

# Study to Assess the Knowledge, Attitude and Practice of Plastic Use among School students of Meerut, Uttar Pradesh

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## Abstract

**Back ground:** Plastic is everywhere in today's lifestyle. Because of indiscriminate dumping of plastic bags on land, toxic metals such as cadmium and lead pigments percolate into underground water. Garbage mixed with plastic bags interferes in waste processing facilities and causes problems in landfill operations. Disposal of plastic through recycling, burning, or land filling is a myth because it does not undergo bacterial decomposition<sup>5</sup>. Due to non-biodegradable nature they cause hazardous negative impact on the environment. **Material & methods:** The present quasi-experimental study was conducted among school going students of class 11<sup>th</sup> and 12<sup>th</sup> of Satyakaam International School. Data was collected on predesigned semi structured questionnaire which included details of socio demographic variables like age, sex, parent's education and other details about knowledge, practice and attitude of school going children regarding plastic use. One week after the presentation again the knowledge of students regarding plastic was assessed on the same set of questionnaire. **Result:** knowledge of chemical nature of plastic before presentation was present in 64% students. knowledge regarding Non-biodegradable nature of plastic was present in 88% students. There was increase of 12% in knowledge regarding side effects of plastic on environment. 89% of the students support government on plastic ban. **Conclusion:** 16% samples that were unaware of the hazards of plastic use needed to be educated about them through means like pamphlets, health talks, advertisements and awareness programs.

**Key word :** Plastic, Knowledge, Practise, Biodegradation

## Introduction

Plastic is everywhere in today's lifestyle. It's used for packaging, protecting, serving, and even disposing of all kinds of consumer goods. The Modern consumer is exposed to a wide variety of plastic and rubber products in his day to day life: at home, work, school, shopping, recreation, play and transport<sup>1</sup>. As a material, plastic

has existed for just over a century and mass production began in earnest in the 1950s. By 1988, 30 million tons of plastic products were produced annually, reaching 265 million tons by 2010 and accounting for 8% of global oil production<sup>2</sup>. Plastics are inexpensive, lightweight, strong, durable, corrosion-resistant materials, with high thermal and electrical insulation properties. The diversity of polymers and the versatility of their properties are used to make a vast array of products that bring medical and technological advances, energy savings and numerous other societal benefits. consequence, the production of plastics has increased substantially over the last 60 years from around 0.5 million tonnes in 1950 to over 260 million tonnes today<sup>3</sup>.

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Plastic waste includes items as bags (44.6%), bottles/caps/lids (29.4%), and others (26%) and their life is approximately minimum 10 years to maximum 500 years or above<sup>4</sup>. Because of indiscriminate dumping of plastic bags on land, toxic metals such as cadmium and lead pigments percolate into underground water. Garbage mixed with plastic bags interferes in waste processing facilities and causes problems in landfill operations. Disposal of plastic through recycling, burning, or land filling is a myth because it does not undergo bacterial decomposition<sup>5</sup>. Due to non-biodegradable nature they cause hazardous negative impact on the environment. Disposal of plastic waste which is a major cause of environment pollution becomes carcinogenic to human, birth defects, impaired immunity, endocrine disruption, development and reproductive effect<sup>6</sup>. Our oceans have been used as a dumping ground, choking marine life and transforming some marine areas into a plastic soup. In cities around the world, plastic waste clogs drains, causing floods and breeding disease. Consumed by livestock, it also finds its way into the food chain<sup>7</sup>. Burning of plastics cause emissions of toxic gases and release a toxic carcinogen called dioxin. The dioxin affects the function of the reproductive and immune system. It is also associated with skin and respiratory problems resulting from exposure to and inhalation of toxic fumes, especially hydrocarbons and residues released during the process<sup>5</sup>.

Many attempts have been made to address the negative impacts of usage of plastics by recycling and banning of the production of one time use plastics. Recently, our honourable Prime minister started a campaign “Say No To Single Use Plastic” to address this problem. To create a better environment for all, it is important to realize the negative impacts of plastic, and limiting the use of plastic products in everyday life .What is the level of knowledge, attitudes and practise of using plastic?

This is the issue this study seeks to investigate. Knowledge affects attitude and attitude affect practice. With this back ground, the present study was conducted to assess the level of knowledge, attitude and practise related to plastic use among school students of class 11<sup>th</sup> and 12<sup>th</sup> standard and to study the percent change in their knowledge one week after one hour presentation.

## Aim and Objectives

1. To assess the level of knowledge of students about plastic use and its effect on environment.
2. To assess the attitude of students towards plastic use.
3. To assess practise of students related to plastic use.

## Material and Methods

**Study setting:** Satyakaam International School, Meerut UP

**Study population:** Students of class 11<sup>th</sup> and 12<sup>th</sup>

**Study Design:** Quasi-experimental

**Sampling technique:** Purposive sampling

**Sample size:** 100 students

**Research tool:** Self designed semi -structured questionnaire

**Study Period:** 3 months (October 2019- December 2019)

**Inclusion Criteria:** Both male and female students and Students who are present at the time of study were included in the study

**Exclusion Criteria:**

Students who were not willing or not present at the time of study

**Dependent variables:** Knowledge, attitude and Practice related to plastic

**Independent variables:** age, sex, mother’s and father’s education

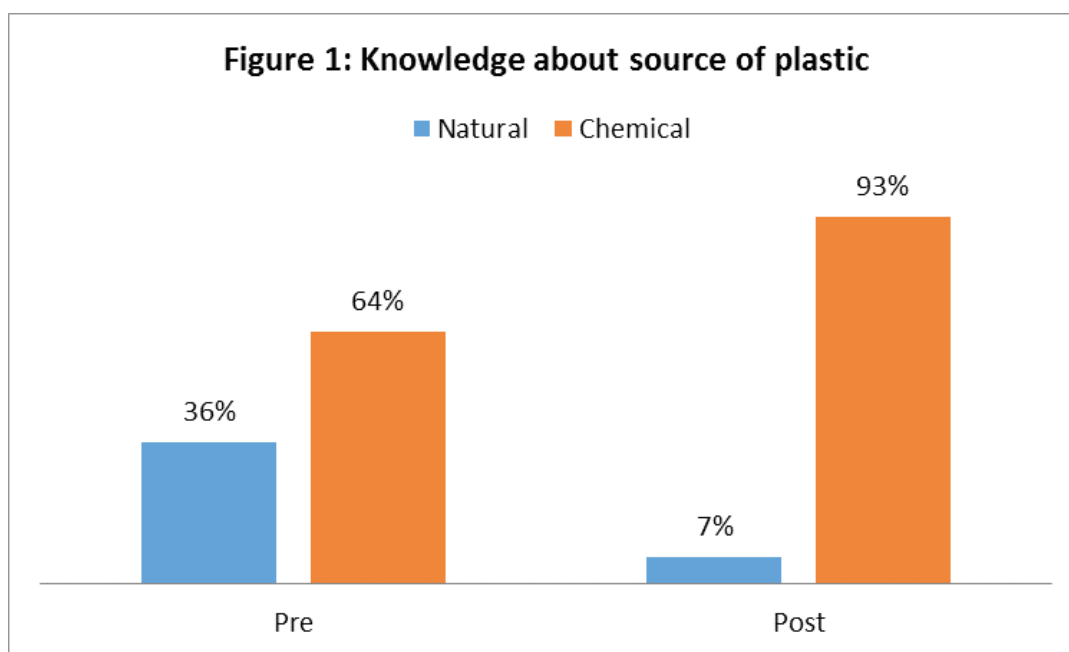
**Methodology:** The present quasi-experimental study was conducted among school going students of of class 11<sup>th</sup> and 12<sup>th</sup> of Satyakaam International School, Meerut. Prior permission was taken from the concerned authority and arrangement was made to gather the students at pre decided date, time and place. The purpose and objective of the study was explained to the students prior to the data collection and they were assured about the confidentiality of the data . Data was

collected on predesigned semi structured questionnaire which included details of socio demographic variables like age, sex, parent’s education and other details about knowledge, practice and attitude of school going children regarding plastic use . Before filling the questionnaire, questions were explained to the students so that they could understand the questionnaire completely and could answer properly. Completion of questionnaire was assured at the time of collection. After collection of filled questionnaire a Power point presentation along with videos regarding various aspects of plastic was given to the students. one week after the presentation again the knowledge of students regarding plastic was assessed on the same set of questionnaire. The data was entered and analysed on SPSS.

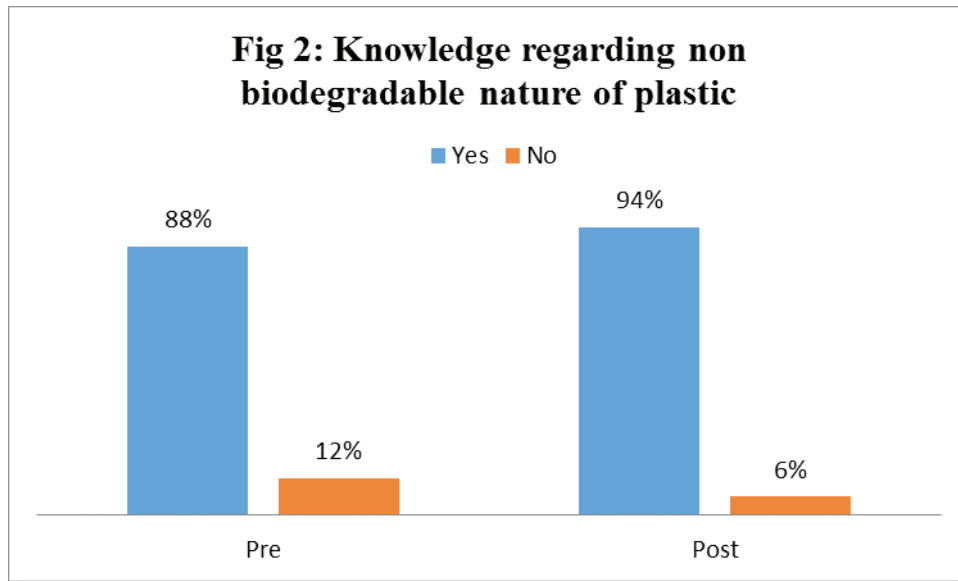
### Results

It is seen that in the study group 13% students were of 15 years of age, 40% of 16 years, 42% of 17 years and 5% of 18 years. Amongst the students 61% were male and 39% female, 57% were studying in class 11th and 43% in class 12<sup>th</sup>. 3% of student’s father was educated till high school, 21% were educated till intermediate, 49% were graduate, and 27% were post graduate. 3% of student’s mother educated till high school, 29% was educated till intermediate, 41% were graduates and 27% were post graduate.

Figure 1 shows that in our study group, knowledge of chemical nature of plastic before presentation was present in 64% students while it was 93% after presentation. There was increase of about 29% which was found to be statistically significant



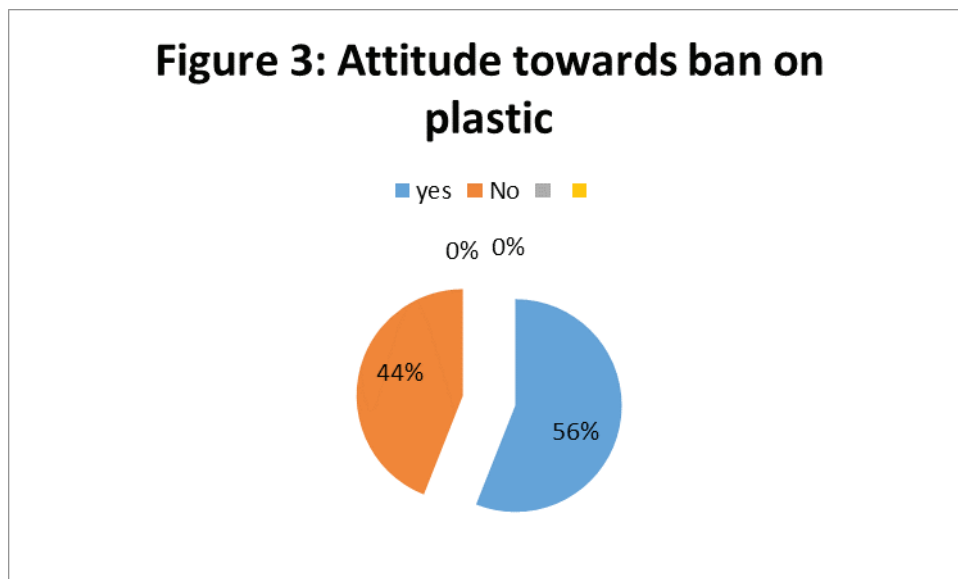
**Figure 2 shows that in our study before presentation knowledge regarding Non-biodegradable nature of plastic was present in 88% students and it was 94% after presentation. There was increase of about 6% which was found to be statistically non-significant.**



Knowledge of study subjects regarding recent campaign “NO to single use plastic”. Before presentation the knowledge of campaign was present in 64% students but after presentation it was 83% and the difference was found to be statistically significant.

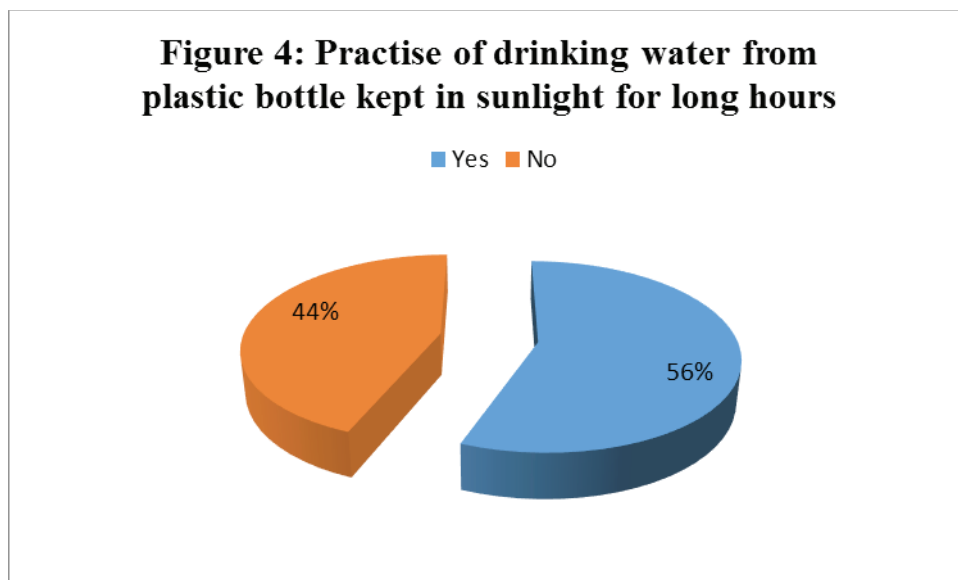
Knowledge of students before and after presentation. There was increase of 12% in knowledge regarding side effects of plastic on environment. The difference was not found to be statistically significant.

Figure 3 shows the attitude of students towards ban on plastic. According to the majority of the students (77%) ban on plastic is a great solution to the problem. In our study 89% of the students support government on plastic ban and 87% of the students say no to future use of plastic.



64% of the study subjects consume food that was microwaved in plastic utensils

Figure 4 shows distribution of students according to their practise of drinking water from plastic bottle kept in sunlight for long hours. 56% of the students drink water from the bottle that was kept for long hours in sunlight and 44% do not.



In our study nearly two third (66%) students used plastic bags when they went for shopping. Only 34% student used other bags like cotton bag, paper bag and cloth bags respectively.

Table 1 shows that slightly more number of males (88.52%) as compared to female (87.17%) students had knowledge of non- biodegradable nature of plastic. The difference was found to be statistically significant.

**Table 1: Association between gender and knowledge about non-biodegradation of plastic**

Gender	Yes (%)	No (%)	Total
Male	54(88.52%)	7 (11.47%)	61 (61%)
Female	34 (87.17%)	5 (12.82%)	39 (39%)
Total	88 (88%)	12 (12%)	100 (100%)
	X <sup>2</sup> =0.0408	P value<0.05	

Table 2 shows the association between the gender and their attitude towards future use of plastic. In our study majority of the students (87%) denied the future use of plastic. Nearly equal number of male and female (86.88% and 87.17%) students said no to future use of plastic. The difference was not found to be statistically significant.

**Table 2: Association between gender and their attitude towards further use of plastic**

Gender	Yes (%)	No (%)	Total
Male	8 (13.11%)	53 (86.88%)	61 (61%)
Female	5 (12.82%)	34 (87.17%)	39 (39%)
Total	13 (13%)	87 (87%)	100 (100%)
	X <sup>2</sup> =0.0002	P value= 0.966	

## Discussion

In our study group the knowledge regarding source of plastic, non-biodegradable nature, recent campaign and various side effects of plastic on environment was found to be 64%, 88%, 64% and 72% respectively. With regard to the knowledge level as whole one of the study conducted in Shariah<sup>8</sup> among school students show low level of knowledge as compare to our study (52%) while a study conducted in Singapur<sup>9</sup> shows similar level of knowledge as compare to our study (70.9%). One of the study conducted in Tamil Nadu shows low over all knowledge of students related to plastic as compare to our study (42%) but better knowledge of students regarding ill effects of the plastic (M=10.49) which is similar to our study (72%)<sup>6</sup>.

In our study 77% of the study shows favourable attitude towards on plastic and thought that the ban is great solution to the problem. In our study 89% of the students support government on plastic ban and 87% of the students say no to future use of plastic. Similar favourable attitude (77.9%) towards ban on plastic was observed by Joseph et. al<sup>10</sup> in their study. Whereas Kanagabala et al<sup>11</sup> in their study reported higher percentage of students (88.3%) who strongly favoured ban on plastic. In Oneof the study conducted among school going adolescents in Wardha, Maharastra 65.26% of the students agreed for ban on plastic bag usage<sup>12</sup>.

In our study 66% students used plastic bags when they went for shopping. The practise of drinking water from the bottle that was kept for long hours in sunlight was observed in 56% students. While quite low practise of plastic was found in one of the study conducted in Tamilnadu<sup>6</sup> where good practise related to plastic was present in only 22.7% students and moderate practise in 33.7%.

In our study significant difference was found in the knowledge of male as compare to female regarding non biodegradable nature of plastic. Slightly more number of female as compare to male was found to have positive attitude toward future non use of plastic. From a gender perspective similar findings were reported by Tanima Ferdous<sup>13</sup> in her study among school students of Lalitpur district where female respondents had stronger attitudes than male partners.

## Conclusion

The study concluded that the knowledge regarding plastic has increased significantly among students. More than half of the students microwave food in plastic container, drink bottle water kept in sunlight for long time and carry plastic bags for shopping. Knowledge regarding non-biodegradable nature of plastic was found to be more among male as compare to female. Majority of the students denied future use of plastic. These students having knowledge about plastic can bring about revolutionary change in the usage and disposal mechanism of plastic bags. Through their knowledge of hazards that are caused due to excessive and unwarranted usage of plastic bags and irresponsible dumping of them, they can limit use of plastic bags and also encourage the use of eco-friendly conventional carry bags, for e.g. cloth bag. The above findings also showed that the 16% samples that were unaware of the hazards of plastic use needed to be educated about them through means like pamphlets, health talks, advertisements and awareness programs.

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**Source of Funding :** Self

**Ethical Clearance:** The study was approved by institutional ethical committee.

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