

Effect of Structured Teaching Program on Students' Knowledge of Plastic Use Hazards in Selected Schools, Puducherry

Geetha Chockalingam

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ABSTRACT

Introduction: Plastic bags are firm, and their cost is less; so, they are used in all shops. Today, people are accustomed to using plastic bags and find their daily life difficult without using them. Reusable items produce environmental pollution and harm humans.

Objectives: Assess the knowledge on hazards of plastic use, evaluate the effectiveness of structured teaching program (STP), and associate the knowledge with demographic characteristics of schoolchildren.

Materials and methods: Adopted pre-experimental research design, and quantitative research approach was used and it was conducted in a government school in Puducherry, India. Selected 60 samples by convenient sampling method to assess the knowledge through a questionnaire. The STP was implemented.

Results: The study results revealed that among 60 schoolchildren, 50% had moderate and 50% had inadequate knowledge during the pre- and post-test, respectively; 100% of them had adequate knowledge. This was highly statistically significant.

Conclusion: The findings revealed that structured teaching was bringing out the change in the knowledge of schoolchildren.

Keywords: Effectiveness, Hazards of plastic use and knowledge, Schoolchildren, Structured teaching program.

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INTRODUCTION

Plastic pollution is one of the most important aspects of today's environmental challenges in the world. Toxic substances kill the entire environment, natural creatures, poison seafood and cause major health risks, and may even contribute to global warming.¹ Possibilities are there that it will create new animals that are not suitable for living organisms on the ground. Plastic pollution is a severe concern in these situations, and it needs additional investigation.^{2,3} In 2011, the campaign "Stop Using Plastics and Make the World a Greener Place" was launched. Plastics are extremely harmful to the environment. In various ways, they deplete the ecosystem's natural resources and energy in large quantities. Along with wasting resources such as fossil fuels and other resources, plastic items endanger the foundation of life on the land and sea animals.^{4,5}

NEED FOR THE STUDY

A STP is a powerful concept. It is based on the notion that Children may be trusted and encouraged to teach and assist one another since they have the ability and incentive to do so. This is a whole different perspective on education's potential. Child-to-child activities refer to several kinds of assisting and caring actions. In this age range, schoolchildren are the most influential people, and their influence has a significant impact on their lives. To create a greener and better environment, it is vital to inform schoolchildren about the risks associated with consuming plastic.⁶

PROBLEM STATEMENT

Effectiveness of STP on knowledge regarding hazards of plastic use among schoolchildren in selected school, Puducherry, India.

Department of Child Health Nursing, Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth, Puducherry, India

Corresponding Author: Geetha Chockalingam, Department of Child Health Nursing, Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth, Puducherry, India, Phone: +91 8807788796, e-mail: geethakasi@gmail.com

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OBJECTIVES

- Evaluate the effectiveness of STP on schoolchildren's knowledge regarding risks associated with plastic use.
- Associate between the schoolchildren's knowledge regarding hazards of plastic use with their selected demographic variables.

HYPOTHESES

H₁: Schoolchildren's knowledge differs significantly between the pre- and post-test.

H₂: There is an association between schoolchildren's knowledge, and their demographic characteristics studied.

The present research is based on the concept of the open system model. All living organisms, exchange matter, energy, and information, resulting in variable degrees of contact with the environment from which the system receives input and produces matter, energy, and information.⁷

The literature review collected data on the following:

- Knowledge of hazards associated with plastic use.
- Structured teaching program.

RESEARCH METHODOLOGY

Used quantitative research approach and pre-experimental research design.

Research Design in Schematic Format



- O_1 – Pretest: Using a non-probability convenient selection technique, the investigator selected 60 schoolchildren from grades 5 and 6.

The duration took about 30 minutes, included a structured questionnaire to determine the degree of knowledge about the harms of plastic use during pretest.

- X – Intervention: The subjects were chosen by the investigator. With the use of PPT and film, the instruction was offered through an organized teaching program. A 1-week intervention session was conducted.
- O_2 – Post-test: It was conducted after one week implementation of intervention.
- Dependent variable: Knowledge regarding plastic use harms.
- Independent variable: STP.
- Study setting: Conducted in a government school from Seliamedu, Puducherry, India.
- Population: Schoolchildren (of age 10–12 years) in a selected school in Puducherry, India.
- Sampling technique: From the accessible population of schoolchildren in a selected school; samples that met the inclusion requirements were chosen and employed a non-probability selection approach.
- Sample and Sample size: Samples were of 60 schoolchildren from a government school in Seliamedu, Puducherry, India.

Inclusion and Exclusion Criteria

- Children between the ages of 10–12.
- Self-interest to participate.
- Easily accessible throughout the time of data collection.

Any samples that are sick during the data collection period fall into exclusion criteria.

Tool for Data Collection

- Section A: Sociodemographic variables of participants.
- Section B: Structured questionnaire on knowledge.

Procedure for Calculating the Score

There was a total of 22 items, including general information on plastic use, and hazards to humans, coastal regions, and animals; there were four options for each item, one of which was an accurate response. All correct answers received a score of 1, while incorrect responses received a score of 0, which are interpreted as in Table 1.

Validity of Content

A group of experts in community medicine and nursing validated the instrument. Cronbach's α was used to determine the internal consistency. The coefficient was 0.89 ($p = 0.001$) in the results, showing strong internal consistency.

Table 1: Interpretation of the knowledge score

S. No.	Knowledge level	Score	%
1	Adequate	15–22	>65
2	Moderately adequate	8–14	33–64
3	Inadequate	0–7	<32

The pilot study was done at a government school, Seliamedu, Puducherry, India for 1 week, from 11 March to 15 March. During this time, the tool's validity and reliability were evaluated.

Procedure for Data Collection

- Intervention: Implementation of a planned education intervention on the risks associated with using plastic.
- Post-test: On day 7 to determine the knowledge of dangers of plastic use; after the post-test, a knowledge evaluation of the risks of plastic use was done using an interview method.
- Ethical considerations: Prior to data collection, the entire data collection procedure was explained by the researcher, and obtained informed consent. Maintained their confidentiality.
- Make a data analysis strategy: The information was collected, organized, and tabulated. For demographic information, applied frequency and percentage distribution. The effectiveness of STP was assessed through paired t -test. The degree of knowledge was associated with their demographic characteristics using the Chi-squared test.

RESULTS

The major findings are summarized as follows:

- Equal number of children from grades 5 and 6, with 31 (51.66%) from grade 6 and 29 (48.33%) from grade 5.
- The majority of students 39 (65%) were between the ages of 10 and 11, with 21 children (35%) between the ages of 11 and 12.
- The majority 42 (70%) of children have acquired knowledge about the dangers of using plastic through school education.
- From both grades, equal number of students (30%) have inadequate, moderate, and sufficient knowledge about the dangers of using plastics, according to pre-test knowledge.
- Distribution of schoolchildren according to their knowledge level after the implementation of intervention revealed that all children 60 (100%) had sufficient knowledge for all domains, and the difference between pre- and post-test knowledge scores and overall knowledge was highly significant ($p = 0.001$).
- The demographic characteristics examined had no statistically significant association with schoolchildren's knowledge.
- There is no statistically significant relationship between knowledge and the demographic variables studied.

Among the 60 students who already had previous knowledge of the risks associated with using plastic, 42% gained it from the school curriculum.

Figure 1 shows that an equal percentage of students 30 (50%) had a moderate, lack of knowledge, and none had sufficient knowledge. This demonstrates that the children require instruction about the harms of plastic consumption.

Table 2 shows that there was a statistically significant difference between pre- and post-test knowledge levels on the risks of using plastic in all categories. The study hypothesis H_1 was accepted. The pre- and post-test knowledge levels of schoolchildren and their

Table 2: Effectiveness of STP on schoolchildren's knowledge of the hazards of plastic use during pre- and post-test. (N = 60)

S.No.	Area of knowledge	Pre-test		Post-test		t-value
		Mean	SD	Mean	SD	
1	General hazards	3.13	1.1	5.17	0.62	13.33**
2	Hazards on human beings	2.13	0.93	3.45	0.62	15.38**
3	Hazards on coastal areas	0.75	0.60	2.47	0.50	11.2**
4	Hazards on environment	1.1	0.82	3.32	0.65	13**
5	Hazards on animals	0.43	0.53	1.6	0.56	13.22**
6	Preventive aspects	0.4	0.72	2.35	0.73	18**
7	Overall	6.50	0.97	17.74	0.69	33.58**

**Highly significant when $p < 0.001$

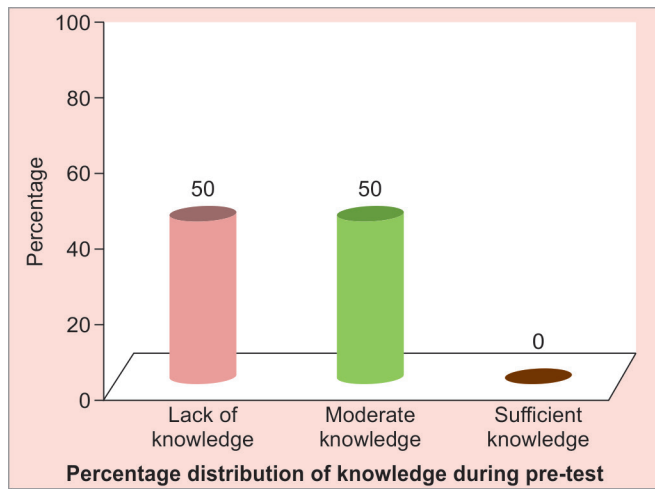


Fig. 1: Determining the percentage of schoolchildren's pre-test knowledge of the risks involved in using plastic. N = 60

demographic characteristics did not correlate. The study hypothesis H_2 was rejected.

DISCUSSION

According to the study objectives, the findings are discussed as follows:

- Evaluate the effectiveness of STP on schoolchildren's knowledge regarding risks associated with plastic use.

On the post-test, 60 (100%) of the students showed that they had the necessary knowledge. Between pre- and post-test levels of knowledge in all categories and total level of knowledge, there was a very significant difference ($t = 33.58^{**}$) in the results. The structured education method performed well.

Provided funding for the current study, he conducted research on peer-mediated learning with 189 students studying in grades from 8 to 10 in Shimla. They revealed different valuable information in the 10 themes they had chosen. Knowledge from the pretest was 7.7%. After peer-mediated instruction, knowledge increased by 61.2% among students, from 68.9% to 68.9%.^{8,9}
- Associate between the schoolchildren's knowledge regarding hazards of plastic use with their selected demographic variables.

In this study, there was no association between the level of knowledge of students and their demographic features, and the study hypothesis H_2 was rejected.

Limitations

- This study was conducted only in government school.
- The sample size was limited to 60 school students.

CLINICAL SIGNIFICANCE

Children's wellbeing is a good indicator of a nation's wealth. The current study used a structure-based teaching approach to help people understand the risks associated with consuming plastic. To encourage instructors to instruct pupils in the classroom, the nurse administrator coordinates her efforts with them. Give the school nurse permission to take part in an education program. The findings can be used by school health nurses as an evidence-based practice to raise awareness among students.

RECOMMENDATIONS

To generalize the study findings, the same study with a large sample size can be done through an STP, and can be conducted on different topics. A research project involving schoolchildren in urban and rural areas. Research may be carried out on children of different age groups. Innovative teaching methods can be used to conduct a similar study.

CONCLUSION

This research will aid in the development of relevant instructional materials for healthcare professionals. The STP has been shown to improve children's knowledge, and healthcare workers can employ structured teaching to educate children in order to improve healthy growth and development, and also through practices from daily activities.⁹

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