



## Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students

Mary Rexline S

Professor, Dept. Fundamentals of Nursing, Vydehi Institute of Nursing Sciences & Research Centre #82, EPIP Area, Nallurhalli, Whitefield, Bengaluru, Karnataka.

### ABSTRACT

Published Online : October 15, 2024

Monkey pox is a viral infectious disease caused by the monkey pox virus, which belongs to the same family as the virus causing smallpox. Though typically self-limiting, with symptoms lasting two to four weeks, it can be transmitted through close contact with infected individuals, animals, or contaminated materials.

**Materials and Methods:** A pre-experimental one-group pretest post-test designed study was conducted to evaluate the effectiveness of Laptop-Assisted Teaching on knowledge regarding Human Monkey pox (HMPX) among 60 nursing students using purposive sampling technique at a selected school in Bengaluru with the Objectives, to assess the effectiveness of Laptop-Assisted Teaching in improving knowledge about Human Monkey pox (HMPX) among nursing students and to determine the association between pretest knowledge scores regarding Human monkey pox (HMPX) among Nursing students with their selected sample characteristics. Data was collected using a structured knowledge questionnaire on HMPX, validated by 10 experts. Descriptive and inferential statistics were used for analysis.

**Results:** The study showed that Laptop-Assisted Teaching significantly improved students' knowledge of HMPX. The mean pretest score was 9.95 (SD = 4.01), while the mean post-test score was 17.84 (SD = 8.78). The computed paired 't' test value of 6.36 at  $p > 0.05$  was significant. Additionally, there was a statistically significant association between pretest knowledge scores and selected sample characteristics such as age and family type.

**Conclusion:** The study concluded that nursing students had inadequate knowledge about HMPX initially, but Laptop-Assisted Teaching was effective in enhancing their understanding.

### KEYWORDS

Effectiveness, Structured Teaching, Knowledge, Human Monkey pox (HMPX), Nursing Students.

### INTRODUCTION

Monkey pox is an ongoing viral infectious disease. It is caused by monkey pox virus, a zoonotic virus in the genus Orthopox virus, of the family poxviridae. It is to be remembered that the causative agent of smallpox is also from this same genus.<sup>1</sup>

Monkey pox was first identified as a distinct illness in the year 1958 among laboratory monkeys in Copenhagen, Denmark. The first ever case of monkey pox was documented in 1970 among six unvaccinated children during the smallpox

eradication efforts. The ongoing outbreak of monkey pox was confirmed in May 2022. The initial cluster of cases was found in the United Kingdom, where the first case was detected on May 6, 2022 in an individual with travel links to Nigeria.<sup>2</sup>

In India, the first monkey pox case reported was in a 35 years old male, a native of Kollam district, who had arrived in Kerala from UAE on July 12 and had tested positive on July 14, 2022<sup>3</sup>

Monkey pox is usually a self-limiting disease with the symptoms lasting from two to four weeks. Severe cases can also occur with a fatality rate of 3-6%. It is transmitted by humans through close contact with an infected person or animal or material contaminated with the virus. It is transmitted from one person to another by close contact with lesions, body fluids, respiratory droplets and materials contaminated with blood. The clinical presentation of monkey

*Corresponding Author: Mary Rexline S*

*\*Cite this Article: Rexline S M (2024). Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students. International Journal of Clinical Science and Medical Research, 4(10), 360-365*

## Mary Rexline S, Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students

pox resembles that of smallpox and is typically presented with fever, rash and swollen lymph nodes. People can spread it from the onset of symptoms until all the lesions have scabbed and fallen off, with some evidence of spread for more than a week after the lesions gets crusted.<sup>4</sup>

People who live with or have close contact (including sexual contact) with someone who has monkey pox are most at risk. Anyone living with someone who has monkey pox should take steps to reduce the risk of becoming infected. A person who has a monkey pox infection should be assessed by a health care provider to determine if they are well enough to be cared for at home and if isolation can be safely managed at home. Health workers should follow infection prevention and control measures to protect themselves while caring for patients with monkey pox. New born infants, young children and people with underlying immune deficiencies may be at higher risk of more serious symptoms, and in rare cases, death from monkey pox. Pregnancy can also increase one's risk of adverse events such as miscarriage or stillbirth. People who were vaccinated against smallpox may have some protection against monkey pox. However, younger people are unlikely to have been vaccinated against smallpox because smallpox vaccination stopped in most settings worldwide after the disease was eradicated in 1980. People who have been vaccinated against smallpox should continue to take precautions to protect themselves and others.<sup>5</sup>

As of now, there is no known and absolute cure, but the smallpox vaccine has around 35% protection in the prevention of infection. Antiviral drugs such as Cidofovir and Tecovirimat are used for the treatment of monkey pox.<sup>6</sup>

### Need for the study

**“Health is the greatest of human blessings”**

#### Hippocrates

Monkey pox is a rare disease caused by infection with the monkey pox virus. Monkey pox virus is part of the same family of viruses as variola virus, the virus that causes smallpox. Monkey pox symptoms are similar to smallpox symptoms, but milder, and monkey pox is rarely fatal. Monkey pox is not related to chickenpox<sup>4</sup>

Monkey pox was discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research. The first human case of monkey pox was recorded in 1970. Prior to the 2022 outbreak, monkey pox had been reported in people in several central and western African countries. Previously, almost all monkey pox cases in people outside of Africa were linked to international travel to countries where the disease commonly occurs or through imported animals. These cases occurred on multiple continents.<sup>7</sup>

The outbreak was first reported in India on 14 July 2022 when Kerala's State Health Minister announced a suspected imported case which was confirmed hours later by the National Institute of Virology. India was the tenth country to report a monkey pox case in Asia and the first in South Asia.

Currently, India has reported ten confirmed cases of monkey pox, three of them in Kerala and five in Delhi, and eight suspected cases, one case each in Delhi and Telangana two in Bihar and four in Uttar Pradesh.<sup>8</sup>

The literature revealed Monkey pox (MPX) has classic prodromal symptoms followed by a total body rash. The sole distinguishing clinical characteristic from other pox-like illnesses is the profound lymph adenopathy. Laboratory diagnosis of MPX is essential, a suitable test for endemic areas is under development but not yet available.<sup>9</sup>

A systematic review of peer-reviewed shows an escalation of monkey pox cases; especially in the highly endemic Democratic Republic of Congo (DRC) a spread to other countries, and a growing median age from young children to young adults. These findings may be related to the cessation of smallpox vaccination, which provided some cross-protection against monkey pox, leading to increased human-to-human transmission. The appearance of outbreaks beyond Africa highlights the global relevance of the disease. Increased surveillance and detection of monkey pox cases are essential tools for understanding the continuously changing epidemiology of this re surging disease.<sup>10</sup>

As of 31<sup>st</sup> July 2024, over 100 000 confirmed cases of Mpox due to monkey pox virus clade I and clade II, including over 200 deaths among confirmed cases, have been reported by more than 120 countries globally according to the World Health Organization (WHO) (2022-24) All the cases of Monkey pox due to MPXV clade I have been reported from the African continent, apart from one case reported by Sweden and one by Thailand.<sup>11</sup>

Despite alarming statistics, literature reviews and recent worldwide outbreak of monkey pox, the researcher decided to create an awareness among the students, of selected nursing School, Bengaluru, regarding monkey pox through laptop assisted teaching.

### RESEARCH METHODOLOGY

A Pre- Experimental one group pre- test post- test design was conducted to evaluate the effectiveness of Laptop-Assisted Teaching on knowledge regarding Human Monkey pox (HMPX) among students in a selected Nursing School, Bengaluru. The population comprised of nursing students who were studying in second and third year General Nursing Midwifery. The sample was selected through purposive sampling technique and based on inclusion and exclusion criteria. The study subjects consisted of 60 General Nursing Midwifery Students among which 30 second year and 30 third year students.

The tools for the study consisted of Section A: Sample Characteristics such as Age in years, education of father, education of mother, occupation of father, occupation of mother, family income per month in rupees and source of information about Human Monkey Pox (HMPX). Section B: Structured Knowledge Questionnaire. Information regarding sample characteristics was collected from the study subject

## Mary Rexline S, Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students

through self-report. Formal permission was obtained from the authority of the selected Nursing school. Written informed consent was obtained from the selected subjects after assuring anonymity and confidentiality of the information given. Pre-test was conducted by using structured knowledge questionnaire to assess the knowledge regarding monkey pox through self-report. Following pre-test, intervention in the form of laptop assisted teaching on Human monkey pox (HMPX) was administered to nursing students for about 30-40 minutes. Post-test was conducted after 7 days using the same structured knowledge questionnaire. Data analysis was done based on the objectives and hypotheses of the study using descriptive and Inferential statistics.

### RESULTS

**Description of sample characteristics:** Among the nursing students majority (88%) of the nursing students were between the age group of 18- 23 years and 12% of them were between the age group of 23-28 years. With regards to the education of father 12% of the students' fathers' had no formal education, 17% of them had primary education and post graduate and

above respectively, 33% of them had secondary education, 13% of them had completed diploma, and 8% of them had completed their under graduate. In relation to the education of mother 15% of the students' mothers' had no formal education, 25% of them had primary education, 30% of them had completed their secondary education, 8% of them had completed their diploma, 10% of them had completed their under graduate and 12% of them had completed their post graduate and above. Among the nursing students 12% of them are Hindus, 62% of them are Christians, 6% of them are Muslims and 20% of them belongs to other religion such as Buddhism, and Jainism. Most (58%) of the nursing students belong to nuclear family and 42% of them belong to joint family. None of the nursing students were the victim of Human monkey pox infection. None of the nursing students family members were affected with Human Monkey pox infection. Among the nursing students less than half (47%) of the students had previous information regarding monkey pox from magazines and newspaper whereas more than half (53%) of them did not have previous information regarding monkey pox.

**Table 1: Frequency and percentage distribution of pretest and post test knowledge scores of nursing students regarding Human Monkey Pox (HMPX).**

n-60

Level of Knowledge	Category	Pre test		Post test	
		F	%	F	%
Adequate (25-34)	≥ 75%	0	0%	13	22%
Moderately adequate (18-24)	51%-74%	7	12%	23	38%
Inadequate (<17)	≤50%	53	88%	24	40%
<b>TOTAL</b>		<b>60</b>	<b>100%</b>	<b>60</b>	<b>100%</b>

In pre-test, majority (88%) of them had inadequate knowledge, 12% of them had moderately adequate knowledge and none of the nursing students had adequate knowledge, whereas in post-test, 22% of the nursing students had adequate knowledge, 38% of them had moderately adequate knowledge, and less than half (40%) of them had inadequate knowledge regarding Human Monkey Pox (HMPX).

**Table 2: Comparison of pre and post test knowledge scores of Nursing students regarding Human Monkey pox (HMPX) following Laptop assisted teaching.**

n-60

Overall knowledge	Mean	Standard deviation	Mean difference	Paired 't' test	df	p value	Inference
Pre test	9.95	4.01	7.89	6.36	59	p<0.05	S*
Post test	17.84	8.78					
Enhancement	7.89	4.77					

S\*-Significant at 0.05 level  $t_{(59)} -1.671$

## Mary Rexline S, Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students

The above table reveals that the mean post test score of knowledge regarding Human Monkey pox (HMPX) (17.84) is greater than that of mean pre test (9.95) knowledge scores among nursing students. The calculated paired 't' value (t=6.36) is greater than the table value ( $t_{59}=1.671$ ) at 0.05 level. Hence, the research hypothesis  $H_1$  is accepted stating

that there is a statistically significant difference between the mean pre and post test knowledge regarding Human Monkey pox following laptop assisted teaching among nursing students. It was found that the Laptop assisted teaching was effective in improving the knowledge of nursing students regarding Human Monkey pox(HMPX).

**Table 3: Association between pre-test knowledge scores regarding Human Monkey pox among nursing students with selected sample characteristics.**

Sample characteristics	Category	Sample	Level of knowledge		Chi square value	Table value with df	p value Inference
			Inadequate	Moderately adequate			
Age in years	18-23 yrs	53	51	2	27.46	3.84 df=1	S* p <0.05
	23-28 yrs	7	2	5			
Education of father	No formal education	7	6	1	0.05	5.99 df=2	NS p >0.05
	Primary and secondary education	30	23	3			
	Diploma, UG, PG and above	27	24	3			
Education of mother	No formal education	9	8	1	0.01	5.99 df=2	NS p >0.05
	Primary and secondary education	33	29	4			
	Diploma, UG, PG and above	18	16	2			
Religion	Hindu	7	6	1	3.09	7.82 df=3	NS p >0.05
	Christian	37	34	3			
	Muslim	4	4	0			
	Others	12	9	3			
Type of family	Nuclear family	35	28	7	5.6	3.84 df=1	S* p <0.05
	Joint family	25	25	0			
Were you a victim of monkey pox?	Yes	7	7	0	1.04	3.84 df=1	NS p >0.05
	No	60	46	7			
Were any of your family members affected with monkey pox during last six months?	Yes	0	1	0	0.13	3.84 df=1	NS p >0.05
	No	60	52	7			
Do you have any previous information regarding monkey pox?	Yes	28	25	3	0.04	3.84 df=1	NS p >0.05
	No	32	28	4			

S\* -Significant at 0.05 level, NS-Non Significant

## Mary Rexline S, Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students

The above table shows that the computed Chi square value for the age in yrs is 27.46, and type of family is 5.6 are greater than table value at  $p < 0.05$  whereas it is lesser than the table value for the other sample characteristics. Hence the research hypothesis 2 is accepted for the sample characteristics such as age in years and type of family. It is found that there is an association exists between the pre-test knowledge with age in years and type of family.

### DISCUSSION

The findings of the study related to the knowledge on Human monkey pox was supported with a descriptive cross-sectional study aimed to assess Al Ain University students' knowledge of Human Monkey pox (HMPX). A total of five hundred and fifty-eight (558) students participated in the study. The average knowledge score was 70.1%, with a 95% confidence interval (CI) of 68.9 – 71.3. Of the total participants, 111 (19.9%) had poor knowledge about human Monkey pox, 320 (57.3%) had moderate knowledge, and 127 (22.8%) had good knowledge. The study results showed that Old age (OR 0.681; 95% CI 1.005–1.016), female gender (OR 1.26; 95% CI 0.813 –0.961), participants from medical colleges (OR 1.22; 95% CI 1.13 –1.32) having a history of human chickenpox infection (OR 2.6; 95% CI 2.3–2.9) and receiving information on human Monkey pox during education (OR 1.14; 95% CI 1.05–1.2) were strong determinants for good knowledge about Human Monkey pox.<sup>12</sup>

The study finding was supported with another descriptive cross sectional study was conducted to assess Knowledge of Human Monkey pox (HMPX) and its Relation to Conspiracy Beliefs among Students in Jordanian Health Schools, Jordan. Survey was distributed in Arabic language without incentives for participation. The study sample comprised 615 students with a mean age of 20 years and a majority of females (432, 70.2%) and medical students ( $n = 351$ , 57.1%). Out of eleven monkey pox knowledge items, three were identified correctly by >70% of the respondents. Only 26.2% of the respondents ( $n = 161$ ) knew that vaccination to prevent monkey pox is available. Age was significantly associated with better HMPX knowledge for a majority of items. Older age, females, and affiliation to non-medical schools/faculties were associated with harboring higher levels of conspiracy beliefs regarding emerging virus infections. Data also indicate that lower levels of HMPX knowledge were associated with higher levels of conspiracy beliefs.<sup>13</sup>

### CONCLUSION

The study concluded that there is an inadequate knowledge regarding Human Monkey Pox (HMPX) nursing students. The laptop assisted teaching regarding Human Monkey Pox (HMPX) is highly effective in imparting knowledge to the nursing students. There is significant association between the pre-test levels of knowledge regarding Human Monkey Pox (HMPX) among nursing students and their demographic variables. The findings from

the study proved that there is inadequacy in the knowledge regarding Human Monkey Pox (HMPX) among nursing students and the laptop assisted teaching Programme served as an effective means of improving their knowledge.

### IMPLICATIONS

#### Nursing Practice

- The present nursing scenario focuses on providing comprehensive care to individuals. The use of Structured Teaching Programme may be effective to improve knowledge and create awareness among nurses regarding Human Monkey Pox (HMPX).
- The importance of this study in nursing is that it serves as a way for nurses to help their patients to enhance awareness about Human Monkey Pox (HMPX).
- Help nurses to identify patients with Human Monkey Pox (HMPX).

#### Nursing education

- Nursing students must be aware about the Human Monkey Pox (HMPX) as it is an ongoing epidemic.
- Nurse educators should provide awareness among nurses regarding Human Monkey Pox (HMPX).

#### Nursing Administration :Nurse Administrators

- Have responsibility to provide staff development opportunities for the nurses on improving knowledge regarding Human Monkey Pox (HMPX).
- Must take active role in organizing and providing adequate guidance and counseling, and conducting teaching programme on Human Monkey Pox (HMPX).
- Should encourage research work on improving knowledge regarding Human Monkey Pox (HMPX).

#### Nursing research

- There is a need for extended and intensive research in areas such as Infectious diseases.
- Research increases the scientific body of nursing knowledge.
- Budding researchers will have an idea in the field of nursing or any other professionals regarding Human Monkey Pox (HMPX).

#### Limitations: The study is limited to

- Second year and third year GNM students of a selected nursing school.
- The non-equivalent sample were included from two different groups that is second year and third year GNM students.

#### Recommendations:

- A similar study can be replicated on the larger sample for the generalization of the findings.

## Mary Rexline S, Knowledge Regarding Human Monkey pox (HMPX) Among Nursing Students

- A comparative study can be conducted among B.Sc. Nursing and GNM students in selected colleges.
- A comparative study can be conducted between staff and student nurses regarding knowledge regarding Human Monkey pox (HMPX).

### ACKNOWLEDGEMENT

I would like to express my sincere gratitude to all those who have supported and contributed to the successful completion of this research. I am deeply thankful to Ms. Amala Mary Roys, Ms. Ann Maria Francis, Ms. Joshna Jojo, Ms. Joy V, Ms. Kaviya J, Ms. Lhamo Bhuti, Ms. Nikitha S, Ms. Sindhupriya, Ms. Priyadarshini, Ms. Riya Pam Bejo, Ms. Sandra Cyriac & Ms. Sneha Suzan Sunny, the former UG students of St Philomena's College of Nursing. I extend my heartfelt appreciation to Principal St Philomena's College of Nursing, Bengaluru for providing a conducive environment for conducting this research. My special thanks go to the participants who took part in this study.

### REFERENCES

1. WHO. Monkey pox. Available from URL: <https://www.who.int/news-room/fact-sheets/detail/monkeypox>. Accessed on 27th August 2022.
2. Xiang Y, White A. Monkeypox virus emerges from the shadow of its more infamous cousin: family biology matters. *Emerg Microbes Infect.* 2022 Dec;11(1):1768-1777. Available from URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9278444/> Accessed on 10th September 2022.
3. THE HINDU. Kerala: First monkeypox case detected in India discharged Available from URL: <https://www.thehindu.com/news/national/kerala/kerala-first-monkeypox-case-detected-in-india-to-be-discharged/article65702161>. Accessed on 5th September 2022.
4. WHO. Monkey pox. Available from URL: <https://www.who.int/news-room/fact-sheets/detail/monkeypox>. Accessed on 27th August 2022.
5. WHO. Monkey pox. Available from URL: [https://www.who.int/news-room/questions-and-answers/item/monkeypox?gclid=EAIaIQobChMIIPyW6NP\\_-QIVR5lmAh2diABvEAAYASAAEgKY4PD\\_BwE](https://www.who.int/news-room/questions-and-answers/item/monkeypox?gclid=EAIaIQobChMIIPyW6NP_-QIVR5lmAh2diABvEAAYASAAEgKY4PD_BwE). Accessed on 05th September 2022.
6. WIKIPEDIA. Monkey pox. Available from URL: <https://www.en.wikipedia.org/wiki/monkeypox> Accessed on 26th August 2022.
7. Peter A Leggat, Human Monkeypox: Current State of Knowledge and Implications for the Future, 2022. Available from URL: <https://www.researchgate.net/profile/Peter-Leggat>. Accessed on 28th August 2022.
8. Wikipedia. 2022 monkeypox outbreak in India. Available from URL: [https://en.wikipedia.org/wiki/2022\\_monkeypox\\_outbreak\\_in\\_India](https://en.wikipedia.org/wiki/2022_monkeypox_outbreak_in_India). Accessed on 30 August 2022.
9. Eveline M. Bunge, Bernard Hoet, Liddy Chen, Florian Lienert, Heinz Weidenthaler, Lorraine R. Baer, Robert Steffen, The changing epidemiology of human monkeypox—A potential threat? A systematic review, 2022. Available from URL: <https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0010141>. Accessed on 28th August 2022.
10. Monkey pox, Centres for disease control and prevention. Available from: URL: <https://www.cdc.gov/poxvirus/monkeypox/about/index.html>. Accessed on 29th August 2022.
11. European Centre for Disease Prevention and Control (ECDC). Epidemiological update – Week 35/2024: Mpox due to monkey pox virus clade I. Stockholm: ECDC; 2024. Available at: <https://www.ecdc.europa.eu/en/news-events/epidemiological-update-mpox-due-monkeypox>. Accessed on 10th September 2024.
12. Jairoun AA, et al. Awareness and preparedness of human monkeypox outbreak among university student: Time to worry or one to ignore? *J Infect Public Health.* 2022 Oct;15(10):1065-1071. doi: 10.1016/j.jiph.2022.08.015. Epub 2022 Aug 29. Available from url: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9534110>, Accessed on 30th January 2023.
13. Sallam M, et al. Knowledge of Human Monkeypox and Its Relation to Conspiracy Beliefs among Students in Jordanian Health Schools: Filling the Knowledge Gap on Emerging Zoonotic Viruses. *Medicina (Kaunas).* 2022 Jul 11;58(7):924. Available from URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9317638>. Accessed on 11th February 2023.