



International Journal of Advance Research in Community Health Nursing

E-ISSN: 2664-1666

P-ISSN: 2664-1658

www.communitynursing.net

IJARCN 2024; 6(1): 90-94

Received: 02-01-2024

Accepted: 01-02-2024

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Effectiveness of video assisted teaching module on the knowledge regarding hazards of plastic use among high school children at government high school Akbarpur, Bhopal

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DOI: <https://doi.org/10.33545/26641658.2024.v6.i1b.169>

Abstract

The use of chemicals has increased dramatically due to the economic development in various sectors including industry, agriculture and transport. It increasing incidents of illness like cancers, birth defects and many more due to the varieties of chemicals exposure through the air, water, food and the soil. One among the most hazardous manufacture is the plastic. It has become a part of every aspect of human living. This study was aimed to assess the effectiveness of effectiveness of video assisted teaching module on the knowledge regarding hazards of plastic use among high school children at govt. high school Akbarpur, Bhopal. A quantitative research approach with a pre-experimental research design with pre and post-test without control group experimental approach was used. Non-probability purposive sampling technique was used and 60 subjects were selected and data were collected through the multiple-choice questionnaire and analyzed by descriptive and inferential statistics. The results of the study have revealed that the comparison between pretest and post-test knowledge made by t-test, $t=1.27$ at 0.05 level of significance. The comparison between pretest and post-test knowledge of type of plastic & its hazards made by t-test, $t=2.19$ at 0.05 level of significance. The comparison between pretest and post-test knowledge on avoidance of plastic made by t-test, $t=2.27$ at 0.05 level of significance. This indicates that the video assisting teaching module was effective in improving the knowledge of high school children regarding hazards of plastic & its use.

Keywords: Effectiveness, video assisted teaching, knowledge, hazards of plastic and high school children

1. Introduction

Plastics are used on a daily basis throughout the world. The word plastic is common term that is used for many materials of a synthetic or semi-synthetic nature. The term was derived from the Greek *Plastikos*, which means "fit for molding." "Plastics" derived their name from their properties to be molded, cast, extruded or processed into a variety of forms, including solid objects, films and filaments. These properties arise from their molecular structure. Plastics are polymers, very long chain molecules that consist of subunits (monomers) linked together by chemical bonds. The monomers of 2 petrochemical plastics are inorganic materials (such as styrene) and are not biodegradable. When any food material or water is stored in the plastic containers the small, measurable amounts of the materials may migrate into food and can be consumed with it through the process of leaching. Leaching means that some of the chemicals of the plastic enter the food material or water. Plastics are a wide variety of combinations of properties when viewed as a whole. They are used for shellac, cellulose, rubber, and asphalt. We also synthetically manufacture items such as clothing, packaging, automobiles, electronics, aircrafts, 3 medical supplies, and recreational items. The list could go on and on and it is obvious that much of what we have today would not be possible without plastics. One way plastics changed the world was in cost. It was so much cheaper to manufacture than other materials and the various ways it could be used was staggering. Plastics are synthetic substances produced by chemical reactions. Almost all plastics are made from petroleum, except a few experimental resins derived from corn and other organic substances.

Plastic has many properties which has made it a raw material of choice for manufactures of plastic Bags and packing materials. Cost of production, light weight, strength, easy process of manufacture, and availability are few of the properties. There is nothing wrong with plastic as a material. Man has simply not put the plastic to the right use / or using it without taking proper care of other related norms of usage. Children are more vulnerable to the illness because of exposure since childhood. Use of plastic containers, bottles and other items by children has become common. The long lasting ill effects could be brought down through an awareness and modification of the life style at the early age of their life. However it could be only prevented rather responding at the falling stage. This could be possible through the education given to them in the school days. This issue seeks attention not only from the health point of view, but also environmental values attached to it. This study is therefore conducted with the aim of assessing the knowledge regarding safe use of plastics as food and water container in school children and to assess the change in action taken by the effect of educational intervention.

1.1 Objective of the study

- To assess the pretest knowledge score of high school children regarding hazards of plastic use at selected school of Bhopal.
- To assess the posttest knowledge score of high school children regarding hazards of plastic use at selected school of Bhopal.
- Compare the pretest and posttest knowledge score of high school children regarding hazards of plastic use at selected school of Bhopal.

2. Literature Review

The national cancer institute (NCI) 2007

The prospective cohort study was conducted, it includes 25,691 male and female workers enrolled from 10 different formaldehyde producing or using plants. They investigated mortality for multiple cancer sites and duration of exposure. The result were increased risk of sino nasal cancers were observed among male 2.3 (95%), 13 exposed causes and female 2.4 (95%), 4 exposed cases and 3 deaths one death from squamous cell sinonasal cancer and concluded no increase in risk was found among formaldehyde exposed workers.

Chris E. Talsness (2009) ^[10], in their article titled Components of plastic: Experimental studies in animals and relevance for human health, The required testing of chemicals for regulatory purposes is not aimed at understanding molecular mechanisms and focuses on effects occurring at high doses that are typically not relevant for human exposure scenarios. Over the last 10 years, there has been a dramatic shift in the approach of scientists with regard to investigating doses that are relevant for human exposure to study the effect of BPA in laboratory animals. This has led to a totally unique toxicological literature revealing extensive evidence that effects in laboratory animals are occurring at blood levels that are lower than those found in the average person in a developed country. This is clearly of great concern for possible impact on human health.

R. Rangm (2010) ^[11] A laboratory based study was conducted by national institute of health in United States; by

38 experts they examined the effects of Bisphenol A between animal's studies and effects on human beings. During animal studies, scientist have noted female reproductive problems, early onset of puberty, and cancer of the breast & prostate at even low levels of exposure to Bisphenol A. the conclusion of this study in decades that very low levels of Bisphenol A exposure could cause adverse health effects especially to a fetus and infant brain development, effect the children behavior (Hyperactivity). This study recommended that beneficial impacts of plastic use can reduce the health effects on school going children.

3. Research Methodology

Research approach: Quantitative research approach.

Research design: Under experimental Research pre-experimental research design with pre and posttest without control group.

Research setting: The study was conducted in high school of Bhopal.

Study population: The study was carried out among high school children of Bhopal.

Sample and sampling technique: Sample size was 60 high school children in selected high school of Bhopal. Non-probability Purposive sampling technique was used in the study.

3.1 Data collection tools and techniques

The tool includes two section i.e.

Section I: A brief Questionnaire to relate to the demographic variables like age, sex, education.

Section II: Knowledge Items on hazards of plastic use. It consist 10 items from introduction of hazards of plastic use, 10 items from types of plastic & its hazards, 10 items from avoidance of plastic use score '1' and '0' are awarded to correct and wrong response. Thus the maximum score is 30.

4. Results and Discussion

The collected data was analyzed and interpreted in accordance with objectives using descriptive statistics. The data presented in Table 1 indicates that out of 60 samples the majority of samples belonged to age group of 16-17 years (30) that is 50%, 14-15 years (17) that is 28.33%, 18 or above 18 years (8) that is 13.34% and less than 14 years or 14 years (5) that is 8.33%. This indicates that majority of high school children were between 16-17 years (50%). In Distribution of sex variable majority of samples belonged to gender group of females (31) that is 51.66% & male is (29) that is 48.34%. This indicates that majority of high school children were female 31 (88%). In variable of education majority of samples belonged to 12th standard (23) that is 38.34%, 11th standard (16) that is 26.66%, 9th standard (13) that is 21.66% and 10th standard (8) that is 13.34%. This indicates that majority of high school children were between 12th standard (38.34%). Table no. 2 data presented clearly indicates pretest score that out of 60 children 1 (1.66%) high school children have good knowledge, high 26 (43.34%) school children have average knowledge and 33(35%) high school children have poor knowledge regarding hazards of plastic use with 3.53 mean score and 1.57 SD. Table no. 3

data indicates that 22(36.67%) high school children have good knowledge, 20 (33.33%) high school children have average knowledge and 18 (30%) high school children have poor knowledge regarding plastic with 8.78 mean & 1.19 SD. Table no. 4 indicates that The comparison between pre and post knowledge made by t-test. The pre-test and post-test knowledge was statistically tested by applying t-test method at the level of 0.05%. In this case the calculated value of t is more than the table value (1.67).

5. Discussion

The study aimed to assess the effectiveness of effectiveness of video assisted teaching module on the knowledge

regarding hazards of plastic use among high school children at govt. high school Akbarpur, Bhopal. Study the socio demographic characteristics among 60 high school children shown that most of students were in 16-17 year of age group. The majority of sex ratio was female which 51.66% was and the most of samples were in 12th standard. The pretest score of 60 children indicates that most of school children were average knowledge regarding hazards of plastic use. The post test score of 60 children indicates that most of school children were good knowledge regarding hazards of plastic use. This data clearly shown the effectiveness of video assisted teaching module which was shown by comparison of pretest and posttest score.

5.1 Figures and Tables

Table 1: Distribution of socio-demographic variables of high school children, N=60

S. No.	Characteristics	Frequency	Percentage
1.	Age		
	a) Less than 14 yr.	5	8.33%
	b)14-15 yr.	17	28.33%
	c)16-17 yr.	30	50%
	d)18yr or above 18yr	8	13.34%
2.	Sex		
	a) male	29	48.34
	b) female	31	51.66
3.	Education		
	a) 9th Standard	13	21.66
	b) 10th Standard	8	13.34
	c) 11th Standard	16	26.66
	d) 12th Standard	23	38.34

Table 2: Assessment score for pre-test knowledge of high school children regarding hazards of plastic use, N=60

S. No	Category	Frequency	Percentage	Mean	SD
1.	Good	1	1.66%	3.53	1.57
2.	Average	26	43.34%		
3.	Poor	33	55%		

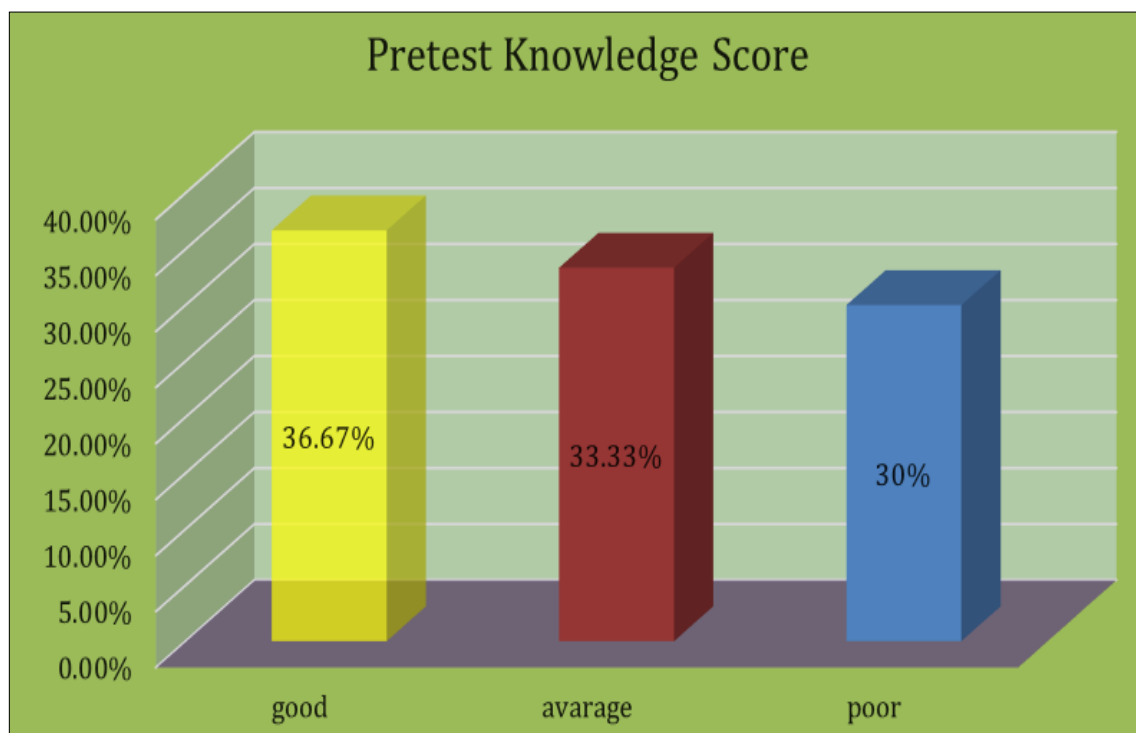


Fig 1: Column graph revealed the pre-test knowledge of high school children regarding hazards of plastic use

Table 3: Assessment score for post-test knowledge of high school children regarding hazards of plastic use, N=60

S. No.	Category	Frequency	Percentage	Mean	SD
1.	Good	22	36.67%		
2.	Average	20	33.33%	8.78	1.19
3.	Poor	18	30%		

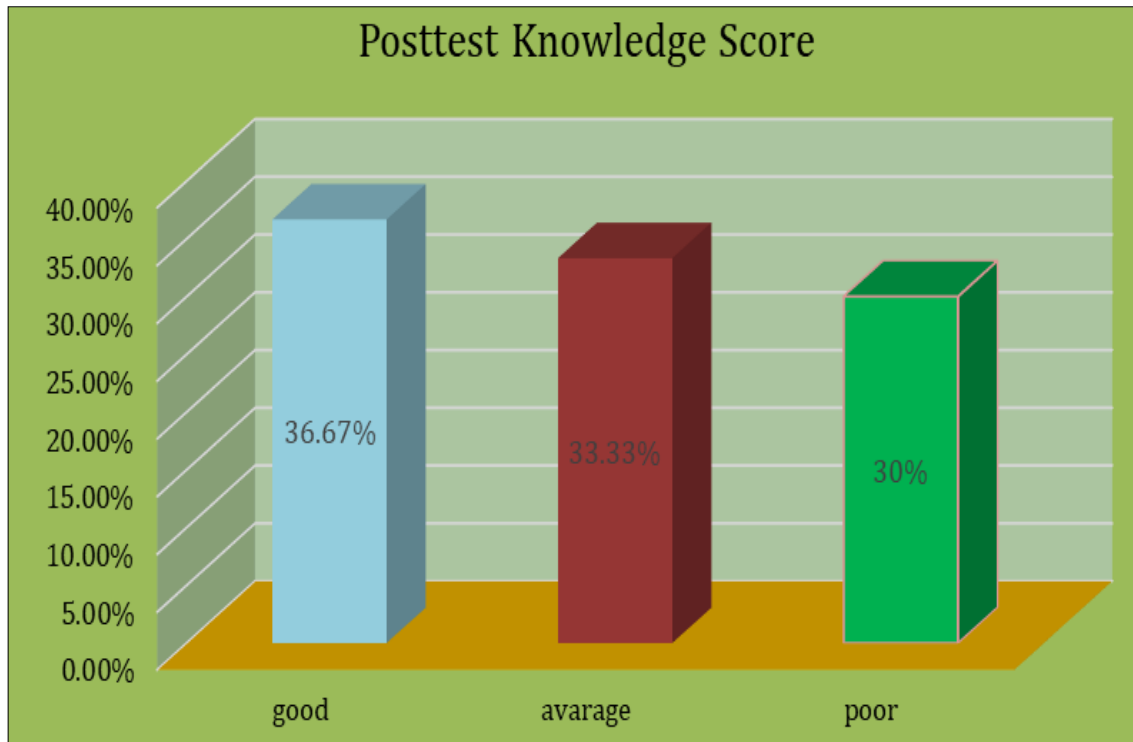


Fig 2: Column graph revealed the post-test knowledge of high school children regarding hazards of plastic use

Table 4: Compare the pretest and posttest knowledge score of high school children regarding hazards of plastic use, N = 60

S. No.	Description	Mean	SD	T-Test	DF	P-Value
1.	Pretest knowledge	3.53	1.57	2.19	58	0.05
2.	Posttest knowledge	8.78	1.19			

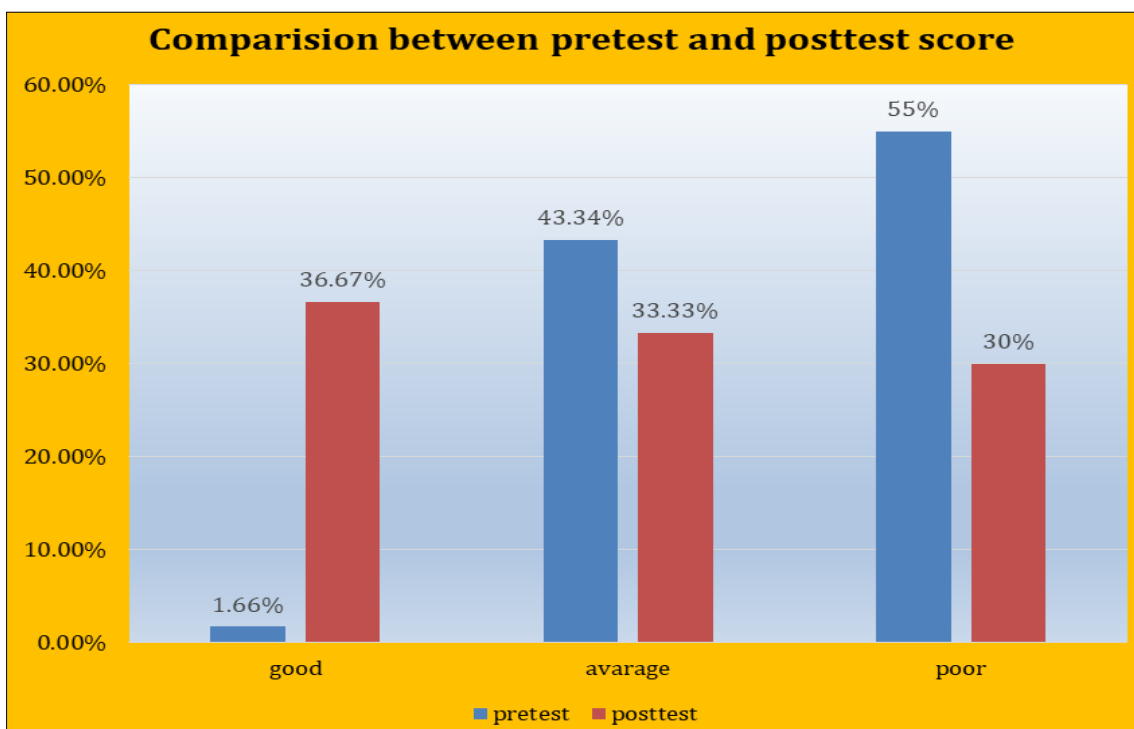


Fig 3: Column graph revealed the comparison between pretest and post-test knowledge of high school children regarding hazards of plastic use

6. Conclusion

It is the responsibility of every citizen to create a hazard free environment around us. Plastic substances are widely used around the globe and there are numerous side effects that gives birth to physical hazard, chemical hazards, biological hazards and environmental hazards. It is harmful for mankind and leads to fatal diseases like cancer. It was researcher's interest to open hidden hazards of plastic use. This study clearly improve the knowledge regarding hazard of plastic use.

7. Acknowledgements

I praise and thank God Almighty for his abundant grace and blessing showered upon me throughout the study. I am especially indebted and express my deepest gratitude to university. I warmly thank all adolescents who participated in this study. I would like to thank Dr. Reena Thakur mam who guided me for this study I extend my heartfelt gratitude to all my friends for their efforts and help in this study. The authority body who gives me permission for this study. Finally I extend my feeling of gratitude to all who directly and indirectly helped in the process and completion of the thesis.

8. Conflict of Interest

Not available

9. Financial Support

Not available

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How to Cite This Article

Gupta J, Thakur R. Effectiveness of video assisted teaching module on the knowledge regarding hazards of plastic use among high school children at government high school Akbarpur, Bhopal. International Journal of Advance Research in Community Health Nursing. 2024;6(1):90-94.

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