

Original Article

# AN EDUCATIONAL INTERVENTION PROGRAMME ON HAZARDS OF PLASTIC WASTE AND ITS DISPOSAL AMONG ADULTS : A RURAL COMMUNITY BASED STUDY

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## Abstract :

**Introduction :** Plastic is everywhere in today's lifestyle. It is used for packaging, protecting, serving, and even disposing of all kinds of consumer goods. Improper plastic disposal has become a leading problem in both developed and developing countries. As plastic is non-biodegradable in nature, it remains in environment for several years and disposing plastic wastes at landfill are unsafe and has led to various health problems. So researcher felt it is vital that adults should possess knowledge on hazards of plastic wastes and its disposal.

**Method :** In this study cross sectional descriptive survey was used. Adults were selected through probability simple random sampling. The data was collected using a pretested structured questionnaire. The structured-teaching programme was administered at the end of the pre-test. The post-test was carried out after 7 days, using the same tool as the pre-test. The data was analysed using SPSS version 16 and the results expressed as proportions.

**Results :** A total of 100 adults were included in the study. Analysis of data revealed pre-test knowledge score was 42.52%. Considering the level of knowledge of adults, a structured teaching programme was administered. The post-test knowledge score was 80.48%. Hence comparison in pre-test knowledge score and post-test percentage of hazards of plastic waste and its disposal was approximately 37.96%. A significant association between source of information and post-test knowledge was found.

**Conclusion :** A significant number of adults had inadequate knowledge. So researcher felt that awareness programmes regarding hazards of plastic waste and its disposal should be emphasized.

**Keywords :** Plastic wastes, Structured teaching programme, Effectiveness, Knowledge, Rural community adults.

## Introduction :

In the last 60 years, plastic has become a useful and versatile material with a wide range of applications. Its uses are likely to increase with ongoing developments in the plastic industry. Plastic is a highly useful material and its applications are expected to increase as more new products and plastics are developed to meet demands.<sup>1</sup>

The word "plastic" comes from the Greek word "plastikos" meaning "to form". Plastic is used in place of other materials, such as glass, wood, and metals, in construction and decoration, for making many articles, as

coatings, and drawn into filaments, for weaving. The term "plastics" includes materials composed of various elements such as carbon, hydrogen, oxygen, nitrogen, chlorine, and sulphur.<sup>2</sup>

India generates 5.6 million metric tons of plastic waste annually<sup>2</sup>. India is the fourth highest Asian importer of plastic waste behind Hong Kong, Philippines, Indonesia. Average Indian uses one kilogram (kg) of plastics per year.<sup>3</sup>

Plastics have become a staple product in the world; the only real concern is how they will affect the environment<sup>6</sup>. Plastic waste has several impacts on health of ecosystems and humans. A lesser known impact that could result from ingestion, entanglement and inadequate waste management is the impact of chemicals on humans and ecosystems, either contained in plastic or transported

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by plastic waste. Human health effects includes decreased immune function, cataract, kidney and liver damage, lung function abnormalities and trigger development of obesity and diabetics, irritation in the eyes, nose and throat.<sup>2</sup>

Plastic Waste Management has assumed great significance in view of the urbanization activities.<sup>2</sup>Adults are the future resources for national development. By educating adults we can develop our nation. It is important to improve the knowledge of adults by giving awareness regarding plastic waste disposal. During community field practice, the researcher found the need of improving knowledge of adults on plastic waste disposal. So the researcher felt the need to evaluate the knowledge of adults about the hazards of plastic and its disposal. The objectives of the study were to assess the pre-test knowledge through knowledge questionnaire and find out the effectiveness of structured teaching programme on knowledge regarding hazards of plastic waste and its disposal among adults as well as to find out the association between pre-test knowledge and demographic variables

**Materials and Methods :**

This cross sectional study was undertaken in Kotekar rural community of Mangalore, with the approval from the District Health Officer, Mangalore and Institution Ethical committee. The study consisted of 100 adults of 20-45yrs. Adults were selected by probability simple random sampling. The participants were briefed about the nature of the study, consent was taken and a pre-tested structured questionnaire was administered to them. Data that recorded include general data comprised of age, gender, occupation, total number of members in the family, educational status, family income per month and source of information. Then the researcher had administered Structured-teaching programme for the adults. Post-test was conducted to know the effectiveness of structured-teaching programme.

**Results :**

Main findings are discussed under the following headings:

**SECTION I : Description of Sample Characteristics**

Majority 43% adults were in the age group 18-25 years and 29% adults of 35-35 years and 28% from 26-35 years. 70% of adults were female and 30% were male. 45% of adults had secondary education, 25% had primary education, 22% had completed their PUC and 7% were graduates and 1% postgraduates .44% were unemployed, 21% were self-employed, 18% had other occupation, 13% were private employees and 4% were government employees. Depending on total members in the family 52% had 3-5 members, 40% of them were 6 and above, 8% had less than 2 members

29% had family monthly income above Rs6000, 28% had

**SECTION II : COMPARISON OF PRETEST & POST TEST KNOWLEDGE OF ADULTS ON HAZARDS OF PLASTIC WASTE AND ITS DISPOSAL**

Table 1 : Distribution of pretest and posttest knowledge level among adults. N=100

Level of knowledge	Max score	Pretest		Post test	
		N	%	N	%
Inadequate	0-7	34	34	0	0
Moderate	8-14	9	9	16	16
Adequate	15-21	57	57	84	84

**SECTION III : EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME**

Table 2 : Mean, SD, Mean% of the knowledge scores in pre-test and post-test. N=100

RESPONDENTS KNOWLEDGE LEVEL						't'
Pretest		Post-test		Effectiveness		
Mean ±SD	Mean%	Mean ±SD	Mean%	Mean ±SD	Mean%	Value
8.93±3.04	42.52%	16.9±2.24	80.48%	7.97± 0.8	37.96%	23.48
't'99 = 1.66		P <0.001		S-Significance		S

**SECTION IV : ASSOCIATION BETWEEN POSTTEST KNOWLEDGE SCORE AND SELECTED DEMOGRAPHIC VARIABLES. N=100**

Sl no	Variables	Degree of freedom	Chi Square value	Result
1	Age	2	0.35	5.99 NS
2	Gender	1	0.30	3.84 NS
3	Education status	2	2.68	5.99 NS
4	Occupation	3	0.73	7.82 NS
5	Total members in family	1	3.59	3.84 NS
6	Monthly income	3	0.58	7.82 NS
7	Source of information	1	24.66	3.84 S

NS\* Not significant, S\* significant, <sup>1</sup>=3.84, <sup>2</sup>=5.99, <sup>3</sup>=7.82; p< 0.05

The above table 3 results that there is significant association between source of information and post-test knowledge score (<sup>1</sup>=3.84).

income between Rs4001-6000, 22% had between Rs2001-4000 and 21% had less than Rs2000. 62% did not had previous information and 38% had information about disposal of plastic wastes. Source of information reveals that 34% had information from newspaper, 28% TV/radio, 21.1% family members/friends and 15% from health professionals.

#### Discussion :

Plastic is everywhere in today's lifestyle. Production of plastic has levelled off in recent years, however it is not declining and may well increase in the future as applications of plastic increase and its use continues to grow. Plastic disturbs the soil microbe activity, and once ingested, can kill animals. Plastic bags can also contaminate foodstuffs due to leaching of toxic dyes and transfer of pathogens. It is very essential to educate the adults on proper methods of disposal of plastic wastes like segregation and recycling and keep the ecosystem clean.

From the data analysis and findings of the study, it is concluded that there was a significant difference between the pretest and posttest knowledge scores of adults on hazards of plastic waste and its disposal. The mean knowledge score of adults during pre-test was 42.52% where as it was increased up to 80.48% during the post-test as an effectiveness of structured teaching programme. The difference assessed was 37.96%. Therefore the knowledge of the adults can be further improved by providing on-going teaching and health education programmes.

Our study denoted that the pretest knowledge score of high students were low which is in concordance with other study conducted in Andhra Pradesh, India to assess the knowledge, attitude and practices of students regarding plastic waste management. Out of 267 students, 70% of students were not having adequate knowledge regarding plastic waste disposal. The researcher concluded that proper health education programs regarding plastic disposal should be emphasized.<sup>4</sup>

The findings of the study revealed that there was significant increase in the posttest knowledge score after

the administration of health teaching. The over-all mean knowledge comparison reveals that pre-test mean score was 8.93 and mean post-test score was 16.90. The significant difference was calculated by using student independent 't' test with a value of 23.48 which is relevant to the study conducted to evaluate college students on food safety attitudes, beliefs, knowledge, and self-reported practices and to explore whether these variables were positively influenced by educational intervention out of 59 Students. The result revealed that students attitude scores increased from 114 to 122 ( $p < \text{or} = .001$ ); FSQ belief and knowledge scores improved from 86 to 98 ( $p < \text{or} = .001$ ) and from 11 to 13 ( $p < \text{or} = .001$ ), respectively due to educational intervention.<sup>5</sup>

#### Conclusion :

The present study has found adults had inadequate knowledge on hazards of plastic waste and its disposal. A significant number of adults were unaware of hazards of plastic waste disposal. Various awareness programmes for adults regarding plastic disposal and recycling should be arranged by administrators with up to date knowledge, so that they can implement in their day to day life.

The limitations of this study included the absence of a comparative group, the small sample size.

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#### Conflicts of Interest :

The author declare that they have no competing interest

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