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Research Article

A Descriptive Study to Assess the Level of Knowledge Regarding Environmental Sanitation among Primary School Children at Melvisharam Urban, Ranipet, Tamil Nadu

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A B S T R A C T

Background: Environmental sanitation plays a vital role in promoting public health. Teaching children through interactive methods such as puppet shows helps improve awareness and encourages healthy habits.

Objectives:

- To assess the pre-test and post-test level of knowledge regarding environmental sanitation among primary school children.
- To evaluate the effectiveness of a puppet show on knowledge regarding environmental sanitation among children.

Methodology: A pre-experimental one-group pre-test and post-test design was used among 10 primary school children selected by purposive sampling. A structured questionnaire was administered before and after the puppet show.

Results: In the pre-test, 60% of children had inadequate knowledge, while after the puppet show, 60% had adequate knowledge. The mean knowledge score increased from 6.1 to 10.3. The t-value (7.65, $p < 0.001$) showed a significant improvement.

Conclusion: The puppet show was an effective, enjoyable, and child-friendly method to improve knowledge on environmental sanitation among primary school children.

Keywords: Environmental Sanitation, Puppet Show, Knowledge, Primary School Children, Health Education

Introduction

"When we teach children to keep their surroundings clean, we are preparing them to build a healthier nation." Florence Nightingale-inspired

Health and sanitation are closely interrelated, as cleanliness of the environment directly influences the well-being of individuals and communities. Environmental sanitation refers to the control of all those factors in the physical environment that can potentially have a deleterious effect on human health. It includes the management of solid waste, disposal of human excreta, maintenance of clean water, proper drainage, and promotion of hygienic habits. Maintaining good sanitation practices is essential to prevent

the spread of communicable diseases such as diarrhoea, cholera, typhoid, and intestinal worm infestations, which are common among school-age children.[1-5]

According to the World Health Organization (2023)[6,7], nearly 1.7 million deaths every year are attributed to unsafe water, inadequate sanitation, and poor hygiene practices. Children, particularly those in developing countries, are the most vulnerable group affected by poor environmental sanitation. Repeated episodes of diarrhoea and worm infestation not only affect children's physical growth but also contribute to school absenteeism, poor academic performance, and malnutrition.[1]

In India, despite the launch of national initiatives like the Swachh Bharat Abhiyan and School Health Program, many communities continue to face challenges related to sanitation awareness and hygiene behaviour. The UNICEF (2022) [5]report states that about 30% of school-age children in rural and urban slum areas lack basic knowledge of handwashing and safe waste disposal. This gap in awareness highlights the necessity of school-based health education programmes that target young learners.

Schools provide an excellent platform for promoting hygiene and sanitation because children are quick learners and can act as change agents within their families and neighbourhoods. Early education on environmental sanitation fosters the development of lifelong healthy habits and helps build a disease-free community.

Therefore, the present study was undertaken to assess the level of knowledge regarding environmental sanitation among primary school children at Melvisharam Urban, Ranipet District, Tamil Nadu, and to evaluate the effectiveness of a puppet show as an educational intervention in improving their understanding of sanitation and hygiene.

Need For The Study

Environmental sanitation is a key determinant of public health, particularly among school-age children who are highly susceptible to infections caused by poor hygiene practices. The World Health Organization (2023) reports that around 1.7 million deaths each year are linked to unsafe water, inadequate sanitation, and poor hygiene. In India, despite various national programmes such as Swachh Bharat Abhiyan and the School Health Program, many children still lack proper awareness regarding sanitation and hygiene practices. Poor waste disposal habits, unsafe water handling, and inadequate handwashing contribute to increased rates of diarrhoeal diseases, worm infestations, and malnutrition among children.

Schools play a pivotal role in shaping the health-related attitudes and behaviours of young children. Early education on sanitation helps in developing lifelong hygienic practices that not only protect children from infections but also extend to their families and communities, thus improving overall public health outcomes. There is therefore a strong need to assess the level of knowledge regarding environmental sanitation among primary school children and to implement effective educational interventions that promote awareness and sustainable hygienic behaviour.

Several studies support the need for this investigation. Kumar and Sharma (2021)[2] conducted a study in Uttar Pradesh among 100 schoolchildren and found that the mean post-test knowledge score (22.4) was significantly higher than the pre-test score (16.8), demonstrating the effectiveness of structured teaching programmes. Sultana and Devi (2020)[4] carried out a study among 80 primary school students in Hyderabad and reported that 60% had inadequate knowledge before intervention, which improved to 85% adequate knowledge after school-based health education. Similarly, Rani et al. (2022)[3] conducted a quasi-experimental study in Tamil Nadu to assess the impact of educational interventions on hand hygiene and sanitation among rural school children, finding a statistically significant improvement ($p < 0.001$) in both knowledge and practice scores.

The World Health Organization (2023) further emphasises that improved sanitation and hygiene in schools lead to reduced absenteeism and better learning outcomes. These findings collectively reinforce the importance of child-centred educational programmes—such as puppet shows, demonstrations, and interactive lessons—to improve sanitation awareness among schoolchildren.

Hence, the present study aims to assess the level of knowledge regarding environmental sanitation among primary school children at Melvisharam Urban, Ranipet, Tamil Nadu, and to evaluate the effectiveness of a structured teaching programme in improving their understanding and practices.

Objectives

- To assess the pre-test and post-test level of knowledge regarding environmental sanitation among primary school children.
- To evaluate the effectiveness of a puppet show on knowledge regarding environmental sanitation among children.

Methodology

Research Design

A pre-experimental one-group pre-test and post-test design was used to assess the effectiveness of a puppet show on knowledge regarding environmental sanitation among primary school children (Table 1).

In this design, the knowledge level was measured before and after the intervention without a control group.

Table 1.Environmental sanitation among primary school children

Group	Pre-test	Intervention	Post-test
Experimental	O_1	X	O_2

O_1 – Pre-test knowledge assessment
X – Puppet show on environmental sanitation
O_2 – Post-test knowledge assessment

Research Setting

The study was conducted at a selected primary school in Melvisharam Urban, Ranipet District, Tamil Nadu.

Population

The target population consisted of primary school children studying in Classes III to V. Sample and Sample Size

The sample size consisted of 10 primary school children studying in Classes III to V.

Sampling Technique

A purposive sampling technique was used to select the sample based on inclusion and exclusion criteria.

Inclusion Criteria

- Children studying in Classes III to V.
- Children available at the time of data collection.
- Children who were willing to participate in the study.

Exclusion Criteria

- Children who had already attended similar health education programmes on sanitation.
- Children who were absent during the data collection period

Description of the Tool

A structured knowledge questionnaire was used to assess the knowledge of children regarding environmental sanitation.

The tool consisted of two sections:

- **Section A**: Demographic variables such as age, gender, class, and source of information.
- **Section B**: Structured knowledge questions on environmental sanitation (e.g., cleanliness, waste disposal, safe drinking water, and personal hygiene).

Each correct answer was given a score of one (1), and wrong answers were given zero (0). The total score was 15.

The knowledge level was classified as follows:

- **Adequate Knowledge**: 11–15 scores
- **Moderately Adequate Knowledge**: 6–10 scores
- **Inadequate Knowledge**: 0–5 scores

A pre-test was conducted using the structured knowledge questionnaire. A puppet show on environmental sanitation was presented to the children for 20–30 minutes using colourful puppets and simple language. After one week, a post-test was conducted using the same questionnaire to assess the gain in knowledge (figure 1-4).

The collected data were analysed using descriptive and inferential statistics.

- **Descriptive statistics**: Frequency, percentage, mean, and standard deviation were used to describe demographic data and knowledge scores.
- **Inferential statistics**: The paired 't' test was used to evaluate the effectiveness of the puppet show, and the Chi-square test was used to find the association between post-test knowledge and selected demographic variables.

Distribution of Variables

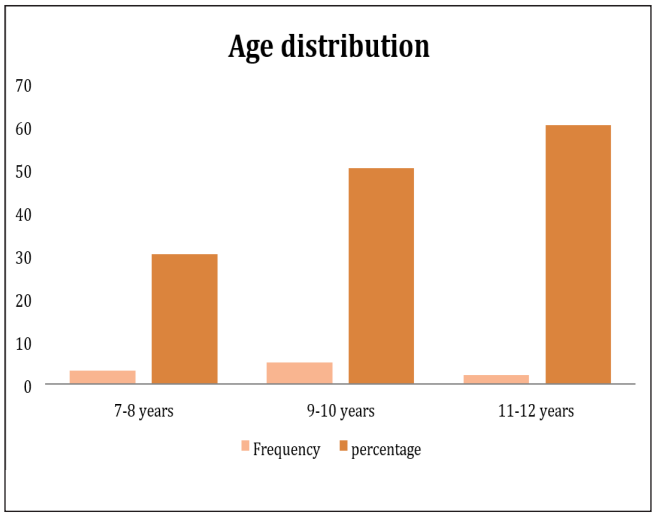

Figure 1.Show that the majority of children (50%) were in the age group of 9–10 years, while 30% were between 7–8 years and 20% were between 11–12 years

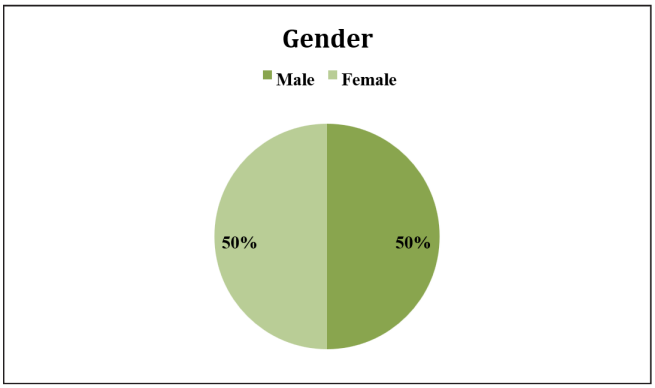

Figure 2.Depicts that Equal numbers of boys and girls (50% each) participated in the study, indicating a balanced gender distribution

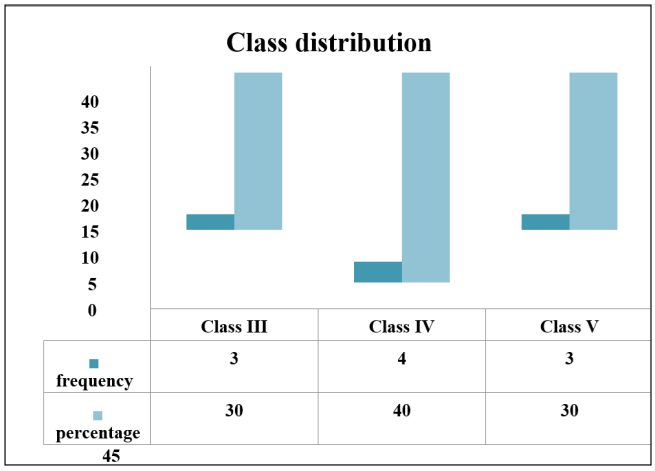

Figure 3.shows that class of study, most of the children (40%) were in Class IV, followed by Class III (30%) and Class V (30%)

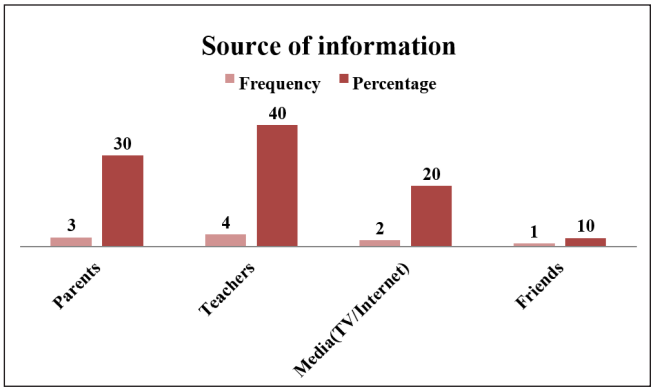

Figure 4.shows that source of information about environmental sanitation, the majority (40%) received information from teachers, followed by parents (30%), media (20%), and friends (10%)

Discussion

Objective 1: To assess the pre-test and post-test level of knowledge regarding environmental sanitation among primary school children

In the present study, the pre-test results revealed that a majority of children (60%) had inadequate knowledge regarding environmental sanitation, 30% had moderately adequate knowledge, and only 10% had adequate knowledge before the intervention. This finding indicates that most of the children lacked awareness about the importance of cleanliness, waste disposal, safe water usage, and hygiene practices.

After the educational intervention using a puppet show, there was a remarkable improvement in the post-test knowledge level — 60% of the children demonstrated adequate knowledge, 30% had moderately adequate knowledge, and only 10% remained in the inadequate category. The mean knowledge score increased from 6.1 (SD = 1.9) in the pre-test to 10.3 (SD = 1.5) in the post-test, with a calculated t-value of 7.65, which was statistically significant at $p < 0.001$.

This finding clearly shows that the puppet show was effective in improving the children's understanding of environmental sanitation concepts. The result is consistent with the findings of Kumar & Sharma (2021)[2], who reported that structured teaching programmesprogrammes significantly increased the knowledge of schoolchildrenregarding sanitation and hygiene practices. Similarly, Rani et al. (2022)[3] also found that health education interventions improved awareness and positive behaviour among children in Tamil Nadu schools.

Thus, the present study supports the importance of interactive and visual teaching methods in promoting hygiene awareness among young learners (Table 2 & Figure 5).

Table 2.Level of knowledge on Pre-test and post-test Knowledge Scores Regarding Environmental Sanitation (N = 10)

Level of knowledge	Pre test		Post test	
	n	%	n	%
Inadequate	6	60	1	10
Moderate	3	30	3	30
Adequate	1	10	6	60

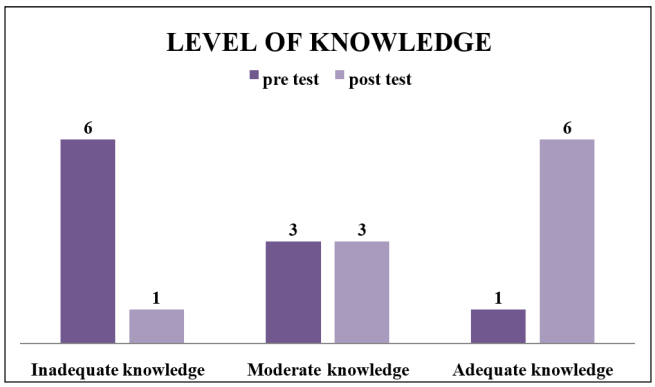

Figure 5.shows that most students (60%) had inadequate knowledge before the intervention.After the puppet show, 60% of the children had adequate knowledge

Objective 2: To evaluate the effectiveness of a puppet show on knowledge regarding environmental sanitation among children

The comparison between pre-test and post-test results revealed a significant improvement in the knowledge level of the children following the puppet show intervention. The mean gain score of 4.2 (post-test mean – pre-test mean) and the t-value of 7.65 at $p < 0.001$ confirm the statistical significance of the intervention.

The puppet show used in this study proved to be an engaging, age-appropriate, and culturally sensitive teaching method. It captured the children's attention and simplified complex concepts about environmental cleanliness, waste management, and hand hygiene. This interactive method allowed children to relate to real-life scenarios, reinforcing retention and understanding.

The findings of the study align with Sultana & Devi (2020), who found that participatory learning methods such as puppet shows and dramatisation were more effective in improving health awareness among school-aged children compared to traditional lectures. Additionally, UNICEF (2022) emphasised that visual and activity-based health education methods are more effective in sustaining behavioural changes among children.[5]

Hence, it can be concluded that the puppet show was an effective educational tool in improving knowledge regarding environmental sanitation among primary school children, and it can be adopted widely in community and school health programmes.

The above table 4 shows that there is a significant association between the post-test level of knowledge and selected demographic variables such as age (p = 0.04) and class (p = 0.03) of the children. However, variables such as gender and source of information did not show any significant association with the post-test knowledge scores.

Table 3.Comparison of Pre-test and Post-test Mean Knowledge Scores (N = 10)

S.no	Demographic variables	Chi-square	df	p-value	Inference
1.	Age(in years)	4.28	2	0.04*	S
2.	Gender	0.85	1	0.42	NS
3.	Class	5.12	2	0.03*	S
4.	Source of information	3.64	3	0.30	NS

Table 4.Association Between Post-test Level of Knowledge and Selected Demographic Variables of Primary School Children. (N = 10)

Test	Mean(M)	SD	Mean Difference
Pre test	6.10	1.90	4.20
Post test	10.30	1.50	

Nursing Implications

- **Community Health Nursing**: Nurses can organise regular awareness programmes on sanitation in schools and communities.
- **Education**: Teaching through play and storytelling enhances participation and retention among children.
- **Research**: Further studies can be done to assess long-term behavioural changes following hygiene education.

Recommendations

- Puppet shows can be used regularly in schools to teach children about environmental sanitation.
- Health topics like cleanliness and hygiene can be taught through fun methods such as puppet shows and role plays.
- Teachers and health workers should be trained to use creative teaching methods.
- Community health nurses can use puppet shows in villages and urban areas to create awareness.
- Similar studies can be done with a larger group of children for better results.

Conclusion

This study concludes that the puppet show is an effective, engaging, and child-friendly teaching strategy to promote environmental sanitation knowledge among school children. It also emphasises the need to include interactive educational methods in school health programmes to ensure better learning and retention.

The use of creative tools like puppet shows can contribute significantly to achieving behavioural change among children and thereby improve community hygiene standards in the long term.

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