece>

*This manuscript was peer-reviewed*

*Issue Editor: Dr. M.A. Jahangir*

**Copyright:** ©2021 Chittaluri V. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License [<http://creativecommons.org/licenses/by/4.0/>], which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author[s] and the source, provide a link to the Creative Commons license, and indicate if changes were made.

