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Original Research Article

An investigative study on the effectiveness of an informational pamphlet in enhancing caregivers' knowledge about home-based management of children affected by tomato flu in selected rural communities of Indore, Madhya Pradesh

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Abstract

Background: Tomato flu, a contagious viral infection presenting with painful red blisters, was first detected in Kerala in May 2022, mainly among children below five years of age. Since then, cases have been reported in nearby states such as Tamil Nadu and Odisha, raising public health concerns regarding its wider spread across India. Although generally non-fatal, the infection is highly transmissible through close contact and contaminated surfaces. Caregivers play a central role in the early identification, home management, and prevention of further transmission. Therefore, providing them with effective health education is crucial for ensuring proper disease management.

Materials and Methods: A quantitative pre-experimental study was carried out in Morodhat Hat, Indore, including 100 caregivers chosen through purposive sampling. Participants' baseline knowledge of Tomato flu home care was assessed using a structured questionnaire. An educational pamphlet was then administered, followed by a post-test with the same tool. Data analysis was performed using descriptive statistics and paired 'z' tests, with the level of significance fixed at $P < 0.05$.

Results: The paired 'z' test showed a statistically significant increase in caregivers' knowledge following the intervention (mean difference = 14.2, $z = 18.67$, $p < 0.05$). The mean pre-test score of 12.4 rose to 26.6 after the educational session, confirming the pamphlet's effectiveness in improving caregivers' understanding of home care management for Tomato flu.

Summary and Conclusion: The study demonstrated that distributing an informational pamphlet significantly enhanced caregivers' knowledge of Tomato flu home management. These findings underscore the importance of community-based health education in addressing emerging infectious diseases, particularly in rural areas. Tailored educational programs can empower caregivers and contribute to better health outcomes among vulnerable populations.

Keywords: Tomato flu, Caregivers, Health education, Knowledge improvement, Emerging infectious diseases.

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1. Introduction

According to the Union Health Ministry, Tomato flu was first detected on May 6, 2022, in the Kollam district of Kerala. By July 26, 2022, more than 82 children below the age of five had been diagnosed in government hospitals across the state. Other affected regions within Kerala included Anchal, Aryankavu, and Neduvathur. The emergence of this viral illness prompted health alerts in neighboring states such as Tamil Nadu and Karnataka.

In addition, the Regional Medical Research Centre in Bhubaneswar, Odisha, reported 26 cases among children aged 1–9 years. To date, confirmed cases have mainly been restricted to Kerala, Tamil Nadu, and Odisha, though precautionary measures are being taken by the Kerala Health Department to curb transmission to other parts of India.

As highlighted in a report published by The Lancet Respiratory Medicine, Tomato flu is currently in an endemic state and is generally considered non-life-threatening. However, it remains highly contagious, spreading easily through direct contact, clothing, and contaminated surfaces. Children are particularly vulnerable due to behaviors such as frequent hand-to-mouth contact and exposure to unclean surroundings.

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Since its identification, over 100 pediatric cases have been reported across India. Despite its nickname, the exact causative agent is still under investigation. The disease is characterized by painful red blisters that resemble the surface of a tomato, hence the name "Tomato flu."

Given its rapid spread, developing educational materials for caregivers is vital. Such resources should be designed in collaboration with health professionals and based on reliable, updated data to ensure accurate guidance for home-based management and prevention.[1-6]

1.1. Statement of the problem

An investigative study on the effectiveness of an informational pamphlet in enhancing caregivers' knowledge about home-based management of children affected by tomato flu in selected rural communities of Indore, Madhya Pradesh.

1.2. Objectives of the study

1. To evaluate the pre-test knowledge scores of caregivers regarding home-based management of children affected by Tomato flu.
2. To evaluate the post-test knowledge scores of caregivers regarding home-based management of children affected by Tomato flu.
3. To determine the effectiveness of an informational pamphlet in improving caregivers' knowledge on home care management of children with Tomato flu.

2.1 Hypothesis

1. Null Hypothesis (H_{01}): There will be no significant difference between pre-test and post-test knowledge scores of caregivers regarding home care management of children with Tomato flu at the significance level of $p \leq 0.05$.

2. Research Hypothesis (RH_1): There will be a significant difference between pre-test and post-test knowledge scores of caregivers regarding home care management of children with Tomato flu at the significance level of $p \leq 0.05$

2. Materials and Methods

3.1. Research approach

A quantitative research approach was adopted to assess the effectiveness of an informational pamphlet on caregivers' knowledge regarding home-based management of children affected by Tomato flu.

3.2 Research design

The study employed a pre-experimental one-group pre-test–post-test design to evaluate the improvement in caregivers' knowledge before and after the administration of the informational pamphlet.

3.3. Variables under study

1. *Independent variable:* The informational pamphlet on home care management of children with Tomato flu.
2. *Dependent variable:* The knowledge level of caregivers regarding home care management of children with Tomato flu.
3. *Extraneous variables:* Factors such as caregivers' age, gender, religion, educational background, parents' education, and the child's play activities.

3.4. Research setting

The study was conducted in the rural community area of Morodhat Hat, Indore, Madhya Pradesh.

3.5. Population

The target population consisted of caregivers residing in the rural community area of Morodhat Hat, Indore, Madhya Pradesh.

3.6. Sample and sample size

A total of 100 caregivers who met the eligibility criteria were included as the study sample.

3.7. Sampling technique

The study sample was selected using a non-probability purposive sampling technique.

3.8. Inclusion criteria

1. Caregivers who were available during the data collection period.
2. Caregivers of children aged 1–12 years**.**
3. Caregivers with at least one child in the family.

3.9. Exclusion criteria

1. Caregivers unwilling to participate in the study.
2. Caregivers who could not understand Hindi or English.
3. Caregivers unable or unfit to take part in the study.

3. Results

Section I: Analysis and interpretation of the demographic characteristics of the study participants (N = 100)

The data in Table 1 reveals the demographic profile of the caregivers. With respect to age, 15 (15%) were below 20 years, 20 (20%) belonged to the 21–30 years age group, 45 (45%) were between 31–40 years, and 20 (20%) were above 40 years.

In terms of gender, 10 (10%) of the caregivers were male, while 90 (90%) were female.

Regarding marital status, 19 (19%) were unmarried, 79 (79%) were married, 2 (2%) were widowed, and none were divorced.

With respect to religion, 52 (52%) identified as Hindu, 38 (38%) as Muslim, while none identified as Christian or other religions.

Educational background showed that 37 (37%) were illiterate, 28 (28%) had primary education, 12 (12%) had completed middle school, 10 (10%) had high school education, 8 (8%) were graduates, and 5 (5%) had postgraduate qualifications.

In terms of occupation, 48 (48%) were unemployed, 24 (24%) were self-employed, 20 (20%) worked in private jobs, and 8 (8%) were employed in government jobs.[7-9]

Family income distribution revealed that none of the caregivers had a monthly income of less than ₹5,000. A majority, 56 (56%), reported income between ₹5,001–10,000, 34 (34%) earned between ₹10,001–15,000, and 10 (10%) had an income above ₹15,000.

Regarding family type, 48 (48%) lived in joint families, 52 (52%) in nuclear families, and none belonged to extended families.

When asked about prior knowledge of Tomato flu, only 4 (4%) reported having awareness, while 96 (96%) had no prior knowledge.

Table 1: Frequency and percentage distribution of caregivers based on demographic variables

S. No.	Demographic Variables	No.	%
1.	**Age (in caregivers)-**		
	Below 20 year	15	15%
	21 -30 years	20	20%
	31 - 40 years	45	45%
	Above 40 years	20	20%
2.	**Gender**		
	Male	10	10%
	Female	90	90%
3.	**Marital Status**		
	Unmarried	19	19%
	Married	79	79%
	Widow	02	02%
	Divorced	00	00%
4.	**Religion**		
	Hindu	52	52%
	Muslim	38	38%
	Christian	10	00%
	Others	00	00%
5.	**Educational Status -**		
	Illiterate	37	37%
	Primary School	28	28%
	Middle School	12	12%
	High School	10	10%
	Graduate& Post graduate	08	08%
6.	**Occupation**		
	Unemployed	48	48%
	Self employed	24	24%
	Private Jobs	20	20%
	Government	08	08%
7.	**Monthly family income-(In Rs/-)**		
	> 5,000 Rs. / month	00	00%
	5,001 - 10,000 Rs. / month	56	56%
	10,001 - 15,000 Rs. / month	34	34%
	< 15,001 Rs. / month	10	10%
8.	**Types of family**		
	Joint	48	48%
	Nuclear	52	52%
	Extended family	00	00%
9.	**Previous knowledge about tomato flu.**		
	Yes	04	04%
	No	96	96%

Table 2: Assessment of pre-test and post-test knowledge scores N= 100

Level of knowledge	Pre test		Post test	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Poor knowledge	52	52%	00	00%
Average knowledge	27	27%	14	14%
Good knowledge	16	16%	56	56%
Excellent knowledge	05	05%	30	30%
Total	100	100%	100	100%

Section II: Pre-test and Post-test Knowledge Scores on Home Care Management of Children with Tomato Flu among Caregivers

The knowledge assessment tool consisted of 40 multiple-choice questions, each with a single correct answer. Caregivers received 1 mark for each correct response, while incorrect responses were scored as 0. The total scores were categorized into levels of knowledge: poor, average, good, and excellent.

In the pre-test, the frequency and percentage distribution of caregivers' knowledge levels showed that 65 (65%) had poor knowledge, 30 (30%) demonstrated average knowledge, 5 (5%) displayed good knowledge, and none (0%) achieved an excellent level of knowledge regarding home care management of children with Tomato flu.

After administering the informational pamphlet, the same questionnaire was used for the post-test evaluation. The results indicated substantial improvement: 0 (0%) caregivers remained in the poor knowledge category, 14 (14%) demonstrated average knowledge, 56 (56%) achieved good knowledge, and 30 (30%) attained an excellent level of knowledge.

These findings clearly establish that the informational pamphlet was effective in enhancing caregivers' knowledge about home-based management of Tomato flu.

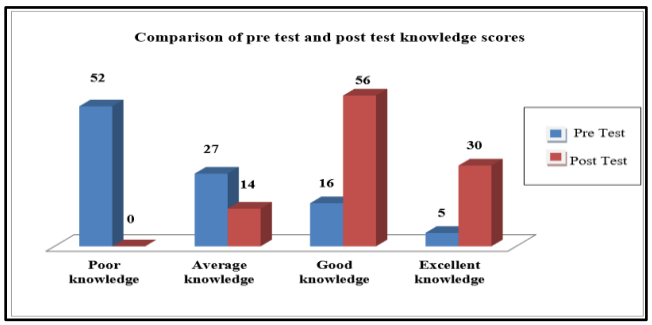

Figure 1: Comparison of pre-test and post-test knowledge scores of caregivers on home care management of children with tomato flu

4. Discussion

This study aimed to assess how effective an educational pamphlet was in improving caregivers' knowledge about home-based management of Tomato flu. The results showeda marked rise in knowledge levels after the intervention, as evidenced by significantly higher post-test scores compared

Section III - Effectiveness of information pamphlet regarding home care management of children

Table 3: Comparison of mean pretest and posttest knowledge score

Knowledge Score	Mean	Mean Difference	SD	Df	Paired 'z' value	P Value
Pre test	12.4	14.2	9.4	99	18.67	p <0.05 HS
Post test	26.6		13.3			

The paired 'z' test was applied, yielding a p-value < 0.05, indicating statistical significance. The results in the table show that the mean pre-test knowledge score was 12.4 (SD = 9.04), whereas the mean post-test score increased to 26.6 (SD = 13.3). The mean difference of 14.2 was found to be significant ($p < 0.05$), demonstrating a substantial improvement in knowledge after the intervention. These findings confirm that the informational pamphlet was effective in enhancing caregivers' knowledge regarding home care management of children with Tomato flu.

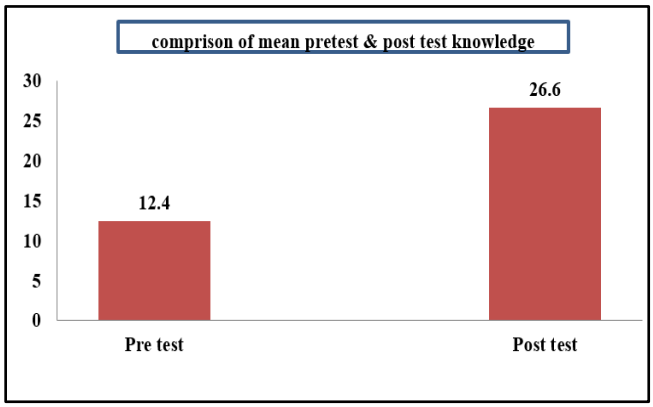

Figure 2: Comparison of mean pre-test and post-test knowledge scores of the sample

to pre-test scores. The average pre-test score of 12.4 indicated limited prior knowledge, whereas the post-test mean of 26.6 demonstrated considerable improvement following exposure to the pamphlet.

These results align with earlier research. For instance, Agarwal and Gupta (2022) as well as Bhatt and Sharma (2021) highlighted that printed health education resources

can significantly enhance caregivers' understanding of childhood illnesses and their home care. Similarly, Patel et al. (2020) found pamphlets to be useful in improving parental awareness about communicable diseases.[10-14]

The observed improvement in this study emphasizes the relevance of community-focused educational interventions. Given that Tomato flu spreads easily through direct contact and contaminated objects, equipping caregivers with knowledge about hygiene practices, recognizing symptoms, and maintaining home isolation is crucial for reducing transmission. The pamphlet proved to be a cost-effective, accessible, and reusable resource, making it particularly beneficial in rural settings and among populations with lower literacy levels. This finding is consistent with the work of Singh and Mehta (2019).

Nevertheless, the study has some limitations. The absence of a control group due to the pre-experimental design reduces the strength of generalizations. Additionally, the use of purposive sampling within a single community may have introduced selection bias. Future research involving larger, more heterogeneous samples, randomized study designs, and extended follow-up periods would provide a clearer understanding of knowledge retention and actual practice changes.[15]

5. Summary

The study demonstrated that the use of an informational pamphlet led to a significant improvement in caregivers' knowledge regarding home-based management of Tomato flu. These results emphasize the role of community education in limiting the spread of emerging infectious diseases, particularly in rural settings. Targeted health education programs can empower caregivers and contribute to improved health outcomes among vulnerable populations.

6. Conclusion

The findings of this study confirm that the informational pamphlet was effective in enhancing caregivers' understanding of Tomato flu management in selected rural areas of Indore. Following the intervention, caregivers exhibited increased awareness of symptoms, preventive strategies, and appropriate home care practices. The pamphlet proved to be a practical and valuable educational resource, enabling caregivers to manage Tomato flu more effectively. Overall, such health education initiatives can significantly contribute to disease prevention and better health outcomes in rural communities.

7. Source of Funding

No external funding was received for this study.

8. Conflict of Interest

The authors declare no conflict of interest.

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