

A Cross Sectional Study to Assess the Awareness and Perception About the Ban on Plastic Bag Usage Among Adult Population in Urban Area of Chennai, Tamil Nadu.

Name: Dr. RRajkamal^{1*}, Dr. Jayakiruthiga. S², Dr. BRETHIS.C. S³, Dr. ShravyaMourya⁴, Dr. Aafrin Akbar⁵, Dr. Aarthi. R⁶, Dr. RumanaSamreen.K⁷

¹ Designation: Associate Professor, Department:Community Medicine, Institute:ACS Medical College & Hospital Chennai., Contributions:Concept,design,definition of intellectual

content,literaturesearch,manuscriptpreparation,manuscriptediting,manuscriptreview,data analysis, Ph:9842769553

EmailID: rajkamalmbbs@gmail.com

² Designation: Assistant Professor, Department:Community Medicine, Institution:Madha Medical College and Research Institute,

Contributions:Concept,design,literaturesearch,manuscriptediting,manuscript review, Ph: 9444464140

EmailID: jaikeerthi07@gmail.com

³ Designation: Associate professor, Department: Pharmacology, Institute: ACS Medical College,Chennai. Contributions:manuscript preparation

Ph:9751666924

Email ID: brethischandru@gmail.com

⁴ Designation: Post Graduate, Department:Community Medicine, Institute:ACS Medical College,Chennai., Contributions:manuscriptpreparation,manuscript review. Ph:9566123657

Email ID: shravyamourya@gmail.com

⁵ Designation: II year Post Graduate, Department:Community Medicine, Institute:ACS Medical College,Chennai. Contributions:manuscriptpreparation,manuscriptreview,Data analysis. Ph:9600062996

Email ID: aafrin.lubna@gmail.com

⁶ Designation: II year Post Graduate, Department:Community Medicine, Institute:ACS Medical College,Chennai. Contributions:manuscriptpreparation,manuscript review. Ph: 9791142464

Email ID: draarthir14@gmail.com

⁷ Designation: CRMI, Department:Community Medicine, Institute:ACS Medical College,Chennai.

Contributions:manuscript preparation, Data analysis. Ph: 6380276733

Email ID: rumana.samreen2110@gmail.com

Corresponding Author/Chief Investigator:

Name: Dr. RRajkamal

Designation:Associate Professor, Department:Community Medicine, Institute:ACS Medical College & Hospital Chennai., Contributions:Concept,design,definition of intellectual content,literaturesearch,manuscriptpreparation,manuscriptediting,manuscriptreview,data analysis, Ph:9842769553

EmailID: rajkamalmbbs@gmail.com

Abstract

Introduction: Plastic bag usage has become an increasing commodity in our day-today life without taking into consideration it's environmental and health impacts. Objectives: This study was done to assess the practice of plastic bag usage, perception of ban on plastic bags among adult population and the association between socio demographic factors and awareness of plastic bag ban among the study participants. Methods: A community based cross sectional study was carried out in Chennai city in June 2022 using a structured questionnaire amongst

the adult population. RESULTS: Out of the 400 participants, majority of the subjects (94.8%) were aware that plastics bags are hazardous. Also, 348 (87%) were aware that it caused cancer. Furthermore, 314 (78.5%) were aware that plastic bags are non-biodegradable and 387 (96.8%) knew it caused pollution. Majority of the participants 385 (96.3%) were aware of the legal ban on plastic bag usage and 369 (92.3%) were in favor of prohibiting its usage and 373 (93.3%) of the subjects were open to the idea of using alternate reusable bags to contribute to an eco-friendly environment. Conclusion: Most of the participants in the settings had the awareness of hazards of plastic bag usage. However, there is a need for spreading the awareness of using alternative strategies and effective implementation of legislation to minimize the usage of plastics in the community.

Keywords: Urban area, plastic bag ban, non-biodegradable, legislation.

1. Introduction

Plastic bags were introduced in 1970's and have gained an increasing popularity amongst consumers and retailers [1]. They are available in huge numbers and varieties across the world. It is estimated that around 500 billion plastic bags are used every year worldwide [2]. The plastic industry is one among the most rapidly growing industries in India.

The production of plastics has reached 8.5 million tons in 2013 with a growth rate of 8% over the previous five years. The growth rate is expected to be 10% over the next five years [3]. The reasons for popularity of usage of plastic bags are light weight, resistance to degradation (by chemicals, sunlight and bacteria), durability and above all they are of low cost. While these conveniences are benefitting individual users, the problems and the cost of disposal of plastic items would burden the entire society [4].

After their entry to the environment, plastics take anywhere from 15 to 1000 years to biodegrade [5]. It possesses a risk to human health and environment [6]. In addition to problems like choking the drains, the littered plastic bags are breeding ground for mosquitoes when rainwater gets collected in them. This could worsen the situation of malaria in a highly endemic area. Plastic bag packing for hot edible items causes migration of harmful chemicals to food items. These include Styrene which is carcinogenic, Phthalates and Bisphenol A which causes diabetes and diseases of the heart and liver [7].

Approximately, 95% of urban stray cattle in India are suffering from various ailments due to hazardous materials, mostly plastic bags inside their abdomen [8]. Plastic bags are indiscriminately dumped into millions of landfills worldwide which occupy trillions of hectares of lands and emit dangerous methane and carbon dioxide gases during their decomposing stages as well as highly toxic leachates from these landfills [9]. It effectively blocks sewerage pipelines, litters agricultural lands, canals, rivers and oceans. They are not biodegradable because of which they contribute very disruptive effects on the agricultural development. They take incredibly long time to break down and when they do, it is into powdery plastic dusts which contaminate all life forms including the soil and the water forever [10].

Therefore, it is high time we switch over to alternative materials for packing and transportation. "The Plastic Manufacture, Sale and Usage Rules 1999, amended in 2003 under the Indian Environment (Protection)

Act of 1986 prohibit manufacture, stocking, distribution or sale of carry bags made of virgin or recycled plastic and prohibits littering of plastic items". However, studies on consumer preferences revealed that large proportion of people do not value environmental aspects [11]. Moreover, poor enforcement of the legislation has made the ban towards plastic bag usage largely ineffective [12]. The result being plastic bags have been used widely by small business owners like hawkers, retail shops and in shopping malls. Provision of suitable bags like cloth/jute/ paper bags in marketplaces at a subsidized price would improve the practice if the customer forgets to get one from home. This strategy has been reported to reduce the utilization of plastic bags by 90% in Ireland [13] and by 49% in China [14]. In another study done in Delhi 57.6% users suggested cloth/ jute as alternatives for plastic bags while 40.3% suggested paper bags [15]. The Chief Minister of Tamil Nadu on 05.06.2018, on the floor of Legislative Assembly, with a view to make Tamil Nadu Plastic Free, has announced ban on 'one time use and throwaway plastics', irrespective of thickness, with effect from 1st January, 2019 under the provisions of section 5 of the Environment (Protection) Act, 1986 (Central Act 29 of 1986) read with Government of India, Ministry of Environment and Forests Notification No.S.O.152(E), dated: 10th February, 1988 [16].

Therefore, keeping the above aspects in view, this community-based cross-sectional study was planned to assess the plastic bag usage and awareness and perception of ban on plastic bags among the adult population in our urban field practice area in Chennai.

2. Objectives

To assess the awareness and perception of ban on plastic bags among adult population in Urban area of Chennai.

To measure the association between socio demographic factors and awareness of plastic bag ban among the study participants.

3. Materials and Methods

Study Design: This is a community based Cross-sectional study with both descriptive and analytical components

Study area and population: The study was conducted in Nerkundrum, the urban field practice area attached to ACS medical college in Chennai, Tamil Nadu. The study population included individuals residing in the study

area and aged above 18 years. The study was done for a period of three months, from February 2019 to July 2019.

Inclusion and exclusion criteria: Resident individuals aged 18 years and above and willing to participate were included in the study. Residents whose house was locked on the day of data collection, those who were mentally unstable, sick and bed ridden were excluded from the study.

·Sample Size : A study done in Tiruchirapalli by vigneshwaran R16 found that awareness level among adult population was 48.3%, Based on this prevalence and keeping 5% alpha error and 12 % of relative precision, Sample size will be calculated by the formula $n = Z^2 pq / d^2$ n = sample size z^2 = Value of two tailed alpha error is 1.96 p = prevalence = 48.3% q = 100- p = 51.7% d = acceptable deviation- 12% of prevalence . Based on the above formula, the calculated sample size is 400.

· Data Collection Methods: Data was collected from eligible and willing participants using a pre-tested,

structured interviewer administered questionnaire. Socio-demographic information including age, gender, occupation, education, marital status and socio-economic status were collected. The awareness of the participants about the plastic bag ban legislation, Usage of plastic bags, Disposal of plastic bags, knowledge on effects of plastic on health and environment, acceptance of the ban legislation and practices related to plastic usage after the ban were also collected.

Data Analysis: The data obtained from the survey was entered and analyzed by SPSS software version 21.0 and the appropriate statistical test was performed in the analysis. Prevalence was expressed in percentage.

Ethical considerations: The Study has been approved by institutional ethics committee of ACS Medical college and hospital. An informed consent was taken from each participant before data collection, after explaining about the objectives of the study.

4. Results

Table 1: Socio Demographic Profile of The Respondents (N=400)

CHARACTERISTICS	FREQUENCY (%)
AGE GROUP	
Below 40	336(84.0)
Above 40	64(16.0)
SEX	
Male	200(50.0)
Female	200(50.0)
MARITAL STATUS	
Married	110(27.5)
Unmarried	284(71.0)
Widowed	4(1.0)
divorced	2(0.5)
EDUCATION	
Illiterate	2(0.5)
Primary	2(0.5)
Middle	3(0.8)
High school	13(3.3)
Higher secondary	28(7.0)
Undergraduate	254(63.4)
Postgraduate	98(24.5)
OCCUPATION	2(0.5)
Employed	208(52.0)
Unemployed	192(48.0)
SOCIOECONOMIC STATUS	
Upper class	9(2.3)
Upper middle class	92(23.0)
Middle class	260(65.0)
Lower middle class	35(8.7)
lower class	4(1.0)
RELIGION	9(2.3)
Hindu	349(87.2)
Muslim	19(4.8)
Christian	32(8.0)
TYPE O FAMILY	11(2.8)
Nuclear family	
Joint family	83(20.8)
Three generation family	306(76.4)

Majority of the participants belonged to age group less than 40 yearsie 84% About 16 % of the respondents belonged to age group above 40 years. There were equal number of female (50%) and male (50%) participants . Regarding occupational status of the study participants nearly 52% were employed,

48% was unemployed. With regards to education, 63.4% of the study participants were under graduates. According to modified BG Prasad socioeconomic classification (2017), 65 % belonged to middle class and 23 % to upper middle class. Majority of the respondents were unmarried (71%) and belonged to nuclear (76.4%) type of family.

AWARENESS ON LEGAL BAN OF PLASTIC BAGS

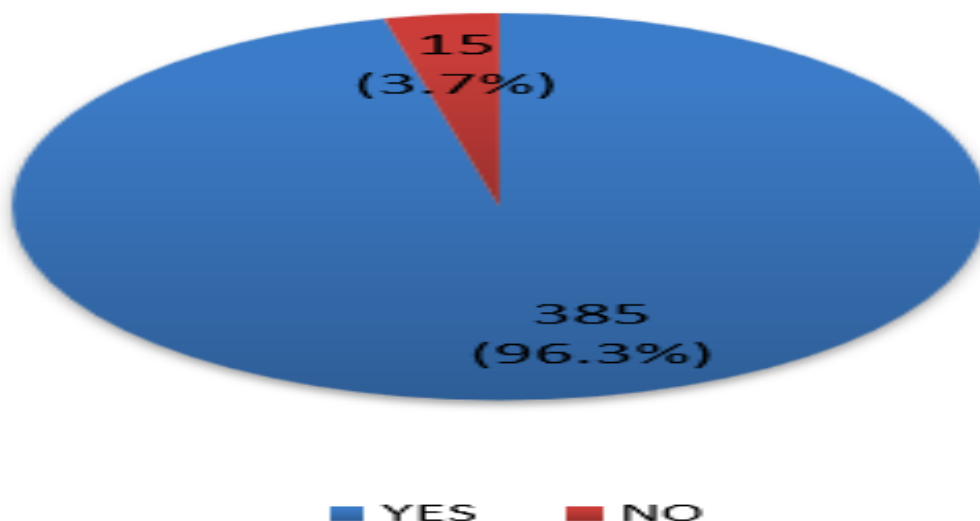


Figure 1 : Awareness On Legal Ban Of Plastic Bags (N=400)

Awareness on plastic ban legislation Figure 1 shows that among the 400 study participants, nearly (96.3%) 385 participants were aware about the plastic ban legislation, whereas only 3.7% (15) were not aware about the plastic ban legislation. Awareness on the plastic ban legislation was obtained through various

sources of information. Majority of the respondents came to know regarding the plastic ban legislation through television (77.8%), newspaper (75.5%), social media (57.5%), friends (44.8%) and others (16.3%).

Table 2 : Knowledge On Effects Of Plastic Use on Health And Environment & Attitude of The Participants Towards The Plastic Ban Legislation. (N=400)

Knowledge On Effects of Plastic Use On Health And Environment	
Characteristics	Frequency (%)
Do You Think Plastic Bag Is Hazardous To Health?	
Yes	379(94.7)
No	21(5.3)
Do You Think Plastic Bags Causes Cancer?	
Yes	348(87.0)
No	52(13.0)
Are Plastic Bags Degradable	
Yes	86(21.5)
No	314(78.5)
Can Plastic Bags Pollute Water,Soil,Air?	
Yes	387(96.8)
No	13(3.3)
What Is The Source Of Information About Ban Of Plastic Bags? (Multiple Responses)	
Television	302(75.5)
Radio	84(21.0)
Newspaper	230(57.5)
Social Media	311(77.8)
Friends/Family/Relatives	179(44.8)
Others	65(16.3)
Attitude Of The Participants Towards The Plastic Ban Legislation	
Are You In Favour Of Prohibiting The Plastic Bags?	
Yes	369(92.3)
No	31(7.8)
Are You Open To The Idea Of Using Reusable Bags?	
Yes	373(93.3)
No	27(6.8)
Will You Advise Others To Stop Using Plastic Bags?	
Yes	378(94.5)
No	22(5.5)
Will You Prefer Shops That Do Not Use Plastic Bags?	
No	363(90.8)
Yes	37(9.3)
Will Have Food Or Beverages Served In Plastic Plates And Cups	
Yes	52(13.0)
No	348(87.0)

About 94.7% of the respondents were aware that usage of plastic bags was injurious to health and 87% knew that plastics are cancerous. Majority of the study participants were aware that plastics are non-degradable (78.5%). The knowledge on ill effects of plastic usage affecting the environment by means of soil, water and air pollution was observed in 96.8% of the study

participants.

About 93.3 % (195) of the study participants were open to the idea of using reusable bags. 94.5% of participants responded that they would advise others to stop using plastic bags. About 90.8 % agreed to go only to shops that plastic bags, 65% used only less than 5 plastic bags per week.

Table 3 : Practice Of Usage Of Plastic Bag After Ban By Legislation (N=400)

Characteristics	Frequency (%)
Are You Using Plastic Bags After The Plastic Ban Legislation?	
Yes	126(31.5)
No	274(68.5)
How Do You Dispose The Plastic Bags (Multiple Responses)?	
Open Dumping	35(8.8)
Burning	22(5.5)
Burying	19(4.8)
Community Dustbin	337(84.3)
Others	71(17.8)
What Is The Reason For Continued Use Of Plastic Bags? (Multiple Responses)	
Easily Carried	275(68.8)
Lightweight	215(53.8)
Affordable	203(50.7)
Easy To Store	182(45.5)
Low Price	182(45.5)
Number Of Plastic Bag Used After Plastic Bag Ban Legislation? (N=126)	
Less Than 5	49 (38.8)
5-10	53 (42.1)
More Than 10	24 (19.1)
What Is The Purpose Of Using Plastic Bag?(N=126)	
Garbage Storage And Disposal	52 (41.2)
Local Markets	38 (30.2)
Departmental Stores	26 (20.6)
Others	10 (8.0)
Types Of Alternative Bags Used Commonly (N=274)	
Cloth Bags	136 (49.7)
Jute Bags	60 (21.9)
Paper Bags	48 (17.5)
Basket	30 (10.9)

Practice of plastic bag usage after the ban and the participants' practices towards the plastic ban legislation are depicted in Table 4. Of the 400 participants, 126 (31.5%) participants continued using plastic bags even after the plastic ban legislation. On the other hand, nearly 274 (68.5%) participants said that they stopped using plastic bags and shifted to eco-friendly alternatives. Most common reasons for continued use of plastic bags were that they could be easily carried (68.8%), light weight (53.8%) and affordable

(50.7%). Though 31.5% of participants continued using plastic bags, 38.8% of the participants used less than 5 plastic bags in a week and 19.1% used more than 10 plastic bags in a week. Nearly 41.2% of the respondents used plastic bags for garbage storage and disposal, 30.2% used plastic bags for local market purposes to carry fruits and vegetables and 20.6% from departmental stores. Remaining 68.5% who did not use plastic bags were using eco-friendly alternatives like cloth bags (49.7%), jute bags (21.9%), paper bags

(17.5%) and baskets (10.9%)

Table 4 : Association Between Socio Demographic Variables And Its Perceptions Towards The Ban On Plastic Bag Usage (N=400)

Sociodemographic Variables	Awareness On Ban Of Plastic Bag Usage			P Value
	Aware	Not Aware (%)	Total	
Age Group				
Below 40	308 (77)	28 (7)	336	0.317
Above 40	61 (15.25)	3 (0.75)	64	
GENDER				
Male	178 (44.5)	22 (5.5)	200	0.015
Female	191 (47.75)	9 (2.5)	200	
MARITAL STATUS				
Married	105 (26.25)	5 (1.25)	110	
Unmarried	259 (64.75)	25 (6.25)	284	0.278
Widowed	3 (0.75)	1 (0.25)	4	
Divorced	2 (0.5)	0	2	
OCCUPATION				
Employed	187 (46.75)	21 (5.25)	208	0.068
Unemployed	182 (45.5)	10 (2.5)	192	
EDUCATION				
Illiterate	0	2 (0.5)	2	
Primary School	2 (0.5)	0	2	
Middle School	3 (0.75)	0	3	0.000
High School	8 (2)	5 (1.25)	13	
Higher Secondary School	25 (6.25)	3 (0.75)	28	
Undergraduate	242 (60.5)	12 (3)	254	
Postgraduate And Above	89 (22.25)	9 (2.25)	98	
SOCIOECONOMIC STATUS				
Upper Class	6 (1.5)	3 (0.75)	9	
Upper Middle Class	92 (23)	0	92	0.000
Middle Class	241 (60.25)	19 (4.75)	260	
Lower Middle Class	30 (7.5)	5 (1.25)	35	
Lower Class	0	4 (1)	4	
RELIGION				
Hindu	327 (81.75)	223 (55.75)	349	0.000
Muslim	19 (4.75)	0	19	
Christian	23 (5.75)	9 (2.25)	32	
TYPE OF FAMILY				
Nuclear Family	284 (71)	22 (5.5)	306	0.338
Joint Family	74 (18.5)	9 (2.25)	83	
Three Generation Family	11 (2.75)	0	11	

In our present study the awareness of plastic bag ban was more common among those whose age was less than 40 years 308 (77%). Female 191 (47.75%) were more aware when compared to males 178 (44.5%) and the difference was statistically significant. Unmarried individuals 259 (64.75%) were more aware of the plastic bag ban when compared to married couples 105 (26.25%). Awareness was almost equal in both the employed and the unemployed. The literates were more aware than the illiterate and among the literate undergraduates 242 (60.5%) are more aware and the difference was highly significant. Middle class people 241 (60.25%) were more aware followed by upper middle class 92 (23%) and the difference was found to be highly significant. Hindus 327 (81.75%) were more aware of ban of plastic bag and the difference is highly significant. Among the family types, nuclear families 284 (71%) were more aware of plastic bag ban.

5. Discussion

The present study was designed to assess the individual awareness and practice of plastic bags usage, their disposal and perception of legal ban on usage of plastic bags.

In our study, we found that most of the subjects 379 (94.8%) were aware that plastic bags are hazardous to health, 348 (87%) of the study participants were aware that it caused cancer by means of academic curriculum and the knowledge on various public health issues as only 2% of the study population was illiterate.

In our study 314 (78.5%) of the study participants were aware that plastic bags were non-biodegradable and 387 (96.8%) of the study subjects knew that plastic bags caused pollution of soil, water, air. This was possible due to the measures taken by various communication media on stressing about the harmful effects of plastic bag usage on health and environment.

Majority of the study subjects 385 (96.3%) were aware of the legal ban on plastic bags because of the measures taken by both The Central and State Government through awareness programmes and the main source of information being social media 311 (77.8%) and television 302 (75.5%).

In our study, 369 (92.3%) of the study participants were in favor of prohibiting plastic bags in view of reducing the associated health hazards. And 373 (93.3%) of the subjects were open to the idea of using reusable bags and 378 (94.5%) are willing to

advise others to stop using plastic bags to motivate an eco-friendly environment.

Majority of the study subjects 363 (90.8%) prefer shops that don't use plastic bags and 348 (87%) of them don't prefer food being served in plastic plates or cups despite the convenience because they were aware that it threatens both human health and the environmental sanitation.

Though extensive campaigns were carried out on the ban of plastic bags 126(31.5%) of the study participants are still using plastic bags because they can be easily carried 275 (68.8%).

Among them 49 (38.8%) use less than 5 bags per week and the most common purpose of using plastic bags was for garbage storage and disposal 52 (30.2%). And 337 (84.3%) of them are disposing it by means of community dustbin because of their ignorance about the health hazards of using plastic bags.

Majority of the study participants who were not using plastic bags used cloth bags 136 (49.6%) as an alternative because they are easy to carry, easy to store, have long durability and can be reused.

It was also noted in our study that the people who are less than 40 years of age 308 (77%) were more aware of the plastic ban. The exposure to internet and the constant mention of the ban among various social media platforms was one the reasons which contributed to this.

Females 191 (47.75%) were more aware when compared to males 178 (44.5%), one of the reasons being them doing majority of the household work which included buying groceries which required plastic bags.

The literate, especially the undergraduate 242 (60.5%) were very highly aware of the ban on plastic bags as they understood better the campaigns, learnt about it through newspapers and social media and were educated about it in their colleges and workplaces. It was also noted that middle class people 241 (60.25%) were more aware of the ban followed by the upper middle class 92 (23%). Hindus 327 (81.75%) were more aware of the plastic bag ban because they were required to carry a bag to their worship places for veneration purposes and they were advised against it by the authorities. Nuclear families 284 (71%) were more aware of the plastic bag ban.

6. Conclusion

The threat of plastic bag usage to health is increasing day by day. This study shows that majority of the participants were aware about its hazards to health. Also majority of the study participants were aware of the legal ban on plastic bags through social media and television. Further, most of the participants were in favour of prohibiting plastic bags usage and inculcate the usage of reusable bags. Satisfactory awareness level about the ill effects of plastic use and its ban was observed but the level of implementation in their daily life was poor. Although majority of the population is aware of the hazards and ban on plastic

bags usage, complete awareness is inadequate which can be incorporated through IEC activities.

7. Recommendations

Awareness campaigns on how plastics should be reduced, reused and recycled can be conducted with its main target audience being home makers and the younger population as they are prone to use more plastic bags. Various alternatives to plastic bags such as cloth bags, jute bags, paper bags etc can be distributed as complimentary gifts in exchange for a number of plastic bags in stores. There should be clear signs or posters depicting that plastic bags have been banned in all of the public places.

Funding: No funding sources

Conflict of interest: None declared.

References

- Williamson LJ .It's Not My Bag, Baby. *On Earth : Environmental Politics People*, (2003) ; 25(2) : 32-34.
- Spokas KA. Plastics: still young but having a mature impact. *Waste Manage.*, (2007);28(3): 473-474.
- Federation of Indian Chambers of Commerce and Industry. A report on plastics industry [Internet]. New Delhi: TATA Strategic Management Group; 2014. [cited 2014 Nov 2]
- Gupta K, Soma Nathan R. Consumer response to incentives to reduce plastic [2] bag use: Evidence from a field experiment in urban India [Internet]. Delhi: Delhi School of Economics; 2011 Nov [cited on 2014 Jan 24].
- Sutton J, Turner B. Plastic bags: Hazards and mitigation [Internet]. California: [3] Social sciences department, California Polytechnic State University; 2012 May [cited on 2014 Jan 27].
- Halden RU. Plastics and health risks. [4] *Annual Review of Public Health*. 2010; 31:179-94.
- Sung GB. Ban on plastic bags usage: Is it a right move: An empirical study on consumer perception and practice [Dissertation]. Gelu or Universalizing Malaysia; 2010.
- Singh B. Harmful effect of plastic in animals. *The Indian Cow* [2005] Oct-Dec: 10–17.
- Simmons, C. It's in the Bag: An Estimate of the Effect of CO2 Emissions of the Irish Plastic Bag Tax. (2005).
- Stevens, E. *Green Plastics: An Introduction to the New Science of Biodegradable Plastics*. Princeton, NJ: Princeton University Press. (2001).
- Hopewell J, Dvorak R, Kosior E. Plastics recycling: challenges and opportunities. *Philos Trans R Soc Lond B Biol Sci*. 2009; 364:2115-26.
- Gupta K, Somanathan R. Consumer response to incentives to reduce plastic bag use: Evidence from a field experiment in urban India [Internet]. Delhi: Delhi School of Economics; 2011 Nov [cited on 2014 Jan 24]
- Convery F, McDonnell S, Ferreira S. The most popular tax in Europe: Lessons from the Irish plastic bags levy. *Environ Resource Econ*. 2007; 38: 1–11.
- He H. The effects of an environmental policy on consumers: lessons from the Chinese plastic bag

regulation [Internet]. Sweden: School of Business, Economics and Law, University of Gothenburg; 2010 Jun [Cited on 2014 Mar 1].

15.Abhigyan. Use of plastic bags: factors affecting ecologically oriented behavior in consumers [Internet]. Delhi: Foundation for Organisational Research and Education; 2008 Oct-Dec. [Cited on 2014 Feb 19]. Available from: <http://www.freepatentsonline.com/article/Abhigyan/192438179.html>

16.Vigneshwaran. R, Dr.B.Arunkumar. Knowledge Attitude and Practice on Plastic Usage Among the Residents of Tiruchirappalli Municipal Corporation, Tamil Nadu - A Descriptive Study. IOSR Journal of Humanities and Social Science (IOSR-JHSS):33-39