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CHALLENGES IN THE MANAGEMENT OF SINGLE-USE PLASTIC CARRIER BAGS IN ALIGARH CITY: A STUDY ON SELLERS AND CONSUMER ATTITUDE

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Abstract:

Unprecedented growth of urbanisation, population and changing behaviour of consumption and lifestyle of men in urban area generate gigantic amount of non-eco-friendly plastic carry bags which littering in every corner of cities in India. The present study aims to find out the hidden problems of banning single-use plastics among sellers and customers in Aligarh city and to figure out the environmental and health problems associated with present plastic carry bags disposal in the study area. This paper is based on primary source of data. A survey was conducted to collect the data from 210 respondents using a semi-structured questionnaire in four major marketing places in Aligarh city. The results found that majority of the respondents (136, 90.67%) reported there was high increasing trend of single use plastic carrier bags utilization which were non-eco-friendly. Widespread uses of plastic carrier bags were attributed by many factors like free of charge (121, 88.97%), light weight (125, 91.91%), suitable for carrying (117, 86.02%), durability (91, 66.91%) and lack of alternatives (39, 28.68%). The study revealed that majority of the respondents/customers (103, 68.67%) discarded directly plastic carrier bags after taking out the groceries while 31.33% respondents kept these bags for secondary use purposes. The common methods of disposal of plastic bags were open dumping (104, 69.33%) and open burning (61, 40.66%) respectively, burying (32, 21.33%) respectively. The findings state that majority of the respondents claimed the blockage of sewage liners, human health problems, animal health and environmental deterioration which was associated with the practice of plastic carrier bags disposal. The results also indicate that though the respondents claimed many

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environmental and health related issues associated with the plastic carrier bags usages, only 38.67% respondents (customers) and 11.67% retailers/shopkeepers opined the discontinuation of plastic carrier bags uses. The attitudes and behaviour of the respondents and lack of strict government's policies were the hidden problems of banning plastic carrier bags use in the city.

Keywords: Plastic waste**,** Single-use plastic carrier bags, Sellers and Consumers' attitude, Environmental and Health problems.

Introduction

Sustainability of urban environmental ecology has become a pivotal issue in the 21st century where science and technology has made the human life easier and fashionable in every aspect of daily life. Unprecedented growth of urbanisation, population and changing behaviour of consumption and lifestyle of men in urban area generate gigantic amount of non-eco-friendly plastic carry bags which littering in every corner of any city in India. Plastic carry bags concerns have been raised as a symbol of modern ecological crisis and penultimate sign of environmental catastrophe (Hawkins G., 2001). Plastic shopping bags or plastic grocery bags are also called as single-use bags have been used by consumers for carrying items from store to at home since 1960s (European Plastic News: Plastic T-Shirt Carrier Bag, 1965). Around 500 billion to 1 trillion plastic bags are consumed annually worldwide (Lowy J., 2004; Geographical, 2005; Spokas 2007). United States alone used 102 billion plastic bags annually(U.S. International Trade Commission, 2009). The estimated consumption of plastics in India was 8,500,000 tonnes (CPCB, 2007). Plastics carry bags are made from petroleum oil and natural gas which are mostly High-density polyethylene (HDPE) and Low-density polyethylene (LDPE) found in retail shops (US Department of Energy National Renewable Energy Laboratory, 2015).

Widespread utilization of plastics shopping bags made by high density polyethylene came into market in 1982(Morris J., 2004) and most commonly distributed as the 'single-use' plastics bag by supermarkets and takeaway outlets(Australia, Clean Up, 2010). The glossy look, light weight, durable, water proof, cheapness and convenience means of carrying groceries characteristics have occupied more than 80% grocery and store markets (Roach 2005; Khoo H., et al. 2009; Adane L. et al. 2011). The average household use of plastics carry bags is 400 annually (Hay

2010). The per capita consumption of plastics in India is 9.7 Kg annually which is very low as compared developed nations USA 109 kg and European nations 65 kg respectively (Plastic India, Business Press, Research by Tata Strategic). Consumption patterns of plastic in India have significant regional diversity, western states of India accounts for 47% followed by northern India for 23% and southern India for 23% respectively.

Uses of plastic items cover every field of life like packaging, furniture, automobiles, household items, agriculture, medical appliances and electronics etc. There are basically three types of polyethylene (PE) like Low-density Polyethylene (LDPE), High-density Polyethylene (HDPE) and Linear Low-density Polyethylene (LLDPE) found in Indian shopping markets.

The consumptions of single-use plastic carry bags have increased tremendously with the increasing growth rate of population in developing countries but the disposal of plastic waste has remained a debateable issue among urban local body, urban planner and politicians. Plastic waste has occupied significant volume in municipal solid waste stream. According a report by EPA, the sharing of plastic waste was 12% out of total MSW in USA, 2008. In 2007 India generated 9 % plastic wastes out of total MSW (CPCB, 2007). Thomson et al. 2009, talked about the sustainability of plastic in future if the consumption continued at the present rate as one third of the packaging materials get discarded after single-use. In 2010 US Environmental Protection Agency estimated the nation discarded 690,000 tonnes of HDPE bags and 95% of these bags entered into landfill site (Morris, J.,2014) Environmentalists are concerned with the disposal of plastic carry bags as plastic is non-decomposable which can persist in nature for thousands of years (Stevens, 2001; UNEP, 2005a). Thus plastics are having potential negative impacts on environment and health. People discard the plastic carry bags after their single use unnecessarily into the water bodies, sewage lines and burn it openly which degrade the environment seriously. The plastic wastes dumped in water bodies generate leachate which has harmful impact on ecosystem of water bodies. Plastic carry bags negatively affect water, soil and air. International Rice research Institute investigated plastic bags destroy the beneficial bacteria of soil as it prevent the sunlight exposure into the soil (Hasnat,2010).Burning of plastic bags dangerously pollute the air as it produces toxic gases, heavy metals and the toxic compounds and polyaromatic hydrocarbons(PAHs) which negatively affect the health(Hasnat 2010).

Most of the recyclable waste in India after their short period of life ends up in dump yard due to lack of scientific and efficient waste management. Waste management in India is concerned with the principal of sustainability in terms of environmentally, economically and socially. The country is currently confronting massive problems and challenges for waste management. In India nearly 7,935 towns and cities where living more than 377 million population and generate 62 million tonnes of municipal waste annually. More than 50% of these waste dumped into the landfill without considering the recycling, reuse resulting to huge loss of economy and environmental degradation (Lahiry, 2017).

India has long history of its waste management. The urban local body is responsible for waste management in every city in India which is governed by the Ministry of Environment, Forest and Climate Change (MoEF) department collaborating with State Pollution Control Boards (SPCB) of different states. The first Plastic Waste (Management and Handling) Rules, 2011was set up to regulate the manufacture, usage and recycling of plastic bags. However, Government of India notified the Plastic Waste Management Rules, 2016 which brought more criterion than the earlier 2011 rules.

Like other cities of India Aligarh city also practices weak management of solid waste. The average solid waste generation in the city is 415 tonnes/day but nearly 80% of the waste is disposed as open dumping. The major sources of solid waste in the city are domestic, industrial, commercial and street waste. 4.5% of the total waste is plastic waste which is mostly disposed openly without considering the recycling and reuse (Singh 2014).

Objectives

1. To find out the hidden problems of banning single-use plastics among sellers and customers in the city.
2. To figure out the environmental and health problems associated with present plastic carry bags disposal in the city.

Study Area

Aligarh city has been chosen for the present study as hardly any research work on environmental issue like plastic waste disposal was carried out earlier.The city is medium-size fast developing urban centre located at 130 kilometres away of Delhi in western Uttar Pradesh. The city was originally established asa fort in the 12th century. It is the head quarter of Aligarh district located at $27^0$53" N latitude and $78^0$4" E longitude (Fig 1). Topographically the district is situated in the plain area between the Ganga in the north-east and river Yamuna in the north-west forming highland peripheries. The study area lies in the central low-lying tract between the Aligarh drain in the west and Sirsa River in the east. Most parts of the city gets submerged

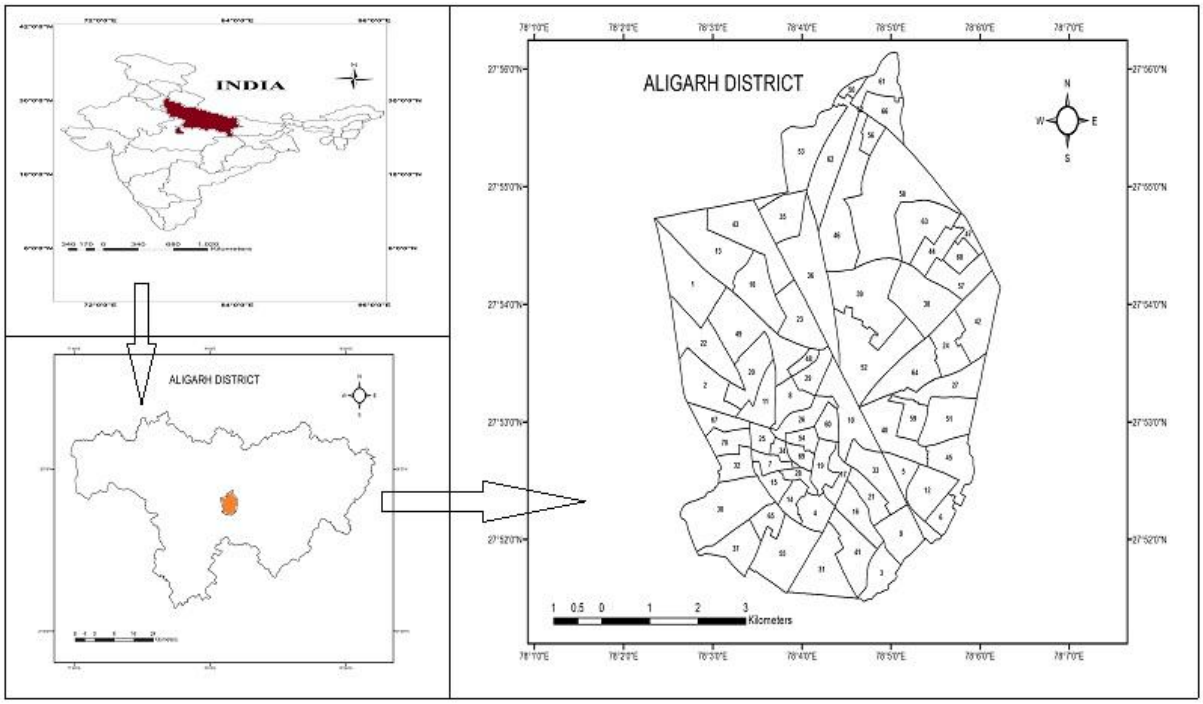

Fig 1 Location Map of the Study Area

during rainy season because of inadequate natural outlet as a result rainwater and waste water collects in the low-lying areas which creates the unhygienic environment and ground for mosquitoes and insects. The putrid drains provide a breeding ground for flies and mosquitoes. The average monthly temperature in the city is 38^0C, sometimes temperature reaches up to 48^0C in May-June whereas lowest temperature 3^0-4^0 C is recorded in December. Aligarh city having demarcation between the old and new quarters. The older one lacks many urban infrastructures. The new part is comparatively clean but recently rapid urban building construction, shopping centres making it worse.

The city presently covers an area of 44.82 km^2. The population of Aligarh city was 6, 69,087 in 2001 and 8, 26,825 in 2011 (Census of India, 2001, Aligarh Nagar Nigam, 2011). The city is famous for its lock industry and commercial, trading centres.

Data Source and Methodology

The study was carried out based on primary sources of data. A survey was conducted with structured questionnaire in order to understand the sellers and consumers attitude related to frequency of plastic carry bags uses, their perception of reuse, recycle and disposal to landfill. Respondents' awareness of environmental problems associated with plastic waste usage and disposal were asked. The willingness to change habits and reduction of plastic use among sellers and customers was also considered. The survey was conducted at the major marketing places in the city (Fig 2) by choosing 100 customers and 60 retailers/shopkeepers (Table 1). 100 customers were purposively selected regardless of age group, sex, education and professions. Stratified random sampling was chosen while selecting 60 retailers/shopkeepers including 20 super markets, 20 groceries and 20 open market sellers who provide plastic carry bags to customers while shopping. The retailers/shopkeepers were asked targeting the types of carry bags they provide, the problems and challenges they face if not providing carrier bags to customers and the opinion whether plastic bags uses should be continued or discontinued. The collected data was analysed with simple percentage and cartographic techniques.

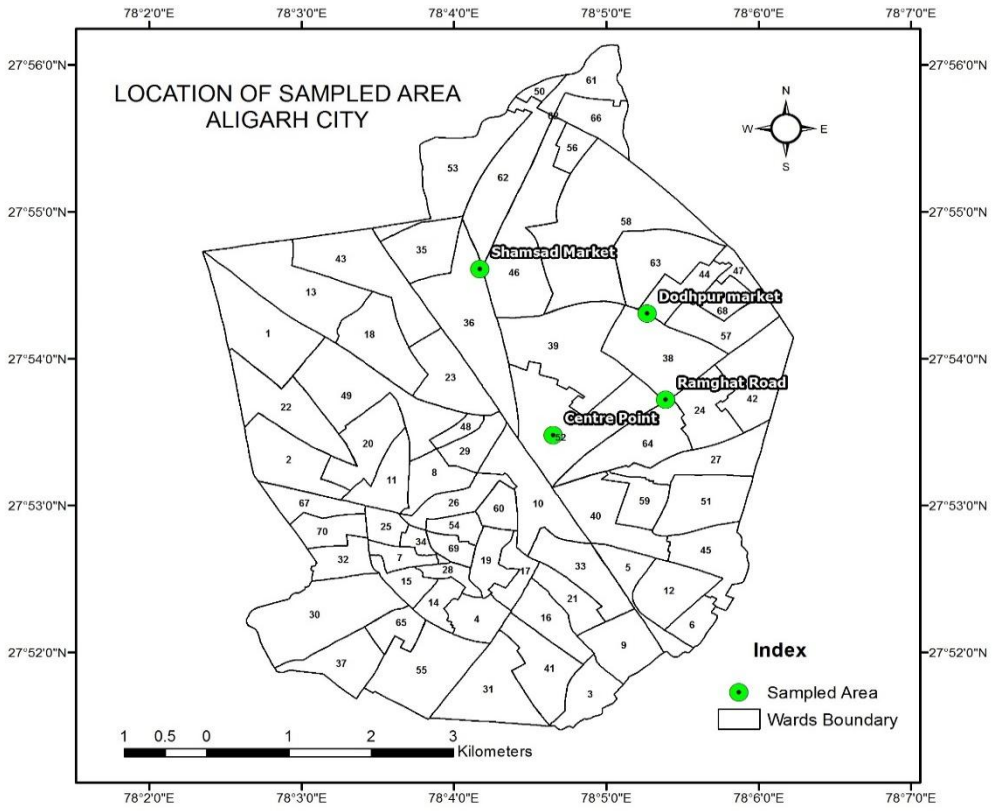

Fig 2 Location of Sampled Area-Aligarh City

Table 1Sampling and Data Collection

Sampled size (N=160)	Target group	Criteria of selection	Remarks
100	Customers	The sampled respondents were chosen based on age group, education and profession in four major marketing places (Fig 2).	Majority of male respondents were sampled due to easy communication and information rather than female respondents.
60	Retailers/ Shopkeepers	Sellers were selected considering their selling capacity who were classified in supermarket,grocery and open market.	Collecting information from sellers was seen difficult during their peak selling time.

Results and Discussion

In the study area, the respondents widely do shopping in grocery, supermarket and open market. The results indicate majority of the respondents usually do shopping in grocery (98, 65.33%) followed by open market (29, 19.33%) and supermarket (23, 15.33%). Frequency of shopping per day among respondents and numbers of plastic carrier bags usage were asked. The findings reveal that the average household consumption of plastic carrier bags was 5, approximately 1000-1500 plastic carrier bags were usually used annually for transportation of groceries to home in the city. The survey results reveal that most of the respondents (103, 68.67%) did not bring shopping bags while remaining respondents (47, 31.33%) bring basket/cloth bags from home. Those who did not bring shopping bags claimed that they forget to bring them, they also claimed that for some marketing like buying meat, fish, milk, other beverage and raw materials plastic carrier bag is most preferable.

Table 2General Information ofthe Respondents (customers)-Aligarh City

Parameters	Categories/group	No. of respondents	Percentage (%)
Gender	Male	96	64.00

	Female	54	36.00
Age(years)	15-24	24	16.00
	25-34	63	42.00
	35-44	41	27.33
	45 & Above	22	14.67
Educational qualification	Illiterate	3	2.00
	Primary	26	17.33
	High school	46	30.67
	Intermediate	43	28.67
	Higher education	32	21.33
occupation	Students	31	20.67
	Service	48	32.00
	Business	43	28.67
	Others*	28	18.67

Note: *Housewives, labours

Source: Primary Survey

There is high increasing trend of plastic carrier bags utilization in Aligarh city. Majority of the respondents (136, 90.67%) regardless of sex, age group, education and occupation observe that plastic carrier bags usages have been increased manifold than the earlier time. This finding is similar to others work carried out in cities of developing countries (Ramaswamy and Sharma, 2011, Adane, L. and Muleta, D., 2011 in Ethiopia). The widespread consumption of plastic carrier bags have been influenced by different factors like free of charge (121, 88.97%) followed by light weight (125, 91.91%), suitability of carrying (117, 86.02%), durability of the bags (91, 66.91%), and lack of alternatives (39, 28.68%) respectively in the study area (Table 3). It is important to understand that free distribution of carrier bags by shopkeepers and retailers to the customer is the main reason of high frequency of plastic bags usage in the city. The survey results support other reports including free distribution carry bags, cheapness, suitability of carrying, easy availability, light weight are the main influencing factors for vast utilization of carrier bags among the customers and retailers in developing and developed nations (Verghese et al., 2006; Environment Victoria, 2006; TEC, 2007; Ayalona, 2009; Li et al., 2010).The survey finds that respondents preferred plastic carrier bags most necessarily while buying meat, fish,

milk, vegetables and oil rather than basket/cloths bags. The study also finds that during rainy season customers took extra carrier bags from sellers for protection from rain. The retailers and shopkeepers also claimed that easy availability (51, 85%), cheapness (49, 81.67%), durability (48, 80.00%) and no others alternatives (37, 61.67) have proliferated the distribution of plastic carry bags among customers.

Table 3 Factors of Increasing Trend of Plastic Carrier Bags Utilization in Aligarh City

Categories/group	Free of charge (%)	Light weight (%)	Suitable for carrying (%)	Durable (%)	Lack of alternatives (%)
Sex					
Male	87(63.97)	89(65.44)	86(63.23)	69(50.73)	29(21.32)
Female	34(25.00)	36(26.47)	31(22.79)	22(16.17)	10(7.35)
Total	121(88.97)	125(91.91)	117(86.02)	91(66.91)	39(28.68)
Age group					
15-24	15(11.02)	17(12.50)	19(13.97)	16(11.76)	7(5.14)
25-34	58(42.65)	60(44.11)	63(46.32)	44(32.35)	13(9.56)
35-44	31(22.80)	29(21.32)	21(15.44)	18(13.23)	10(7.35)
45 & Above	17(12.50)	19(13.97)	14(10.29)	13(9.56)	9(6.61)
Total	121(88.97)	125(91.91)	117(86.02)	91(66.91)	39(28.68)
Educational Qualification					
Illiterate	3(2.21)	1(0.73)	2(.147)	1(0..73)	3(2.20)
Primary	22(16.18)	19(13.97)	24(17.65)	16(11.76)	10(7.35)
High school	40(29.41)	39(28.68)	41(30.15)	24(17.65)	12(8.82)
Intermediate	35(25.73)	42(30.88)	33(24.26)	27(19.85)	8(5.90)
Higher education	21(15.44)	24(17.65)	17(12.50)	23(16.91)	6(4.41)
Total	121(88.97)	125(91.91)	117(86.02)	91(66.91)	39(28.68)
Occupation					
Students	27(19.85)	28(20.59)	28(20.59)	21(15.44)	14(10.29)
Service	42(35.29)	37(27.20)	37(27.20)	33(24.26)	7(5.14)
Business	28(20.59)	35(25.73)	29(21.32)	18(13.23)	5(3.68)
Others*	24(17.65)	25(18.38)	23(16.91)	19(13.97)	13(9.56)
Total	121(88.97)	125(91.91)	117(86.02)	91(66.91)	39(28.68)

Source: Field survey; figures in the parentheses shows percentage

The safe disposal of waste has been the concern among politicians, urban local bodies, government and environmentalists throughout the world. The study revealed that very few respondents (47, 31.33%) keep the plastic carrier bags after taking out the groceries for

secondary use purpose. There were different uses of these plastic bags for secondary purpose like packaging at home, carrying foods to schools by kids. Plastic bags have been "use and throw-away" custom in the city. Majority of the respondents (103, 68.67%) directly discarded the carrier bags after their single uses. Multiple responses have been found regarding the methods of disposal of plastic carrier bags. Majority of the respondents practiced open dumping (104, 69.33%) and open burning (61, 40.66%) respectively, the others practice of disposal is burying (32, 21.33%) (Table 4).The results revealed that residents use the carrier bags for disposing domestic and animal waste which were widely found in every corner of the city. Environmentally this practice is very harmful because decomposable waste inside the carrier bags becomes toxic. Dumped Plastic bags in landfill is an important source of secondary environmental pollutants (Zhang, J.; Wang, X.; Gong, J.; Gu, Z., 2004). The leachate enter into water bodies and soil subsequently degrade the urban ecology. The table 4 indicates that regardless of age, education and occupation the respondents widely practiced the open dumping and open burning. The people of the study area was not very much concerned regarding the urban environment and human health while disposing the plastic carrier bags openly. Burning of plastic carrier bag releases toxic gas carbon dioxide, heavy metals, PAHs, PCBs (Sterner 2003;Astrup et al., 2009; Khoo et al. 2010; Shen et al., 2010; Simoneit2005; Alavanidis et al., 2008), important greenhouse gas which lead to climate change (Muthu et al., 2011). Open burning of plastic carrier bags creates human respiratory problems (Boadi and Kuitunen, 2005; Rayne, 2008). It is generally believed that high educated people are familiar with the human health and environmental issues related with the disposal of plastic carrier bags but the survey results find that they were not very much concerned about the impacts of the present disposal practices. Every citizen must be sensitize of present concerns in the study area.

Table 4 Common Disposal Methods of Plastic Carrier Bags by Respondents-Aligarh City

Categories/group	Open dumping	Burning	Others**
Sex			
Male	68(45.33)	44(29.33)	22(14.67)
Female	36(24.00)	17(11.33)	10(6.66)
Total	104(69.33)	61(40.66)	32(21.33)
Age group			
15-24	17(11.33)	10(6.67)	9(6.00)

25-34	41(27.33)	22(14.66)	13(8.67)
35-44	30(20.00)	17(11.33)	6(4.00)
45 & Above	16(10.67)	12(8.00)	4(2.66)
Total	104(69.33)	61(40.67)	32(21.33)
Educational Qualification			
Illiterate	3(2.00)	2(1.33)	2(.133)
Primary	14(9.33)	17(11.33)	14(9.33)
High school	31(20.67)	20(13.33)	8(5.33)
Intermediate	27(18.00)	15(10.00)	5(3.33)
Higher education	29(19.33)	7(4.67)	3(2)
Total	104(69.33)	61(40.66)	32(21.33)
Occupation			
Students	23(15.33)	13(8.66)	4(2.66)
Service	29(19.33)	19(12.67)	12(8.00)
Business	33(22.00)	11(11.33)	4(2.67)
Others*	19(12.67)	18(12.00)	12(8.00)
Total	104(69.33)	61(40.66)	32(21.33)

Source: Primary survey in Aligarh city, figures in the parentheses shows percentage

Aligarh city is no exception like other cities of the developing worldregarding the environmental and health problems involved with the plastic carrier bags wastes (Boadi and Kuitunen 2005; Girum 2005; Seema 2008 and Adaneet al., 2011). The survey results indicate that there were several problems including the environmental deterioration (littering), blockage of sewage lines (drains), human and animal health issues associated with the plastic wastes in the city. In the multiple responses majority of the respondents claimed blockage of sewage liners (91, 79.13%), human health problems (96, 83.47%), animal health(77, 66.96%) and environmental deterioration(81, 70.43%) respectively in the study area (Table 5). The present disposal of household plastic waste in opens space and drainage system has negative impacts on the environment and the health. The plastic waste clog water channel which acts as breeding ground for mosquitoes, spreading diseases like dengue, malaria, yellow fever, cholera, typhoid that negatively affect the health of local inhabitants (Butu et al., 2013).

Table 5 Environmental and Health Impacts associated with Plastic Carrier bags Disposal-Aligarh City

Categories/group	Human health	Animal health	Blockage of sewage liners	Environmental deterioration
Sex				
Male	67(58.26)	52(45.22)	69(60.00)	53(46.08)
Female	29(25.21)	25(21.74)	22(19.13)	28(24.35)
Total	96(83.47)	77(66.96)	91(79.13)	81(70.43)
Age group				
15-24	10(8.69)	8(6.96)	11(9.57)	6(5.22)
25-34	32(25.21)	26(22.61)	30(26.09)	34(29.56)
35-44	36(27.83)	28(24.35)	33(28.69)	27(23.48)
45 & Above	18(15.65)	15(13.04)	17(14.78)	14(12.17)
Total	96(83.47)	77(66.96)	91(79.13)	81(70.43)
Educational Qualification				
Illiterate	0(0)	1(0.87)	2(1.74)	0(0)
Primary	9(7.83)	11(9.56)	12(10.43)	7(6.09)
High school	25(21.74)	18(15.65)	22(19.13)	21(18.26)
Intermediate	33(28.70)	25(21.74)	31(26.96)	26(222.61)
Higher education	29(25.22)	22(19.13)	24(20.87)	27(23.48)
Total	96(83.47)	77(66.96)	91(79.13)	81(70.43)
Occupation				
Students	25(21.74)	18(15.65)	22(19.13)	19(16.52)
Service	38(33.04)	34(29.56)	35(30.43)	31(26.96)
Business	24(20.87)	19(16.52)	21(18.26)	23(20.00)
Others*	9(7.83)	6(5.22)	13(11.30)	8(8.96)
Total	96(83.47)	77(66.96)	91(79.13)	81(70.43)

Source: Primary survey in Aligarh city, figures in the parentheses shows percentage

The plastic carrier bags are washed by rainstorm during rainy season from heaps of garbage along the roadside spreading all the environment and most of the plastic carrier bags enter into

the sewage lines creating blockage of natural flow of drainage water. Thus the stagnant water lead to submerge of many part of the study area and sometime this water enter into the people's home which are located at low lying areas. During field observation in rainy season it was found that the common transportation system was damaged due to flooding of highways. This observation is also similar to the worked carried out in Bangalore city (Shwetmala et al., 2011) and in Mumbai (Smith, 2009). The study also found out most of the synthetic or non-biodegradable wastes which were dumped openly contained harmful toxic elements and there is a chance of releasing chemical materials and penetration into the soil. A large quantity of plastic and polythene wastes generated from food containers, beverages and packaging materials. These materials contain neurotoxin and carcinogenic which contaminated with water and soil which can affect the central nervous system, the endocrine system and kidneys of people exposed to these toxicants(Obirriet al., 2010; Amonoo – Neizer and Amekor 1994).

Stray animals like cows, dogs, pigs search foods in garbage with plastic carry bags and frequently eat plastic bags. Households disposed their domestic wastes like residual food waste in carry bags and throw it on roadsides. Gradually huge amount of plastic found in their stomachs and especially found large amount in cows, respondents claimed. In many states of India plastic bags which are less than 40 microns are banned but majority of the population don't consider the hazardous impacts on the stray animals.

Table 6 Respondents' Opinion on Continuation and Discontinuation of Plastic Carrier Bags Usage- Aligarh City

Respondents opinion	Customers	Percentage	Sellers	Percentage
Continue	92	61.33	53	88.33
Discontinue	58	38.67	7	11.67
Total	**150**	**100 %**	**60**	**100 %**

Source: Primary survey in Aligarh city

The table 5 indicates 66.96% respondents claimed animal health problems and many stray animals like cow and dogs found death by eating plastic carrier bags. This ingested plastic carrier bags remained undecomposed even after death of these animals. The general urban environment is deteriorated due to littering of plastic carry bags in every corner of the city.

At the end of the individual meeting, the respondents were asked to give their opinion regarding the continuation and discontinuation of plastic carrier bags usages. The survey indicated that 61.33% customers and 88.33% retailers/shopkeepers were in favour of continuing the usages of plastic carrier bags because of cheapness, easy availability, suitability for carrying and no others alternatives in the city. Though the respondents claimed many environmental and health related issues associated with the plastic carrier bags usage in the city, only 38.67% respondents (customers) and 11.67% retailers/shopkeepers opined the discontinuation of plastic carrier bags usage (Table 6).

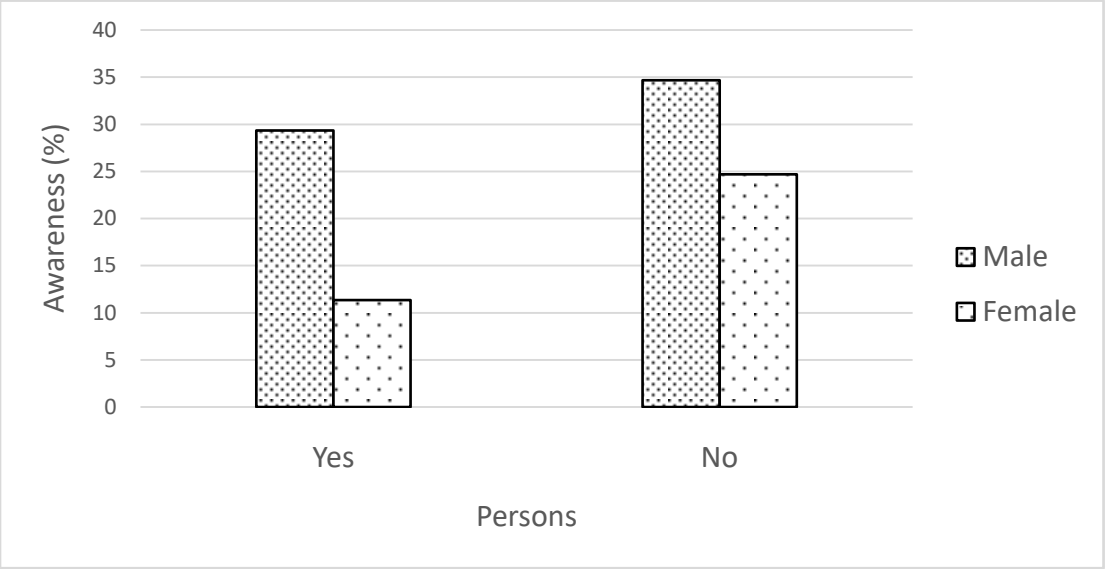

Figure 3 Awareness of Plastic Waste Management Scheme among Male and Female (Customers)

Awareness of plastic waste management scheme was also asked among the customers and sellers. The findings reveal that majority of responses (both customers and retailers) were unaware of the scheme. Among customers 59.33% (89) and 31.67% (19) retailers (Fig 4) were familiar with the present governmental scheme. The results also find that there was large variation of awareness scheme among male and female responses. Male responses regardless of age, education were more aware than the female responses (Fig 3).

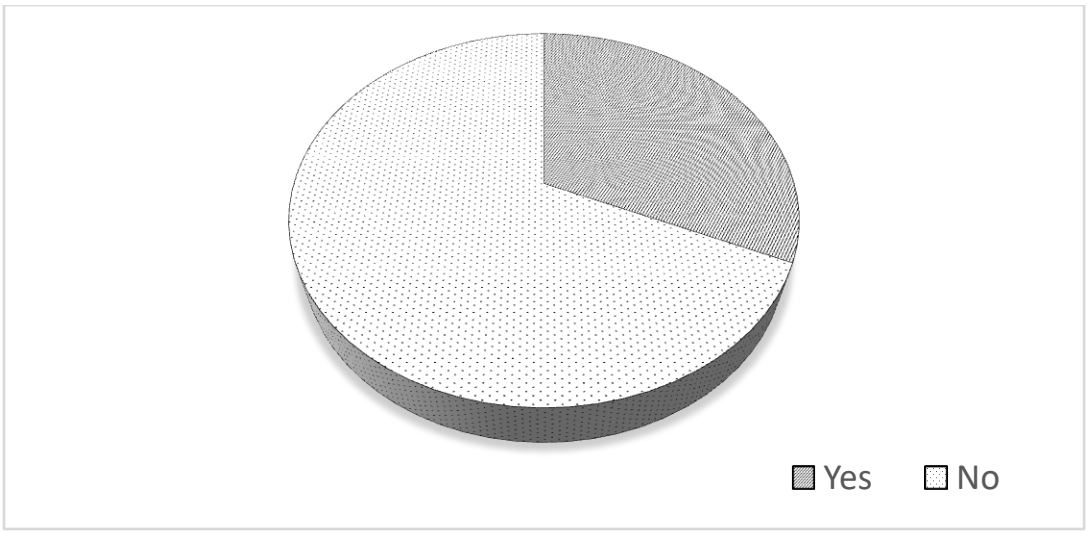

Figure 4 Awareness of Plastic Waste Management Scheme among Sellers

Conclusion

The survey results reveal that majority of the respondents were very much aware regarding the adverse environmental and health impacts of plastic carrier bags uses and the way of disposal methods in the local areas but least respondents both customers and retailers/shopkeepers were in favour of discontinuation of carrier bags usage. These negative attitudes and high increasing trend of plastic carrier bags consumption among respondents were attributed by many factors including cheapness, suitability of carrying, easy availability everywhere and free distribution by sellers. It was observed during survey that regardless of age, education people practiced the conventional methods of waste disposal without considering the health and environmental degradation. Thus it is believed that education without ethical attitudes of people cannot change the behaviour of the consumption and disposal practices of single use plastic bags. Only government scheme cannot be effective without the support of community of the city. To change the attitudes and behaviour of people regarding the high utilization of plastic carrier bags urban local body should impose either the levy system on consumption or total prohibition of plastic bags in order to reduce the burden of overwhelming problems and challenges of waste management in the city. A massive awareness campaign should be organized by the urban local body in order to sensitize the all citizen. A successful sustainable environment can be formed by the combined efforts of all stakeholders' community, NGOs, urban local authority and governments.

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