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Assess the awareness regarding hazards of plastic bag use among adults

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Abstract
Plastic bags have become a staple commodity in our day-to-day life. They are easily available, light weight, strong and cheap because of which they are popularly used. After usage, haphazard disposal of plastic bags is bound to have severe repercussions in the near future.
A study was undertaken to assess the awareness regarding hazards of plastic bag use among adults in selected areas of Pune city.
The objectives of the study were to assess the awareness regarding hazards of plastic bag use among adults and associate the awareness scores with the selected demographic variables.
The study adopted descriptive research design. A semi-structured questionnaire was used to assess the awareness regarding the hazards of plastic bag use among adults. The reliability of questionnaire was determined by test-retest method.
The value of 'r' was found to be 0.789; the value ranges anywhere from 0.0 to 1 with higher values indicating greater degree of reliability. A structured questionnaire was developed which was validated by experts. A descriptive non-experimental study was conducted on 200 adults.
After doing the pilot study the tool was found to be feasible. For the main study the data was collected by non-probability sampling method. The collected data was analysed and interpreted based on the objectives. In this study descriptive and inferential statistics were used to analyse data.
The findings of the study show that 95% of the samples were aware regarding hazards of plastic bag use and 5% samples were unaware regarding hazards of plastic bag use.
Out of demographic variables such as age, gender, education and occupation there was a significant association between awareness score of adults and their education ($p<0.05$) of the samples.

Keywords: Snail, bovine, porcine, physicochemical properties, mucin, mucoadhesives

Introduction
Usage of plastic bags has become a part of our daily life. Plastic bags are used by every other person. Most of the people are unaware of the aftermath occurring because of use plastic bags [1]. The plastic bags are disposed of haphazardly ignorant of its effects on the environment and health of humans and animals [2]. Unlike items that naturally biodegradable, plastic bags are made from polyethylene, a thermoplastic. It is found that plastic bags contain polymers and chemical toxins like lead, cadmium, mercury and carcinogens and direct contact with these substances over a long period can lead to serious consequences.[3] Also the land is filled by garbage of plastic bags presenting unhygienic scene.
The practise of throwing plastic bags results in them being found in to the drainage, the blockage created is a nuisance, creates unsanitary environment which results in hazards to health and spread of water-borne diseases [4]. Accumulated litter reduces rainwater percolation, resulting in low water levels. The quality of soil reduces as the plastic present in the manure remains in the soil for years. This result in increase in landfill and resources needed to transport and recycle them. The problem further aggravates by the developed countries shipping off their plastic waste to countries like India [4].
Most of the wildlife on the planet is in seas & oceans. Hundreds of beings are at risk of injury & death for ingesting and getting entwined in plastic bag floats. Floating carry bags can be mistaken as jellyfish by marine animals that eat them. Majorly the sea turtles are at a huge risk from plasticbags. They risk extinction for ingesting large amounts of plastic. Particles of plastic remain undigested. Misunderstanding plastic garbage as food items, marine organisms swallow them and die [5].
Every now and then the government brings forth laws banning provision of plastic bags with little effect. Plastic bags are used more as they are low costing, tensile, and light weight as well

as a good means of carrying food and goods [6]. Millions (nearly 60-100 million) of barrels of petroleum are used to produce plastic [7].

The nation is yet to take strict actions against this problem and have uniform nationwide law for management of plastic bags. People need education on the ethical ways of using plastic bags and their disposals.

These are some of the hazards associated with using plastic:

- Plastic articles which include shopping bags contain polyethylene, which is a carcinogen [4].
- Chemicals found in plastic bags are believed to cause, impairment of immune system, cancer, early puberty, may develop diabetes and obesity [8].
- Cases of birth and genetic defects and also cancer are associated with polyvinyl chloride, found in packaging plastic bags. It may also cause other problems like skin diseases, vision problems, bronchitis, deafness and liver and digestion problems [4].

Need of the Study

Usage of plastic is inevitable in our daily life. In India major reason for environmental pollution is abundant usage of plastic bags. The reasons for such popular usage of plastic bags is them being resistant to degradation, being light weight and cheap [6].

While they are beneficial for the individuals, the problems & cost of plastic disposal would be overload for entire society. Plastic takes about thousands of years to biodegrade [9]. It raises a risk to health of humans & environment [10].

Plastic bags being cheap are used more often. The plastic bags do not decompose at a suitably faster rate when they are dumped in the landfill sites. Hence they pollute the soil or land in that area. Many a times the plastic bags are thrown even after a single use. This act dramatically increases pollution rate of plastic bags in oceans as well as land. Animals are found dead due to suffocation, intestine and stomach related diseases, this being a common site in the developing and underdeveloped economies because of the improper disposal of plastic bags which are then eaten by the animal community [10].

The burning of plastic bags causes release of toxic gases in the air and also a toxic carcinogen called dioxin. The dioxin affects the function of immune and reproductive system, growth problems and disruption of hormonal balance [4]. It stagnates in the food chain and accumulates for longer period of time in the environment.

The major chemicals used while making plastic of any kind including plastic bags are highly toxic and seriously threaten all the species living on this planet. These chemicals used during production of plastic bags are synthetic chemicals like polyethylene. Polyethylene carry bags being nonbiodegradable cause environment pollution. They undergo photo-degradation while decomposing, breaking them down in small particles. Then these particles enter our food chain by contaminating the soil and water [11].

When the rain water gets collected in the littered plastic bags, it causes breeding ground for mosquitoes. They remain in the same state as we disposed them polluting the marine life, soil, water and also responsible for harming wildlife and making use of the invaluable resources of planet. Exposure to toxic fumes causes skin and respiratory problems. Recycling of plastic bags is expensive and polluting.[4] Also their recycling puts them back in to circulation in the markets and then environment [12]. But, most of us are unaware of hazards of plastic occurring and its impacts for the future generations.

Researcher was interested to:

- Find awareness regarding the hazards of usage of plastic bags among adults in Pune city.

Research Objectives

1) To assess the awareness regarding hazards of plastic bag use among adults.
2) To associate findings with selected demographic variables.

Methodology

A non-experimental research design was adopted to conduct the study among 200 adults in selected areas of Pune city with non-probability sampling technique.

Criteria for Sample Selection

Inclusion criteria

1. Adults in the age group of 18-40 years both male and female.
2. Adults who can read English.
3. Adults who have smart phones and internet facilities.

Description of Tool

Structured tool

The instrument consisted two sections.

Section I: This section sought information on demographic background of participants. i.e. age group, gender, education and occupation.

Section II: An online structured questionnaire was administered to assess the awareness regarding hazards of plastic bag use among adults of selected areas of Pune city. The questionnaire consisted of 20 questions where few question were of negative scoring. Each question had two options i.e. yes or no of which one was the correct option. Every correct option allotted '1' mark and every wrong answer was allotted '0' mark. Samples that had a score of 11-20 were considered as 'aware' whereas samples that had score of 0-10 were considered as 'unaware'.

Results

200 adults were selected for data collection from selected areas of Pune city.

Section I

Analysis related to demographic variables of participants in frequency and percentage distribution.

Table 1: Frequency Distribution of participants as per Demographic Variables n=200

Demographic Data			
Parameters		**Frequency (f)**	**Percentage (%)**
Gender	Male	127	63.5%
	Female	73	36.5%
Age in Years	18-25	139	69.5%
	26-34	36	18%

	35-40	25	12.5%
Education	Higher secondary	36	18%
	Graduate	117	58.5%
	Post graduate	34	17%
	Others	13	6.5%
Occupation	Government	13	6.5%
	Household	04	2%
	Private	56	28%
	Unemployed	127	63.5%

The sample distribution table showed that maximum participants were male 127 (63.5%) and 73(36.5%) samples were female. Most of the samples were of age group 18-25 years 139 (69.5%) and 25(12.5%) participants were of 35-40 age group. 117(58.5%) participants were graduate and 13(6.5%) participants had pursued various other forms of education. Maximum of the participants were unemployed 127(63.5%) and 4(2%) participants did household jobs.

Section II

Analysis related to awareness among adults regarding hazards of plastic bag use.

Table 2: Awareness score among participants regarding Hazards of Plastic Bag Use n=200

Awareness Score			
	Aware (0-6)	**Unaware (7-14)**	**Total**
Frequency	190	10	200
Percentage	95.00%	5.00%	100%

Table: 2 showed the awareness score among adults regarding hazards of plastic bag use. It revealed that majority 190 (95%) of adults were aware and 10 (5%) adults were unaware.

Table 3: Mean Awareness Score and standard deviation of participants regarding Hazards of Plastic Bag Use. n= 200

Awareness Mean Score	Standard Deviation
16.99	2.39

Table 3: showed the awareness score among adults regarding hazards of plastic bag use was 16.99 and standard deviation was 2.39.

Section III

Item wise analysis of awareness regarding hazards of plastic bag use among adults.

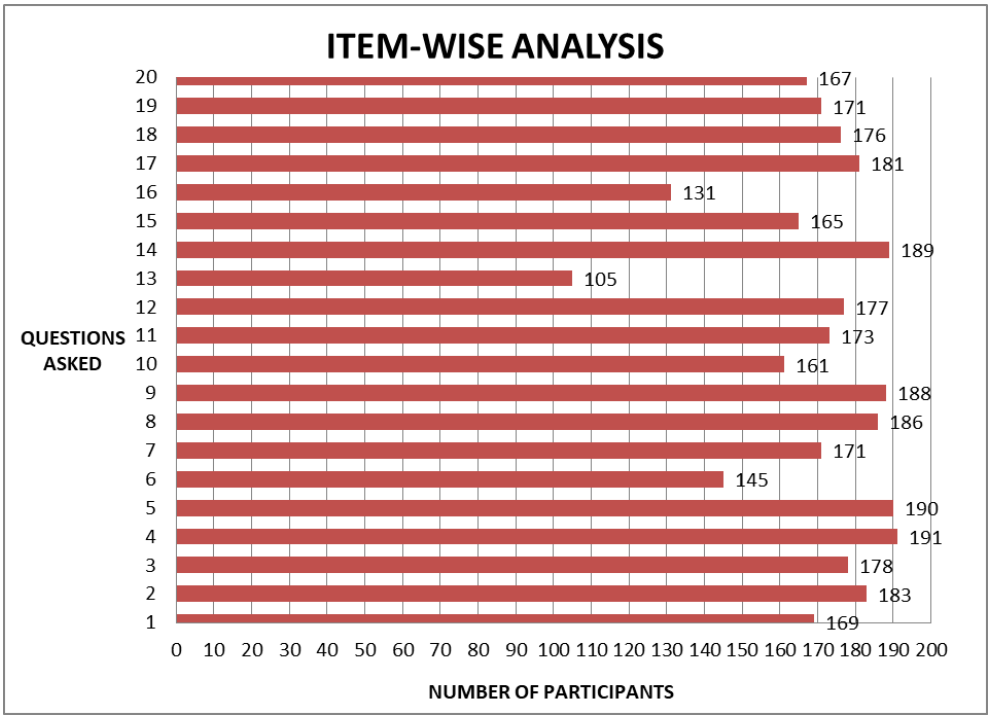

Fig 3: Item wise analysis of awareness regarding hazards of plastic bag use among adults.

From the above figure it was found that most of the participants were able to answer questions related to human health. Q no. 4 and 5, which were based on hazards caused by plastic bag use on human health, had been answered correctly by most of the participants i.e. 191 and 190 respectively. Q no. 13 was answered correctly by only 105 participants. This showed that very few people were aware of the hazards of plastic bag use on environment.

Section IV

Awareness related to association of demographic variables with awareness score among adults regarding hazards of Plastic bag use.

Table 4: Association of demographic variables with awareness score among adults regarding hazards of plastic bag use n=200

Demographic Variables		Awareness Score		d.f	p-Value	Chi Square calculated value	Chi square table value	Inference
		Aware	Unaware					
Gender	F	121	6	1	0.81	0.05	3.84	Not Associate
	M	69	4					
Age	18-25	133	6	2	0.72	0.63	5.99	Not Associate
	26-34	34	2					
	35-40	23	2					
Education	HSc	34	2	3	0.0001	20.60	7.81	Associate
	Graduate	113	4					
	PG	34	0					
	Others	9	4					
Occupation	Government	12	1	3	0.37	3.14	7.81	Not Associate
	Household	4	0					
	Private	51	5					
	Unemployed	123	4					

*association at 0.05, level of significance.

If Calculated Chi Square value was more than Chi Square Table value or if the P- value was less than 0.05 then the variable was associated, if not, it was not associated. The table 4 showed that the Calculated Chi Square Value of age, gender and occupation was less than Chi Square Table Value so they were not associated with Awareness Score regarding hazards of plastic bag use. Also it was found that the Chi Square Calculated Value of education was higher than the Chi Square Table Value hence, it was associated with awareness score of hazards of plastic bag use.

Discussion

The findings of this study had been discussed in relation with the objectives. 95% samples were aware and 5% samples were unaware regarding the hazards of plastic bag use. 16.99 mean values suggested that most of the people had given right answers to approximately 17 out of 20 questions with a standard deviation of 2.39.

From these findings we concluded that the 95% samples that were aware regarding the hazards of plastic bag use; aware citizens are the building blocks of our nation. These aware citizens can bring about revolutionary change in the usage and disposal mechanism of plastic bags. Through their awareness 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 5% samples that were unaware of the hazards of plastic bag use needed to be educated about them through means like pamphlets, health talks, advertisements and awareness programs.

Justification of this study can be given through reports released by Economic Times, dated June 21st, 2018 by a market research company, "while over 85% of the participants were aware of the plastic usage ban and the harmful effects of plastic on environment." Also another report released by Times of India, dated June 3, 2017, under the heading 'Prolonged use of plastic bags a health hazard' says "Experts claim plastic bags contain polymers and chemical toxins like lead, cadmium, mercury and carcinogens and direct contact with these substances over long period can lead to serious health consequences."[3]

Analysis of data related to association of awareness regarding hazards of plastic bag use with selected demographic variables. There was significant association between awareness regarding hazards of plastic bag use among adults and their education. No association was found between awareness regarding hazards of plastic bag use among adults and their age, gender and occupation.

Conclusion

The present study was to assess the awareness regarding hazards of plastic bag use among adults of selected areas of Pune City.

The non-experimental descriptive research design was used for the study, which consist of 200 adults selected through non- probability sampling technique.

The content validity and reliability of the tool was done, which suggested that the tool was reliable. The pilot study conducted on 20 samples established the feasibility of the study. Also no major flaws were found in the tool and hence it was used for the main study.

The data was analysed & interpreted on objectives by using descriptive statistics & inferential statistics. The findings show 95% of the samples were aware regarding hazards of plastic bag use and 5% samples were unaware regarding hazards of plastic bag use.

Limitations

1. Samples were limited to specific area.
2. Small sample sizes prevent generalization of the study.
3. Participants were selected through non-probability technique limiting the generalization of the study.

Recommendations

The future researchers are recommended to conduct research on a large scale so that this study can be generalised. Also future researchers are recommended to conduct pre-experimental and quasi- experimental studies so that various interventions can be conducted to increase awareness regarding hazards of plastic bag use.

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