Research Article

Effectiveness of Structured Teaching Program on Hazards of Plastic Wastes among the Housewives

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Abstract

Background of the Study: Plastics are used on a daily basis throughout the world. Plastic is not biodegradable. When plastics are buried it will choke the drainage and when it is burnt will emit poisonous gases. The increasing awareness of the environment has contributed to concerns regarding our lifestyles and our indiscriminate disposal of wastes. During the past decade, we have been trying to address this complex problem, more aggressively.

Aim: This **s**tudy is aimed to assess the effectiveness of structured teaching program on hazards of plastic wastes among the housewives residing at rural area.

Methodology: A quantitative research approach with pre-experimental one-group pre-test and post-test design was used in this study. Data collected from the 30 housewives were analyzed by descriptive and inferential statistics.

Result: The overall knowledge score in post-test is 94%. In post-test, the 20% of the housewives had moderate knowledge and 80% of the housewives had adequate knowledge. In pre-test, housewives are having 13.9 ± 3.73 overall knowledge score while in post-test, housewives are having 14.5 ± 2.63 overall knowledge score. The paired *t*-test value is 2.71 which are statistically significant at 0.05 level. In association with age, education, previous awareness, and with the level of knowledge, the Chi-square value is significant at 0.05 levels and reveals that there is a significant association between them.

Conclusion: Structured teaching program improved the knowledge level of the housewives and so the health-care professionals can use this method in educating the housewives to facilitate the healthy growth and development and healthy practices in day-to-day activities.

Keywords: Effectiveness, structured teaching program, hazards, plastic wastes, housewives.

Introduction

Plastics are used on a daily basis throughout the world. The "plastic" is a common word that is used for many materials that are synthetic and semi-synthetic in nature. The term "plastic" is derived from a Greek word "plastikos" which means "fit for molding." Plastic bags are light, sturdy, and easy to carry. Housewives are cheaper than paper. From the mid-1980s, the use of plastic bags became common for carrying daily groceries.[1] The Indian plastics industry made a promising beginning in 1957 with the production of polystyrene.[2]

Increasing urbanization and industrialization have contributed for increased plastic generation. This increase has been rapid since the middle of the 19th century which has affected the quality of environment. With formal and informal sector failing to collect plastic waste, the packaging and PVC pipe industry are growing at 16–18% per year. The demands of plastic goods are increasing from household use to industrial applications.[3]

The modern risk extra to basic environmental risks is unsafe use of dangerous chemicals, inadequate disposal of toxic waste and environmental hazards, noise, industrial, pollution, unsafe chemicals in toys, and household products may also harm children. Emerging potential environmental threats to health include global climate change, ozone depletion, contamination

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of persistent organic pollutants and chemicals, and other hazards and emerging disease, one among them is the plastic products and its use.[4] The risks to the family health and safety would increase and above all the environmental burden would be manifold. Hence, the question is not "Plastics vs. No Plastics" but it is more concerned with the judicious use and reuse of plastic waste.[5]

The hazardous waste generated in the country per annum is estimated to be around 4.4 million tons. While as per the estimates of Organization for Economic Cooperation and Development derived from correlating hazardous waste generation and economic activities, nearly 5 million tons of hazardous waste are being produced in the country annually. Twelve states of the country (Maharashtra, Gujarat, Tamil Nadu, Orissa, Madhya Pradesh, Assam, Uttar Pradesh, West Bengal, Kerala, Andhra Pradesh, Karnataka, and Rajasthan) account for 97% of total hazardous waste generation.[6]

The country should take a serious view of this issue and have a uniform nationwide law to dispose plastics. People should be educated on the proper ways of plastic usage and the disposal.[7] Being non-biodegradable substance plastics pollutes earth, air and water. There is no way what so ever you can safely dispose of plastic waste. Plastic causes serious damage to environment both during its production and disposal. Hence, the only way to reduce the hazards of plastic is to reduce the use of plastic and thereby force a reduction in its production.[8]

Plastic bags are difficult and costly to recycle and most end up on landfill sites where housewives take around 300 years to photo degrade. Housewives break down into tiny toxic particles that contaminate the soil and waterways and enter the food chain when animals accidentally ingest them. All should have a basic knowledge about the proper plastic waste management to create a healthy environment in the future.[9]

There is a need for parent's awareness and in-service education program for teachers about hazards of plastic use so that they can create more awareness among students regarding hazards of plastic use.[10] In a study, majority of the students were not aware about the proper disposal of the plastic and the plastic waste management so they were in need of health education regarding the plastic disposal.[11] In another study, housewives had less knowledge on hazards of plastic wastes.[12] The recent studies and statistics throw the light that plastic waste is an important problem in this contemporary approach and more rural community residents are affected mainly due to improper disposal methods and poor knowledge among the housewives regarding the disposal strategies.

Methodology

A quantitative research approach with pre-experimental one-group pre-test and post-test research design was used to assess the effectiveness of structure teaching program about the hazards of plastic wastes among housewives in rural area. A total of 30 housewives were selected through non-probability convenient sampling technique. Tools used for the data collection are general demographic variables and a structured questionnaire related to hazards of plastic waste. Pre-test was conducted and structured teaching program was administered. Post-test assessment was done after 1 week of the implementation of the structured teaching program. The data were analyzed using descriptive and inferential statistics.

Results

Table 1 reveals that majority 43% of housewives belongs to 29–38 years age group, 43% of the housewives with diploma qualification, 33% of the housewives have the family income of Rs. 5000–10,000/-. In terms of religion, 80% were Hindu, 73% of the housewives belongs to nuclear family, 43% of them are coolies by occupation, and 33% of the housewives occupation is agriculture. The waste is disposed in open land by 33% of the housewives, by burning by 27% of the housewives, in dustbin by 33% of the housewives, and by dumping method by 7%of the housewives. Source of knowledge regarding disposal of waste among housewives is by television (33%), radio (43%), newspaper (10%), and friend (14%).

Table 2 shows aspect wise pre-test, post-test knowledge about the hazards of plastics and its safe disposal among housewives. In pre-test, housewives are having more

Table 1: Frequency and percentage distribution of variables ($n=30$)

Demographic variables	Frequency	Percentage
Age		
18–28 years	10	33
29–38 years	13	43
39–48 years	3	10
49 years above	4	14
Education		
1st–12th std.	10	33
Diploma	13	43
Degree	7	24
Family income		
5000–10,000	10	33
10,000–15,000	8	27
15,000–20,000	9	30
Above 20,000	3	10
Religion		
Hindu	24	80
Christian	6	20
Type of family		
Nuclear family	22	73
Joint family	8	27
Occupation status		
Coolie	13	43
Agriculture	10	33
Office work	3	10
Unemployment	4	14
Method of waste disposal		
Open land	10	33
Burning	8	27
Dust bin	10	33
Dumping	2	7
Previous awareness		
Television	10	33
Radio	13	43
Newspaper	3	10
Friend	4	14

Table 2: Aspect wise pre-test, post-test knowledge on hazards of plastic wastes.

Knowledge on	Hazards of plastics use	Pre-test			Post-test		
		Mean	S.D	Mean %	Mean	S.D	Mean %
General aspect of hazards of plastic use	General aspect	6.44	1.44	92%	6.65	1.02	95%
Other hazards of plastic use	Human beings	2.75	0.66	91%	3	0.32	100%
	Environment	2.48	0.72	82%	2.68	0.67	89%
	Prevention	1.48	0.63	74%	1.72	0.62	86%
	Total	13.9	3.73	92%	14.5	2.63	94%

knowledge in general aspects (92%) and minimum knowledge in the prevention aspect (74%). Overall, housewives had 92% of knowledge score. While in the post-test, housewives gained more knowledge in hazards of plastics on human beings (100%). The overall knowledge score in post-test is 94%.

Table 3 shows the pre-test and post-test level of knowledge about the hazards of plastics and its safe disposal among housewives. In pre-test, 27% of the housewives are having inadequate knowledge, 73% of them are having moderate knowledge. While in post-test, the 20% of the housewives had moderate knowledge and 80% of the housewives had adequate knowledge.

Table 4 compares pre-test and post-test mean knowledge score. In pre-test, while considering general aspects, housewives are having 6.44 score where in post-test, housewives are having 6.65 score. The paired *t*-test value is 2.72 which is statistically significant. While considering human beings aspects, in pre-test, housewives are having 2.75 score whereas in post-test, housewives are having 3.00 score. The paired *t*-test value is 2.60 which is statistically significant. In environmental aspects, the pre-test, housewives are having 2.48 score whereas in post-test, housewives are having 2.68 scores. The paired *t*-test value is 1.24 which is statistically not significant. Considering prevention aspects, in pre-test, housewives are having 1.48 score whereas in post-test, housewives are having 1.72 score. The paired *t*-test value is 2.51 which is statistically significant.

Table 5 shows the comparison of overall knowledge score between pre-test and post-test. In pre-test, housewives are having 13.9 ± 3.73 score, and in post-test, housewives are having 14.5 ± 2.63 score. The paired *t*-test value is 2.71 which is statistically significant.

Table 6 shows the association between the level of knowledge and demographic variables. Significance was noted in relation with age with the Chi-square value of 8.18 which is significant 0.05 level. In association with education and level of knowledge, the Chi-square obtained value in 7.89 which is significant at 0.05 level and revealed that there is a significant association between them. In association with previous awareness of the housewives and level of knowledge, Chi-square obtained value in 12.57 which is significant at 0.05 level and revealed that there is a significant association between them.

Table 3: Pre-test, post-test level of knowledge, *n*=30

Level of knowledge	Pre-test		Post-test	
	No housewives	%	No housewives	%
Inadequate	8	27%	-	-
Moderate	22	73%	6	20%
Adequate	0	0%	24	80%
Total	30	100%	30	100%

Table 4: Comparison of pre-test and post-test mean knowledge score

Knowledge on	Knowledge score				Paired "*t*"-test
	Pre-test		Post-test		
	Mean	S.D	Mean	S.D	
General aspect	6.44	1.44	6.65	1.02	*t*=2.72** significant
Human beings	2.75	0.66	3	0.32	*t*=2.60** significant
Environment	2.48	0.72	2.68	0.67	*t*=1.24 non-significant
Prevention	1.48	0.63	1.72	0.62	*t*=2.51** significant

S: Significant at $P \leq 0.05$, **highly significant at $P \leq 0.01$

Table 5: Comparison of overall knowledge score, *n*=30

	No. of housewives	Mean±S.D	*t*-test
Pre-test	30	13.9±3.73	*t*=2.71 **significant
Post-test	30	14.5±2.63	

* Significant at $P \leq 0.05$, ** highly significant at $P \leq 0.01$

Discussion

Plastic causes serious damage to environment both during its production and disposal. Hence, the only way to reduce the hazards of plastic is to reduce the use of plastic and thereby force a reduction in its production. The present study was focused to assess the effectiveness of structured teaching program about the hazards of plastics and its safe disposal among the housewives residing in selected rural area.

In the present study, 27% of the housewives are having inadequate knowledge, 73% of them having moderate knowledge, and none of the housewives had adequate knowledge which was supported by Sanghi. The overall response pattern showed that housewives had only a moderate level of awareness about hazards of plastic use.[13]

In the present study, pre-test, housewives had more knowledge in general aspects (92%) and minimum knowledge in the prevention aspect (74%). Overall, housewives had 92% of knowledge score. While in the post-test, housewives gained more knowledge in hazards of plastics on human beings (100%). The overall knowledge score in post-test is 94%. This finding

Table 6: Association between level of knowledge and demographic variables, $n=30$

Demographic variable	Level of knowledge		Chi-square	Significant
	Moderate	Adequate		
Age				
18–22 years	1	9		
29–38 years	1	12	8.18	S
39–48 years	2	1		
49 above	2	2		
Education				
1st–12th std.	1	9		
Diploma	1	12	7.89	S
Degree	4	3		
Family income				
5000–10,000	2	8		
10,000–15,000	2	6	0.5	NS
15,000–20,000	3	6		
Above 20,000	1	2		
Religion				
Hindu	4	2		
Christian	20	4	0.59	NS
Type of family				
Nuclear family	8	14		
Joint family	2	6	0.33	NS
Occupation status				
Coolie	3	10		
Agricultural	4	6	1.33	NS
Office work	1	2		
Un employment	2	2		
Method of waste disposal				
Open land	3	7		
Burning	2	6	0.73	NS
Dust bin	4	6		
Other method	1	1		
Previous awareness				
Television	1	21		
Radio	2	1	12.57	S
Newspaper	2	1		
Friends	1	1		

is the same in other studies also were the post test knowledge level is greater than the pretest knowledge level [10, 12]. The overall post-test mean score was significantly higher than, the overall mean pre-test knowledge score and the computed paired "*t*"-value 2.71 is higher than table value at $P < 0.05$ level. Hence, the teaching program on knowledge regarding hazards of plastic usage was effective and statistically significant.[11,12]

The present study finding is with 6.44 score in pre-test where in post-test, housewives are having 6.65 score while considering general aspects. The paired *t*-test value is 2.72 which is statistically significant. While considering human beings aspects, in pre-test, housewives are having 2.75 score whereas in post-test, housewives are having 3.00 score. The paired *t*-test value is 2.60 which is statistically significant. While considering prevention aspects, in pre-test, housewives are having 1.48 score whereas in post-test, housewives are having 1.72 score. The paired *t*-test value is 2.51 which is statistically significant. In another study, significance was noted in general aspects, human beings aspects, and prevention aspects which showed that the structured teaching program improved the level of knowledge.[10,11]

In pre-test, housewives are having 13.9 ± 3.73 score, and in post-test, housewives are having 14.5 ± 2.63 score. The paired *t*-test value is 2.71 which is statistically significant. The finding was supported by Kaur that the overall mean score of pre-test was 14.91 with the S.D. 3.84, whereas in post-test, the overall mean score of post-test was 23.01 with S.D. of 3.72. The *t*-test value was −8.1* which is statistically significant at $P < 0.005$ level of significance. The study finding implied that the education had a vital role in improving the knowledge of housewives regarding plastic management.[10-12]

In the present study, significance was noted in relation with age, education, and previous awareness. The finding was supported by Rann *et al*. (2008) conducted a descriptive survey approach housewives assessed the existing habits of people related to plastic bags. The investigator thus said that people have adequate knowledge on effect of plastic, yet, housewives need stimulation and reinforcement to cultivate the habit of carrying their own bags for shopping.[14]

Conclusion

The findings of the study showed that structured teaching program was very effective in improving the level of knowledge among housewives. Pamphlet method teaching improved the knowledge of the housewives and hence the health-care professionals can use it in educating the housewives to facilitate the healthy practices in day-to-day activities.

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Conflicts of Interest

The author has no conflicts of interest.

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