

# Impact of Information Booklet on Harmful Effect of Use of Plastics in Relation to Knowledge among Urban Resident of Pune

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## Abstract

**Introduction:** Plastics are a wide variety of combinations of properties when viewed as a whole. They are used for variety of items and the list could go on and on and it is obvious that much of what we have today would not be possible without plastics. **Material and Methods:** An experimental study was conducted on knowledge of community regarding harmful effects of plastics among urban residents of Pune city. The pre-experimental design was adopted and 40 samples were selected through simple random sampling technique. The data was obtained from the participants using an interview method which included details on socio-demographics of the participants, knowledge of plastics. The same Questionnaire were administered after providing informational booklet as well. **Result:** The findings revealed that pre-test score of the knowledge of participants was 53.92 % whereas 87.83 % of post test score, to test the effectiveness paired 't' was applied at the significance level 0.05 and result shows the booklet on harmful effects of plastics was effective.

**Key words:** Plastics, environmental pollution, harmful effect, bio-degradable, knowledge

## Introduction

Plastics are a widely used across the globe and substantial use found in developing countries due to its low cost. They are used for variety of 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<sup>1</sup>. It was so much cheaper to manufacture than other materials and the various ways it could be used was staggering<sup>2</sup>.

Plastic material consists of synthetic and semi-synthetic compounds which can be used to manufacture solid material

Plastic changed the world and had a great role in advancement of technologies as plastic were cheaper to be manufactured than other materials and hence it was used very often used in all type of products available

today. Because of this reason plastics became part and parcels of our life<sup>3</sup>.

The plastic has unique feature to prepare well-designed and aesthetic products from very low cost material, which are useful for common people. In the plastic and polymer technology there is huge innovations to shape the plastic into various useful material<sup>4</sup>.

## Background

Plastics have been with us for more than a century, and by now they are everywhere, for good and for ill. Plastic contains compounds called phthalates that have been implicated in male reproductive disorders. Studies have also shown that childhood exposure to environmental pollutants can have significant negative effects later in life, including reduced labor force participation and even earnings<sup>5</sup>. Since local residents of the Pune city residing in low cost dwelling and less literate people are not aware of the hazardous effects of the plastics. Education and training methods can be used to educate them and to create awareness among them

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regarding ill effect of the plastics<sup>6</sup>:-

## Methodology

### Study design, setting and sample size

An experimental study was conducted on knowledge of community regarding harmful effects of plastics among urban residents of Pune city. The pre-experimental one group pre-test post-test design was adopted and 40 samples were selected through simple random sampling technique. The permission was obtained from the Pune Municipal Corporation to conduct study.

### Objectives of the Study

3. To assess the knowledge regarding the harmful effect of use of plastics.
4. To determine the effect of informational booklet on knowledge regarding the harmful effect of use of plastics

### Data collection method

The tool had been prepared in four section which

consists of the socio demographic variable, assessment of knowledge (30 items) and information booklet on prevention of hazards of plastics

The interview method was adopted to collect the information. The questionnaires were administered in English and Marathi language. The same questionnaires were used before and after the providing informational booklet. The participants had to answer 26 items to assess the knowledge of harmful effects of plastics. Every right answer gained one (1) point and wrong answer gained zero (0). The overall score ranged from 1-26, participants with good score considered 1-8 score, average score considered 9-17 score and poor score considered 18-26 score.

**Data Analysis:** The data had been analyzed through descriptive analysis and statistical analysis.

## Result

### Section I: Description of samples based on personal characteristics

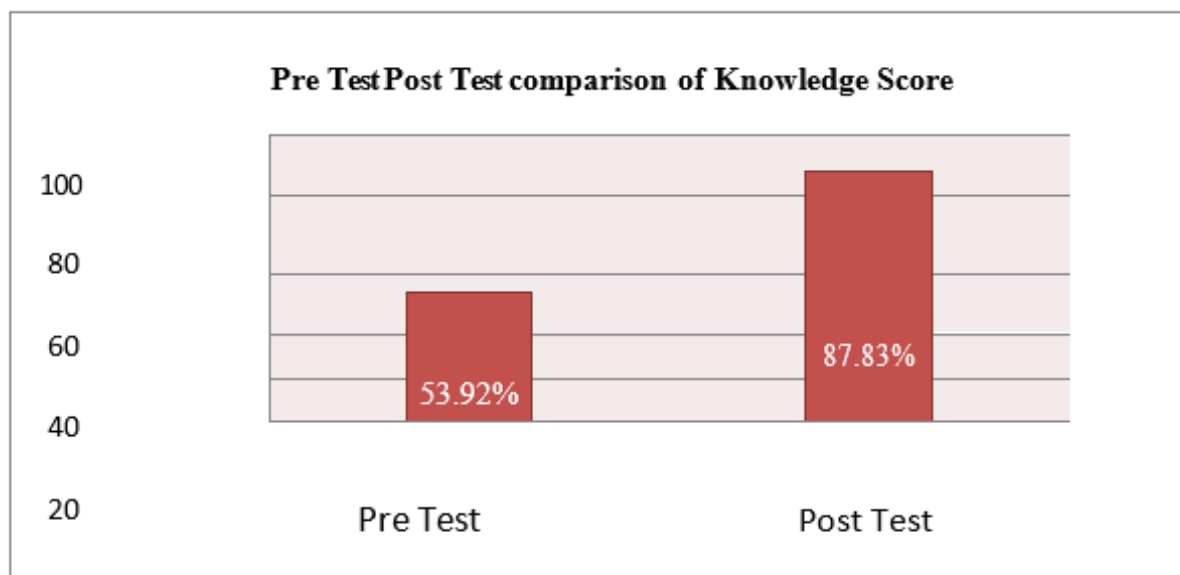
**Table No.1 Distribution of participants as per demographic variables (N=40)**

Demographic variable	Frequency (f)	Percentage (%)
Age		
· 15-30years	25	62.5%
· 31-45years	7	17.5%
· 46-60years	8	20%
Sex		
· Male	19	47.5%
· Female	21	52.5%
· Other	0	0%
Education		
· Primary	7	17.5%
· Secondary	13	32.5%
· Graduate	20	50%
Occupation		
· service	14	35%
· business	10	25%
· unemployed	16	40%
Marital status		
· Married	20	50%
· Unmarried	19	47.5%
· Widow	1	2.5%

Table no. 1 depicts that 25 (62.5%) of the participants are in age group of 15-30 years and 8 (20%) of them are in age group of 46-60years. Most of subjects 21 (52.5%) were females and 19 (47.5%) were male. 20 (50 %) of participants had completed their graduation.14 (35%) of the participants were doing service and 16 (40%) of them were unemployed. Most of the participants 20 (50%) were married.

**Section II – Analysis of data related to the knowledge of harmful effect of plastics**

**Fig No. 1 Pre & Post Test comparison of Knowledge Score**



**Fig no. 1** shows that participants were asked (26)questions, the Pre-test score of the knowledge of subjects regarding the harmful effect of the plastics was 53.92 % and Post test score of the knowledge was 87.83 %. Hence the informational booklet was effective in improving the knowledge of use of plastics among the urban residents

**Table No. 2 Effectiveness of the informational booklet on basic knowledge regarding the harmful effect of the use of plastics**

Sr. No	Knowledge Questions	Pretest score		Posttest score	
		Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
1	Plastics are made up of	34	85	40	100
2	Are there any types of plastics	17	42.5	30	75
3	When did dominance of plastics start	10	25	35	87.5
4	Which among the following is not a property of plastics	9	22.5	23	57.5

**Cont... Table No. 2 Effectiveness of the informational booklet on basic knowledge regarding the harmful effect of the use of plastics**

5	Do plastics make up a large part of municipal solid waste	30	75	36	90
6	Do electronic gadgets contain plastics substances	25	62.5	36	90
7	Does plastics improve durability of goods	25	62.5	37	92.5
8	Are toxic chemicals included in the plastic products we buy	26	65	36	90
9	Which toxins are released when biodegradable plastics break down	8	20	24	60
10	Which size (thickness) of plastic is more harmful	14	35	39	97.5

Table no. 2 depicts that knowledge of the participants has been increased in all the aspects after giving intervention about harmful effect of the use of plastics among residents.

**Table No. 3: Effectiveness of the informational booklet on knowledge regarding effect on human health, animals and environment on use of plastics**

Sr. No	Knowledge Based Questionnaire	Pretest Score Frequency (n)	Pretest Score Percentage (%)	Posttest Score Frequency (n)	Posttest Score percentage (%)
1	Do you think plastics are harmful for human	32	80%	38	95%
2	Do you think plastics can harm the surrounding environment	37	92.5%	40	100%
3	Do plastics play a role in soil erosion	17	42.5%	37	92.5%
4	Will plastic cause acidic rain	15	37.5%	36	90%
5	Do you think plastics can harm animals	34	85%	39	97.5%
6	Do plastics harm the marine life	28	70%	39	97.5%
7	Do you think plastic burning may cause diseases	31	77.5%	39	97.5%
8	What can be the major diseases of burning plastics	14	35%	36	90%
9	Can plastics cause cancer	23	57.5%	38	95%

**Cont... Table No. 3: Effectiveness of the informational booklet on knowledge regarding effect on human health, animals and environment on use of plastics**

10	Are plastics hazardous when buried in land	26	65%	37	92.5%
11	Does burning of plastics creates plastics toxic fume	30	75%	39	97.5%
12	Which type of plastics can release more amount of harmful chemical into the surrounding soil ,and seep into the ground water and contaminating it	9	22.5%	32	80%

Table no. 3 depicts that knowledge of the participants has been increased in all the aspects after giving intervention regarding effect on human health, animals and environment on use of plastics

**Table no.4: Effectiveness of the informational booklet on knowledge regarding recycling and regeneration of plastics**

Sr. No	Knowledge Based Questionnaire	Pretest Score frequency (n)	Pretest Score percentage (%)	Posttest Score frequency (n)	Posttest Score percentage (%)
1	Do you think plastics are degenerative	21	52.5	36	90
2	Do you think all the types of plastics are degenerating	21	52.5	27	67.5
3	How much time is required for degeneration of plastics	9	22.5	31	77.5
4	Can plastics be recycled	22	55	36	90

Table no. 4 stated that knowledge of the participants has been increased after giving intervention about recycling and regeneration of plastic

### Statistical Analysis

The dependent t test, also called paired t test is used for testing values associated to have some connectivity. Knowledge score of the participants is compared with mean of the pre-test with mean of the post-test using paired t test. Post intervention to pre intervention comparison indicated higher overall knowledge score at significance level ( $p < 0.05$ ) and concluded that booklet on harmful effect of plastics proved effective.

### Discussion

Plastic is not only harmful to human health but environment and entire ecosystem is affected<sup>7</sup>. People should be educated and get aware of harmful effect of plastics. Pre-experimental study was conducted on 40 participants, which was selected by simple random sampling. One group pre-test post-test design was used. The findings of the study is organized as per objectives of the study. Researcher found out that pre-test knowledge score of the participants was 53%. Information booklet was administered to the participants, post-test was

conducted, results were recorded, and it was found that knowledge score increased to 88%. Hence, it is proved that information booklet on prevention of hazards of plastics among residents of Pune city. It was found that 95% of people are using plastics in day-to-day practices starting from using plastic bags to plastic cups to drink hot beverages. This study found that education and creating awareness is utmost important among the people to avoid further damage to the health as well as environment. This study is justified by the action of state government to ban on plastic bags and it is implemented in most of the states of India, which is supported by the article published in Economic Times in June 2018, which explains in detail hazards of the plastic on environment ultimately human beings are sufferers. The study is supported by the survey conducted by Chitrakshi Khairnar and Sujita Devi -2019 awareness regarding hazards of plastic bag use among adults and she found that majority of the participants (95%) were aware of plastic use is hazardous to health<sup>8</sup>.

### Conclusion

Findings of the study showed that information booklet on harmful effect of plastics in regards to knowledge and practices of residents of Pune city found effective

**Ethical Clearance-** Taken from Ethics Committee of the Institute

**Source of Funding-** Self funded project.

**Conflict of Interest – Nil**

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