International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2025: 7.089

A Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge regarding Human Metapneumovirus among Parents of School Going Children Age Group of 6-12 Years in Selected Community Area: A Pre-Experimental

Manisha Barapatre[1], Rama Danapure[2]

[1]M. Sc. Nursing Student, MKSSS Sitabai Nargundkar College of Nursing, Nagpur, India
Email: *manishabarapatre58[at]gmail.com*

[2]HOD of Community Health Nursing, MKSSS Sitabai Nargundkar College of Nursing, Nagpur, India

Abstract: ***Human metapneumovirus is a negative-sense single-stranded RNA virus of the family Pneumoviridae and is closely related to the avian metapneumovirus subgroup C. Globally In 2018, there were an estimated 14.2 million acute lower respiratory infection cases associated with human metapneumovirus in children under 5 years old. In one study, 113 out of 4519 samples tested were positive for human metapneumovirus. Human metapneumovirus is a major global cause of respiratory infections with an overall pooled prevalence of about 5.3% among patients with respiratory illness and a higher prevalence of 5–25% in children. Objectives: To assess the knowledge of parents of school going children's age group of 6-12 years regarding Human Metapneumovirus selected community area, to assess the effectiveness of Planned Teaching Programme on knowledge regarding Human Metapneumovirus among parents of school going children age group of 6-12 years in selected community area, to determine the association between knowledge levels and selected demographic variables regarding Human Metapneumovirus among parents of school going children age group of 6-12 years in selected community area. Materials and Methods: A pre-experimental one-group pretest and post-test resign design were used. 100 parents of school going children participated in this study. The sample size was calculated by using Cochran's sample size formula. Quantitative research design was used. Non-Probability convenient sampling technique was used to select the sample. The data were collected from selected community area, using socio demographic data sheet and structured knowledge questionnaires. Consent was obtained from participant in the study. Results: In this study, majority of the subjects 28% were from the age group of 10-11 years and 12 years, majority of the subjects 55% were female, majority of the subjects 66% were belongs to Hindu religion, majority of the subjects 40% were study up to secondary education, majority of the subjects 28% were work as a housewife and majority of the subjects 55% having no any knowledge about human metapneumovirus. In pre-test, majority 59% of subjects had average level of knowledge score, 36% had good level of knowledge score, 4% had poor level of knowledge score, 1% had very good level of knowledge score and 0% had excellent level of knowledge score. Mean knowledge score in pre-test of the subjects was 11.65 + 2.931. Minimum knowledge score in pre-test was 04 and maximum knowledge score in pre-test was 21. While in post-test, majority 57% of subjects had good level of knowledge score, 27% had very good level of knowledge score, 16% had average level of knowledge score and 0% had poor and excellent level of knowledge score. Mean knowledge score in post-test of the subjects was 16.36 + 3.267. Minimum knowledge score in post-test was 09 and maximum knowledge score in post-test was 22. Conclusion: The written prepared material by the investigator in the form of planned teaching helped the subject to improve their knowledge regarding Human Metapneumovirus among parents of school-going children. The study also found no significant association between post-test knowledge scores and most demographic variables, except for the education of parents, which showed a significant influence. The planned teaching programme proved to be an effective method for enhancing parental knowledge on Human Metapneumovirus.***

Keywords: assess, planned teaching, human metapneumovirus, parents, school going children, community

1. Introduction

Human metapneumovirus (HMPV) is a negative-sense single-stranded RNA virus of the family Pneumoviridae and is closely related to the avian metapneumovirus (AMPV) subgroup C. It was isolated for the first time in 2001 in the Netherlands by using the RAP-PCR (RNA arbitrarily primed PCR) technique for the identification of unknown viruses growing in cultured cells.[1]

About 10% to 12% of respiratory illnesses in children are caused by HMPV. Most cases are mild, but about 5% to 16% of children will develop a lower respiratory tract infection like pneumonia.[2]

Globally In 2018, there were an estimated 14.2 million ALRI cases associated with HMPV in children under 5 years old. In one study, 113 out of 4519 samples tested were positive for HMPV. 7 India has reported over 15 cases of HMPV.[3]

Human metapneumovirus (hMPV) is a major global cause of respiratory infections with an overall pooled prevalence of about 5.3% among patients with respiratory illness and a higher prevalence of 5–25% in children. It mainly affects children under 5 years of age with a prevalence of 6.7% as well as the elderly and immunocompromised individuals and causes an estimated 11–14 million infections annually in young children making it the second leading cause of RSV-like infections worldwide.[4]

Prevalence varies across regions with higher rates reported in South India such as Vellore at around 12.7% and variable

prevalence observed in areas including Delhi Pune and the Northeast reaching up to 7%. The infection predominantly affects children under two years of age although all age groups can be involved. Studies from 2020 to 2023 reported a lower prevalence of about 3.1% while more recent reports from late 2024 and early 2025 have confirmed continued detection of cases in India without evidence of a major surge.[5]

Based on reports from early January 2025 a minor and isolated detection of human metapneumovirus (HMPV) was reported in the Nagpur district with no evidence of a widespread or high-prevalence surge at that time. Two suspected cases were identified involving girls aged 7 and 13 years though some reports mentioned 14 years. Both children presented with mild symptoms such as cough and fever were managed on an outpatient basis at a private hospital and subsequently recovered. Their samples were sent to the National Institute of Virology Pune and AIIMS Nagpur for confirmation.[6]

Studies from 2020 to 2023 reported a lower prevalence of about 3.1% while more recent reports from late 2024 and early 2025 have confirmed continued detection of cases in India without evidence of a major surge. Similar to other respiratory viruses hMPV demonstrates seasonal peaks mainly during winter and early spring.[7]

The primary objective of that study was to assess the knowledge of parents of school going children's age group of 6-12 years regarding Human Metapneumovirus selected community area. The secondary objectives of that study were to assess the effectiveness of Planned Teaching Programme on knowledge regarding Human Metapneumovirus among parents of school going children age group of 6-12 years in selected community area and to determine the association between knowledge levels and selected demographic variables regarding Human Metapneumovirus among parents of school going children age group of 6-12 years in selected community area.

2. Material and Methods

A pre-experimental one-group pretest and post-test resign design were used. 100 parents of school going children participated in this study. The sample size was calculated by using Cochran's sample size formula. Quantitative research design was used. Non-Probability convenient sampling technique was used to select the sample. The data were collected from selected community area, using socio demographic data sheet and structured knowledge questionnaires. Consent was obtained from participant in the study. Permission will be obtained from Institutional Ethics Committee. Prior permission is to be taken from principal of college. Prior permission is to be taken from Nagar panchayat.

Criteria for selection of samples

Inclusion Criteria

The criteria that specify characteristics that a population does have the school going children who were.

- Residing in community area.
- Willing to participate.
- Able to understand and write Marathi.

Exclusion Criteria

It is the criteria that involve people who does not possess the school going children who were

- Health professionals.
- Not available at the time of data collection.
- Previously attended health education or training programmes related to Human Metapneumovirus.

Tools

Section I: Demographic Data

It consists of demographic variables to collect the identification data on the parents of school going children regarding the subject like age in years, gender, religion, education of parents, occupation of parents and knowledge regarding human metapneumovirus.

Section II: Structured knowledge questionnaire

It consists of 30 multiple choice questions to evaluate the knowledge regarding human metapneumovirus among parents of school going children age group of 6-12 years in selected community area.

Data Collection

The investigator obtains permission from selected community area in Nagpur District, Maharashtra to conduct the pilot study and also main study. The pilot study was conducted from 17.12.2025 to 23.12.2025 and then main study was conducted from date 05.01.2026 to 12.01.2026. The scoring techniques are distributed according to poor, average, good, very good and excellent.

Statistical Analysis

Statistical analysis was done using SPSS Version 26.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean $\pm$ SD and categorical variables were summarized as percentages. Student paired "t" test was used and also chi square test was used for association. The paired t test whichever appropriate was used for comparison of categorical variables. Graphically the data was presented by bar diagrams. P-value of less than 0.05 was considered statistically significant. The reliability of that tool was 0.80 by using Karl Pearson's correlation coefficient and hence the tools are reliable and valid.

3. Results

Results are divided into four major sections:

Section A:

This section deals with percentage wise distribution of subjects in relation to their demographic variables as shown in table no. 1

Section B:

This section has dealt with the assessment of pre-test and post-test knowledge regarding Human Metapneumovirus among parents of school going children age group of 6-12 years in selected community area. The levels of knowledge were categorized under categories: poor, average, good, very good and excellent. In pre-test, majority 59% of subjects had

average level of knowledge score, 36% had good level of knowledge score, 4% had poor level of knowledge score, 1% had very good level of knowledge score and 0% had excellent level of knowledge score. Mean knowledge score in pre-test of the subjects was 11.65 ± 2.931. minimum knowledge score in pre-test was 04 and maximum Knowledge score in pre-test was 21. While in post-test, majority 57% of subjects had good level of knowledge score, 27% had very good level of knowledge score, 16% had average level of knowledge score and 0% had poor and excellent level of knowledge score. Mean knowledge score in post-test of the subjects was 16.36 ± 3.267. minimum knowledge score in post-test was 09 and maximum Knowledge score in post-test was 22.

Section C:
This section has dealt with the effectiveness of planned teaching programme about knowledge regarding Human Metapneumovirus among parents of school going children age group of 6-12 years in selected community area. The hypothesis was tested statistically, the level of competency during the pre-test and post-test were compared to prove effectiveness of planned teaching programme on significance of difference at 5% level of significance was tested with student's paired 't' test and tabulated 't' value was compared with calculated 't' value. Also, the calculated 'p' values were compared with acceptable 'p' value i.e. 0.05 level of significance.

The statistical Student's paired 't' test was applied at 5% level of significance. The tabulated value for n = 100-1 i.e. 99 Degree of freedom was 99 is that 1.984. The calculated value i.e. 14.950 was much higher than the tabulated value at 5% level of significance. For overall knowledge score of subjects which was statically acceptable level of significance as shown in table no. 2

Section D:
This section has dealt with the association of post-test knowledge score regarding human metapneumovirus among parents of school going children age group of 6-12 years in selected community area with selected demographic variables.

Analysis reveals that there is no association of knowledge score was found in human metapneumovirus among parents of school going children age group of 6-12 years with demographic variables like age in years, gender, religion, occupation of parents and knowledge regarding human metapneumovirus.

Analysis reveals that there is an association of knowledge score was found in human metapneumovirus among parents of school going children age group of 6-12 years with demographic variables like education of parents.

4. Conclusion

The researcher concluded that the planned teaching programme was effective in improving knowledge regarding Human Metapneumovirus among parents of school-going children aged 6–12 years. A significant improvement was observed in post-test knowledge scores compared to pre-test scores, as supported by the higher mean post-test score and the statistically significant paired *t*-test result. Most parents shifted from average to good and very good levels of knowledge after the intervention. The study also found no significant association between post-test knowledge scores and most demographic variables, except for the education of parents, which showed a significant influence. Overall, the planned teaching programme proved to be an effective method for enhancing parental knowledge on Human Metapneumovirus.

Similar study was conducted by VN A, Nisam M, Willaims Prof S. at Urban Area, Jaipur, 2020. After the detailed analysis the overall knowledge of the on prevention of acute respiratory infection among mothers of under five children. The significant association is found between knowledge regarding prevention of acute respiratory infection in number of under-five children. Mean post-test knowledge score (21.13) of mothers of under five children is higher than mean pretest knowledge (15.04) with a mean difference of 06.09 which is found to be statistically significant.[8]

Similar study also was conducted by Deval H, Kumar N, Srivastava M, Potdar V, Mehta A, Verma A at selected school, Uttar Pradesh, India, 2024. After the conclusion the most of the structured teaching programme was effective in enhancing the knowledge regarding respiratory hygiene practices among children. None of the school children have good knowledge in both pre and post-test. If a child follows proper respiratory hygiene practices, the spread of respiratory infection can be reduced.[9]

Conflict of Interest
The authors have no conflict of interest.

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Table 1: Distribution of subjects in relation to their demographic variables

Demographic Variables	Frequency (f)	Percentage (%)
Age in Years		
6-7 Years	21	21
8-9 Years	23	23
10-11 Years	28	28
12 Years	28	28
Gender		
Male	45	45
Female	55	55
Religion		
Hindu	66	66
Christian	04	04
Muslim	08	08
Buddhist	22	22
Others	00	00
Education of the Parents		
Primary Education	39	39
Secondary Education	40	40
Higher Secondary Education	00	00
Graduate	13	13
Post-Graduate	00	00
Illiterate	08	08
Occupation of Parents		
Farmer	18	18
Government Servant	12	12
Daily Wages	10	10
Housewife	28	28
Private Employee	25	25
Others	07	07
Knowledge Regarding Human Metapneumovirus		
Yes	45	45
No	55	55

Table 2: Significance of difference between knowledge scores in pre-test and post-test

Overall	Mean	SD	Mean Difference	t-value	p-value
Pre	11.65	2.931	4.71 + 3.150	14.950	0.0001 S. P<0.05
Post	16.36	3.267			
P<0.05 level				S=Significant	