ISSN: 2091-2986
DOI Prefix: 10.3126/ijssm
International Journal of Social Sciences and Management

Research Article

Problem Faced by The Public Due to The Improper Waste Disposal and Behaviour of Waste Disposal

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Article Information

Received: 14 February 2020
Revised version received: 13 April 2020
Accepted: 16 April 2020
Published: 27 April 2020

Cite this article as:
R. Geetha and S. Rajalakshmi (2020) Int. J. Soc. Sc. Manage. 7(2): 70-77.
DOI: 10.3126/ijssm.v7i2.28593

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Peer reviewed under authority of IJSSM

Abstract

The solid waste management is not only necessary for maintaining the hygienic environment but in reducing the probable health hazards. The current study deals with the problems faced by the public due to improper waste management and the behaviour in waste disposal. The data used in our study is both primary and the secondary data. Waste cannot be simply thrown away anymore, now it must be managed. Many materials thrown away could be saved by simple things like reusing glass, the municipal landfill could be reduced by almost 10 percent and there are still many advantages to waste management. Today, more people are in favour of companies who invest in "green products". As a result, companies have removed phosphates, bleaches, and have made their paper products out of recycled papers. The objective of writing this paper is to study the current practices related to the various waste management initiatives taken in India for human wellbeing. The other purpose is to provide some suggestions and recommendations to improve the waste management practices in Indian towns.

Keywords: Environment; Waste management; Disposal behaviour

Introduction

"There are few things certain in life – one is death, second is change and the other is waste." (Agarwal et al, 2015). No one can stop these things to take place in our lives. But we can be prepared for all these. Each of us has a right for clean air, water and food. We are born from the earth; we return to the earth and we sustain by the earth. Hence the environment in which we live is very important and it directly affects our lives. It is said that man is the product of his environment. Environmental problem is a global concern. Solid waste management issue is the biggest

challenge to the authorities of both small and large cities' in developing countries. This is mainly due to the increasing generation of such solid waste and the burden posed on the municipal budget. In addition to the high costs, the solid waste management is associated with lack of understanding over different factors that affect the entire handling system. In the current study, the data regarding the collection of different types of behaviour of disposing waste and the different types of problem faced by the public (Agarwal et al, 2015).

The most important reasons for waste collection are the protection of the environment and the health of the population. Rubbish and waste can cause air and water pollution. Rotting garbage is also known to produce harmful gases that mix with the air and can cause breathing problems in people. Due to improper waste disposal we may face several problems like unpleasant odour and the health problems. And from our study we conclude that by what type of behaviour the environment is get polluted and by what are the ways we can control it.

Literature Review

Rajkumar et al. (2010) evaluated the contamination in groundwater due to Municipal solid waste disposal in Erode, Tamil Nadu. This research revolves around the improper disposal of solid wastes as landfills at three distinct sites namely Vendipalayam, Vairapalayam, and Semur. with Geographical Information System (GIS), about 43 groundwater and seven surface water samples were analyzed for their physical, chemical and electrical properties were tested. The outcomes indicated that the quality parameters of water exceeded the permissible limits of drinking at many locations leading the water unstable for drinking.

Elbeshbishy & Okoye, (2019) have claimed that improper hazardous waste disposal doesn't just contaminate soil and the local water supply, but it can also pollute the air. An area with an ill reputation for a toxic environment can also be susceptible to lower property values, so not following proper disposal procedures can even affect the value of properties. Long term execution of improper waste disposal of municipal wastes can affect soil and water properties and productivity. It also produces lethal gases such as carbon monoxide and methane gas.

Zakianis & Djaja (2017) expressed that the organic waste corresponds to the remains generated from the kitchen, vegetable, fruits, flowers and leaves which may not cause serious environmental pollution. The mismanagement of municipal solid waste management may lead to serious environmental and economic threat to the country.

Schwarz-Herion et al. (2008), exhibited a contextual analysis of municipal solid waste administration in the city of Karlsruhe in Germany. In this investigation, it is prescribed that reasonable objectives and time allotments should be set up, obligations and duties of national and domestic government bodies should be elucidated, and financing should be apportioned with the end goal to deliver a powerful system for waste management in developing as well as developed nations.

Desa et al., (2011) studied the knowledge, attitudes, behaviors, and awareness regarding solid waste management. This study was examined amid the first-year students where their behavior and practices of waste management were studied. The results have revealed that enhanced waste management can be observed among these students as they value cleanliness and they want to mitigate the possible disease occurrences. Also, it can be noted that sustainable waste management can be attained only through the joint responsibility of the government and its community members.

Desa et al., (2012) examined the attitudes, behavior, and practices concerning solid waste management among students. Although the respondents displayed a high level of behavior and attitude towards waste management, it is apparent that there exists the necessity to develop their tendency towards reducing the problems related to SWM. As a solution to achieve this, a carefully thought-out waste education along with awareness strategy should be developed to alter student's habits and traditional behaviors.

Methodology

Problem Statement

Solid waste management is one of the major problems in world. Waste poses a threat to public health and the environment if it is not stored, collected, and disposed of properly. The perception of waste as an unwanted material with no intrinsic value has dominated attitudes towards disposal. This study investigates the domestic waste practices, waste disposal, and perceptions about waste and health in an urban community and studying the public behaviour regarding the waste management.

Research Objectives

- This study on the waste disposal behaviour types and components of solid waste among the selected respondents.
- Evaluate the problems faced by the public with regards to improper disposal behaviour of the solid waste

Research Hypothesis

The hypothesis used in our study are

H_{01}: Types of waste disposal behaviour and the step taken for solid waste management of the respondents are satisfactory.

H_{02}: There are some problems faced by the public with regards to improper solid waste disposal behaviour.

Data Collection

Primary data discusses the first-hand information collected for the research by a researcher with own personal effort. This information have the specific data which the researchers collect or observe by themselves such as conducting a questionnaire and interview. This specific statistic can be seen as important data since the records are unique, and it is collected and observed based on the specific purpose draw by researches. In this investigation, the authors conducted a questionnaire for gathering all concrete information to analyse and answer all the issues in this research question. Primary data is seen as valuable and essential data in the research regarding an exclusive result that the authors obtained directly from the survey. This information was acquired by a structured questionnaire distributed to 400 respondents in Ramanthapuram District.

Data Analysis

In the analysis, for hypothesis 1 and 2 the correlation and regression analysis has been carried out and got positive and negative values respectively. The regression model is fitted in the regression analysis. in the correlation analysis we find out the relation between the positive and the negative relation and in the regression analysis we fitted the regression model.

H_{01}: Types of waste disposal behaviour and the step taken for solid waste management of the respondents are satisfactory.

From the Table 1 the correlation analysis have been computed in order to the correlation analysis in order to find the positive and negative relationship between the variables like Periodicity of collection of waste, Picking plastic waste to sell for recycling, Putting wastes into garbage bin, we won't allow the wastes to accumulate in one place and have positive correlation and the variables are highly significant because the behaviour of each respondents makes the surroundings clean and tidy and prevent from the unwanted diseases. The variables like Provisions of community bins at locality, we will be one of the responsible for good environment, we won't consume plastic shows less correlation and they are not significant.

From the Table 2 we conclude that The R square value of 0.71 or 71% indicates that the independent variable causes about 71% of the variation of dependent variables, while 29% cannot be explained. It means that the model is acceptable in explaining the variation of dependent variables, by using the ANOVA and regression, we can say that this model is fit and appropriate in analysing the independent and dependent variables used in this study with 0.000 significance and with F-value of 10.84. From the Coefficients Table of regression, is used to find the positive and the negative impacts between the variable we conclude that the variable, Surroundings become unhygienic, Putting wastes into garbage bin is responsibility for everyone, I will not buy plastics, I pick up garbage around my area, it's my responsibility these variable have positive relation between the dependent variable and the variable like Picking plastic waste to sell for recycling can help to manage waste, Reusing plastic bags for shopping is good for waste reduction, I will not allow the wastes to accumulate in one place theses above variable shows the negative relation between the dependent variables. From the above-mentioned negative factors we conclude that we must give the special attention or otherwise we can say that we must focus on these habits in order to change the behaviour of collecting waste.

Hence the multiple coefficient equation

$$Y=4.955+0.523X_1+0.115(X_2)-0.274(X_3)-0.022(X_{4)+}0.320(X_5)-0.202(X_6)-0.010(X_7)-0.126(X_8)+0.250(X_9)-1.87(X_{10}).$$

H_{02}: There are some problems faced by the public with regards to improper solid waste disposal behaviour.

From the above table we have computed the correlation analysis in order to find the positive and negative relationship between the variables like Health problems, Raw foods, Any other waste, Glass Items, Plastic container, Non-veg left over, Any other waste, Packets, Glass Items, Disposal diapers form the above mentioned variables The above mentioned variables have negative relationship.

From the Table 3 we conclude that R square value of 0.764 or 76% indicates that the independent variable cause about 71% of the variation of dependent variables, while 34% cannot be explained. This means that the model is acceptable in explaining the variation of dependent variables namely Using the ANOVA regression, it can be said that this model is fit and appropriate in analysing the independent and dependent variables used in this study with 0.000 significance and with F value of 4.450.From the Coefficients, Table of regression, is used to find the positive and the negative impacts between the variable we conclude that the variable, Egg shell, Bottles, Plastic, container, Napkins, Glass Items, Packets, Any other waste these variable have negative relationship because of these variable which are stored in the dump place which makes the unpleasant odour.

The multiple regressions are

$$Y=5.257-0.55(X_1)+.264(X_2)+.162(X_3)+.087(X_4)+0.185(X_5)+.188(X_6)+.030(X_7)$$

Table 1: Correlation of Disposal Behaviour

Correlations

		Behaviours of waste collecting workers	Periodicity of collection of waste	Provisions of community bins at locality	Picking plastic waste to sell for recycling can help to manage waste	Putting wastes into garbage bin is responsibility for everyone.	I will not allow the wastes to accumulate in one place	I will make waste to recycle.	I will not buy plastics	I will be one of the responsible for good environment
Behaviours of waste collecting workers	Pearson Correlation	1	1.000**	1.000**	.226**	.159**	.014	.145**	.009	.072
	Sig. (2-tailed)		.000	.000	.000	.001	.779	.004	.861	.149
	N	400	400	400	400	400	400	400	400	400
Periodicity of collection of waste	Pearson Correlation	1.000**	1	-1.000**	.226**	.159**	.014	-.145**	-.009	-.072
	Sig. (2-tailed)	.000		.000	.000	.001	.779	.004	.861	.149
	N	400	400	400	400	400	400	400	400	400
Provisions of community bins at locality	Pearson Correlation	1.000**	-1.000**	1	-.226**	-.159**	-.014	.145**	.009	.072
	Sig. (2-tailed)	.000	.000		.000	.001	.779	.004	.861	.149
	N	400	400	400	400	400	400	400	400	400
Picking plastic waste to sell for recycling can help to manage waste	Pearson Correlation	.226**	.226**	-.226**	1	.356**	.032	-.031	-.042	-.135**
	Sig. (2-tailed)	.000	.000	.000		.000	.523	.540	.404	.007
	N	400	400	400	400	400	400	400	400	400
Putting wastes into garbage bin is responsibility for everyone.	Pearson Correlation	.159**	.159**	-.159**	.356**	1	.014	.050	.135**	-.036
	Sig. (2-tailed)	.001	.001	.001	.000		.787	.323	.007	.477
	N	400	400	400	400	400	400	400	400	400
We won't allow the wastes to accumulate in one place	Pearson Correlation	.014	.014	-.014	.032	.014	1	.276**	.299**	.305**
	Sig. (2-tailed)	.779	.779	.779	.523	.787		.000	.000	.000
	N	400	400	400	400	400	400	400	400	400
We will allow waste to recycle.	Pearson Correlation	.145**	-.145**	.145**	-.031	.050	.276**	1	.258**	.317**
	Sig. (2-tailed)	.004	.004	.004	.540	.323	.000		.000	.000
	N	400	400	400	400	400	400	400	400	400
We will not purchase practice	Pearson Correlation	.009	-.009	.009	-.042	.135**	.299**	.258**	1	.267**
	Sig. (2-tailed)	.861	.861	.861	.404	.007	.000	.000		.000

	N	400	400	400	400	400	400	400	400	400
Responsible for good environment	Pearson Correlation	.072	-.072	.072	-.135**	-.036	.305**	.317**	.267**	1
	Sig. (2-tailed)	.149	.149	.149	.007	.477	.000	.000	.000	
	N	400	400	400	400	400	400	400	400	400
**. Correlation is significant at the 0.01 level (2-tailed).										

Table 2: Regression table for Disposal Behaviour

Model summary		**Anova Table**	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
R=8.67 R^2=.718		F=10.824 Sig=.000	B	Std. Error	Beta		
1	(Constant)		4.955	.428		11.572	.000
	Surroundings become unhygienic		.523	.099	-.093	-1.638	.102
	Provision for waste collection		.115	.092	.066	1.249	.212
	Picking plastic waste to sell for recycling can help to manage waste		-.274	.106	-.160	-2.585	.010
	Reusing plastic bags for shopping is good for waste reduction.		-.022	.099	-.012	-.226	.821
	Putting wastes into garbage bin is responsibility for everyone.		.320	.097	-.186	-3.303	.001
	Picking up garbage around my places is my responsibility		-.202	.048	-.196	-4.204	.000
	I will not allow the wastes to accumulate in one place		-.010	.060	-.008	-.167	.867
	I will make waste to recycle.		-.126	.085	-.070	-1.482	.139
	I will not buy plastics		.250	.174	.066	1.434	.152
	I will be one of the responsible for good environment		-.187	.118	-.074	-1.593	.112
	I pick up garbage around my area, it's my responsibility		.000	.000	.000	.	.
a. Dependent Variable: Behaviours of waste collecting workers							

Table 3: Regression for problems faced with disposal behaviour of the solid waste

Model summary	**Anova Table**	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
R=.874 R^2 =.718	F value=4.450 Sig value=.000	B	Std. Error	Beta		
1	(Constant)	5.257	.212		24.805	.000
	Egg shell	055	.089	-.032	-.613	.540
	Bottles	.264	.088	-.159	-3.012	.003
	Plastic container	.162	.090	-.097	-1.802	.072
	Napkins	.087	.094	-.050	-.924	.356
	Glass Items	.185	.089	.109	2.073	.039
	Packets	.188	.096	-.100	-1.944	.053
	Any other waste	.030	.093	-.017	-.322	.747
a. Dependent Variable: Unpleasant odour						

Table 4: Correlations for the problems faced with disposal behaviour of the solid waste

		Unpleasant odour	Health problems	Raw foods	Vegetables peels	Food left overs	Fruit skin	Egg shell	Non-veg left over	Tea-Coffee powder	Paper bags	Bottles	Plastic container	Napkins	Disposal diapers	Glass Items	Packets	Any other waste
Unpleasant odour	Pearson Correlation	1	.261**	.116*	-.194**	-.153**	-.121*	-.075	.020	-.160**	-.077	-.194**	-.153**	-.121*	-.075	.020	-.160**	-.077
	Sig. (2-tailed)		.000	.020	.000	.002	.016	.133	.695	.001	.123	.000	.002	.016	.133	.695	.001	.123
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Health problems	Pearson Correlation	.261**	1	.070	-.052	-.055	-.023	-.021	-.060	-.079	.042	-.052	-.055	-.023	-.021	-.060	-.079	.042
	Sig. (2-tailed)	.000		.164	.301	.272	.645	.670	.229	.114	.397	.301	.272	.645	.670	.229	.114	.397
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Raw foods	Pearson Correlation	.116*	.070	1	-.062	-.049	.029	.059	.009	.006	-.011	-.062	-.049	.029	.059	.009	.006	-.011
	Sig. (2-tailed)	.020	.164		.214	.327	.563	.237	.856	.910	.831	.214	.327	.563	.237	.856	.910	.831
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Vegetables peels	Pearson Correlation	-.194**	-.052	-.062	1	.192**	.297**	.125*	.214**	.170**	.247**	1.000**	.192**	.297**	.125*	.214**	.170**	.247**
	Sig. (2-tailed)	.000	.301	.214		.000	.000	.013	.000	.001	.000	.000	.000	.000	.013	.000	.001	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Food left overs	Pearson Correlation	-.153**	-.055	-.049	.192**	1	.287**	.252**	.230**	.271**	.083	.192**	1.000**	.287**	.252**	.230**	.271**	.083
	Sig. (2-tailed)	.002	.272	.327	.000		.000	.000	.000	.000	.099	.000	.000	.000	.000	.000	.000	.099
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Fruit skin	Pearson Correlation	-.121*	-.023	.029	.297**	.287**	1	.120*	.269**	.184**	.174**	.297**	.287**	1.000**	.120*	.269**	.184**	.174**
	Sig. (2-tailed)	.016	.645	.563	.000	.000		.016	.000	.000	.000	.000	.000	.000	.016	.000	.000	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400

Egg shell	Pearson Correlation	-.075	-.021	.059	.125*	.252**	.120*	1	.237**	.160**	.183**	.125*	.252**	.120*	1.000**	.237**	.160**	.183**
	Sig. (2-tailed)	.133	.670	.237	.013	.000	.016		.000	.001	.000	.013	.000	.016	.000	.000	.001	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Non-veg left over	Pearson Correlation	.020	-.060	.009	.214**	.230**	.269**	.237**	1	.095	.140**	.214**	.230**	.269**	.237**	1.000**	.095	.140**
	Sig. (2-tailed)	.695	.229	.856	.000	.000	.000	.000		.057	.005	.000	.000	.000	.000	.000	.057	.005
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Tea-Coffee powder	Pearson Correlation	-.160**	-.079	.006	.170**	.271**	.184**	.160**	.095	1	.141**	.170**	.271**	.184**	.160**	.095	1.000**	.141**
	Sig. (2-tailed)	.001	.114	.910	.001	.000	.000	.001	.057		.005	.001	.000	.000	.001	.057	.000	.005
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Paper bags	Pearson Correlation	-.077	.042	-.011	.247**	.083	.174**	.183**	.140**	.141**	1	.247**	.083	.174**	.183**	.140**	.141**	1.000**
	Sig. (2-tailed)	.123	.397	.831	.000	.099	.000	.000	.005	.005		.000	.099	.000	.000	.005	.005	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Bottles	Pearson Correlation	-.194**	-.052	-.062	1.000**	.192**	.297**	.125*	.214**	.170**	.247**	1	.192**	.297**	.125*	.214**	.170**	.247**
	Sig. (2-tailed)	.000	.301	.214	.000	.000	.000	.013	.000	.001	.000		.000	.000	.013	.000	.001	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Plastic container	Pearson Correlation	-.153**	-.055	-.049	.192**	1.000**	.287**	.252**	.230**	.271**	.083	.192**	1	.287**	.252**	.230**	.271**	.083
	Sig. (2-tailed)	.002	.272	.327	.000	.000	.000	.000	.000	.000	.099	.000		.000	.000	.000	.000	.099
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Napkins	Pearson Correlation	-.121*	-.023	.029	.297**	.287**	1.000**	.120*	.269**	.184**	.174**	.297**	.287**	1	.120*	.269**	.184**	.174**
	Sig. (2-tailed)	.016	.645	.563	.000	.000	.000	.016	.000	.000	.000	.000	.000		.016	.000	.000	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Disposal diapers	Pearson Correlation	-.075	-.021	.059	.125*	.252**	.120*	1.000**	.237**	.160**	.183**	.125*	.252**	.120*	1	.237**	.160**	.183**
	Sig. (2-tailed)	.133	.670	.237	.013	.000	.016	.000	.000	.001	.000	.013	.000	.016		.000	.001	.000
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Glass Items	Pearson Correlation	.020	-.060	.009	.214**	.230**	.269**	.237**	1.000**	.095	.140**	.214**	.230**	.269**	.237**	1	.095	.140**
	Sig. (2-tailed)	.695	.229	.856	.000	.000	.000	.000	.000	.057	.005	.000	.000	.000	.000		.057	.005
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Packets	Pearson Correlation	-.160**	-.079	.006	.170**	.271**	.184**	.160**	.095	1.000**	.141**	.170**	.271**	.184**	.160**	.095	1	.141**
	Sig. (2-tailed)	.001	.114	.910	.001	.000	.000	.001	.057	.000	.005	.001	.000	.000	.001	.057		.005
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Any other waste	Pearson Correlation	-.077	.042	-.011	.247**	.083	.174**	.183**	.140**	.141**	1.000**	.247**	.083	.174**	.183**	.140**	.141**	1
	Sig. (2-tailed)	.123	.397	.831	.000	.099	.000	.000	.005	.005	.000	.000	.099	.000	.000	.005	.005	
	N	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Conclusion

Proper education of the public, the provision of more communal trash bins and the collection of waste by private contractors could help prevent exposing the public in municipalities to diseases. The disposal of waste from the kitchen like egg shells and other waste should be disposed properly and prevent these waste things from decayed. Soil, water and air pollution can all be a result of improper waste disposal and occurs when either of them becomes contaminated with hazardous materials. Not only does this contribute to the creation of a greenhouse gas effects but also causes significant harm to marine and wildlife. The improper waste affects the health of human being it affects the water bodies since the water is an excellent solvent; it can contain numerous dissolved chemicals. As a result, while moving through, water picks up pollution along the way. It often has dissolved substances like various chemicals and gases. Rainfall easily mixes to toxic liquid substances and seeps into the water streams to end up in nearby water bodies. Thus, the neighbourhood fountain, pond, lake or even drinking water taps are susceptible to the dangers of contamination. The behaviour of the people should be changed, we should make sure that the each and every one should dispose the waste properly into the garbage we should make some penalty if they didn't obey the rules and regulations. Government should take necessary steps in disposal of waste management. Some educational class or program should be conducted to the uneducated people regarding the waste disposal and the harmful effects of disposal of waste

Conflict of Interest

Authors declare no any conflict of interest regarding this research work.

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