International Journal of Social Sciences: Current and Future Research Trends (IJSSCFRT)
ISSN: 2790-4008

https://ijsscfrtjournal.isrra.org/index.php/Social_Science_Journal

Analyzing People's Behavior and Knowledge Towards Waste Minimization in Lahore, Pakistan

Samina Bilal[a*], Amna Rana[b], Ayesha Baig[c], Zeba Haseeb[d]

[a]*National Transmission & Despatch Company (NTDC), WAPDA House, Lahore, Pakistan*
[a,b,d]*College of Earth and Environmental Sciences, University of Punjab, Lahore (54000), Pakistan*
[c]*Lahore College of Arts and Science, Johar Town, Lahore (54000), Pakistan*
[a]*Email: samina.ntdc@gmail.com , Samina.bilal@ntdc.com.pk*
[b]*Email: amnar0331@gmail.com*
[c]*Email: ayeshabaig004@gmail.com*
[d]*Email: zebahaseeb27@gmail.com*

Abstract

In today's modern world, solid waste management (SWM) is one of the most challenging and daunting issues, mostly faced by Asian countries. This encompasses two major reasons such as urbanization and change of living patterns, which have witnessed serious ramifications pertaining to its management. In Pakistan, irregular collection, open dumping particularly at domestic level reflect the dismal image of the cities owing to lack of capacity and awareness level of public. The current study was designed to assess the awareness, knowledge, behavior and attitude of the respondents of Lahore in terms of SWM. Statistical research findings demonstrated that behavior and knowledge of people played pivotal role in waste minimization; for instance, 77% of respondents were found to be well aware of health risk from waste burning, 85% had knowledge of diseases due to improper storage or disposal of waste. It was also observed that well-informed people were willing to pay for effective cleaning mechanism and waste management practices. Therefore, it is highly suggested to create awareness among people and encourage them to cooperate with concerned authorities to ascertain effective waste management practices.

Keywords: Awareness; Environment Lahore; Public participation; Solid Waste Management.

1. Introduction

Any useless and discarded material arising from domestic, industrial and commercial activities are termed as solid waste [1]. The perception regarding solid waste as it being a threat to the environment only is wrong, for it equally puts the economy of a country at great peril [2]. In larger and developed cities, solid waste management is one of the major environmental issues because its generation cannot be avoided altogether.

---

* Corresponding author.

It becomes more problematic because the mechanism of solid waste management in developing countries remain a highly neglected area. This issue initially did not cause problems to a threatening extent, but with the passage of time it has turned into an extremely worrisome nuisance for the man-kind and earth due to industrial revolution, population growth and advancement in technology [3,4,5,6].

The countries with lower GDP produce less quantity of waste [7]. Solid waste management in low-income countries is often ignored by local authorities [8, 4, 9]. Hence, there is no proper mechanism for proper collection, transfer, disposal and recycling of waste [10, 11, 12, 13] because of various hurdles for sustainable waste management [14]. In terms of examination on recycling attitudes and inspirations, the logistics literature is still deficient in the psychologist and behaviorist approach of the masses[15].

The composition of the waste is not easy to determine because of its heterogeneity over time due to seasonal variation [16]. In Palestine, average waste generation is about 0.82 kg/person/day [17,10]. The most commonly generated waste is in the form of organic fruits and vegetables (65.1%), paper (9.1%) and plastic (7.6%). Besides, average recyclable and compostable waste consists of 87.5% approximately.

The composition of solid waste consists of organics (71.4%), paper (6.7%), plastic (7.8%), glass (0.7%), clothes (1.3%) and others (12.1%) [18].

Now-a-days, environmental issues have taken the limelight throughout the world as people are more aware about diversity of problems like global warming, air, water and soil pollution [19]. Recycling patterns were observed in Rajshahi city by the help of a survey in Bangladesh. Almost 1906 people were engaged in recycling activities in the city. Additionally, major proportion of waste like iron, paper and glass were used to produce new products whereas only small fraction of plastic was processed to create bottle caps and pots. However, recycling and reuse schemes were seen in different parts of the country that would definitely give rise to long term benefits to environment and humans [20, 21]. It is vital to investigate the role of mass media in community awareness about domestic waste management in Lahore, Pakistan [22].

2. Methodology

2.1. Study Area

The Lahore city, a capital of Punjab province, was selected as a study area for assessing the knowledge and awareness level of its citizens in relation to Solid Waste Management (SWM). The city has about 15 million population that generates about 5500 tons of solid waste with 0.67kg of waste/person/day.

2.2. Research Methodology

To assess different parameters, Lahore city was first divided into three strata with respect to living standards and income level i.e. High-income areas (HIA), Middle-income areas (MIA) and Lower income areas (LIA). The population groups of study areas were selected by using *Simple Random Sampling* technique. From each income areas, 100 households were selected for interview that made a total of 300 responses. In each income area, door-

to-door visits were arranged to collect desired information.

2.3. Surveying Questionnaire

For systematically examining the selected community knowledge followed by their awareness status towards SWM practices, a semi-structured questionnaire was devised. In the light of questionnaire, the data was collected through interviews and organized by Slovin's Formula as shown below, which works for simple random sampling in order to obtain reliable results.

n = N/ 1+ N (e) 2

Where:

n = size of the sample

N = total population of selected Areas,

e = accepted margin of error in the estimates

2.4. Statistical Analysis

Descriptive statistics and Pearson Chi-square were used for analysis of data with the help of Statistical Package for Social Sciences (SPSS v.16).

3. Results and Discussion

3.1. Residential Survey

Survey was conducted through face to face interviews of the residents of Lahore city with the help of questionnaires prepared for this purpose. It was found through statistical analysis that 72% males and 28% females responded throughout the survey.

3.2. Willingness for Solid Waste Education

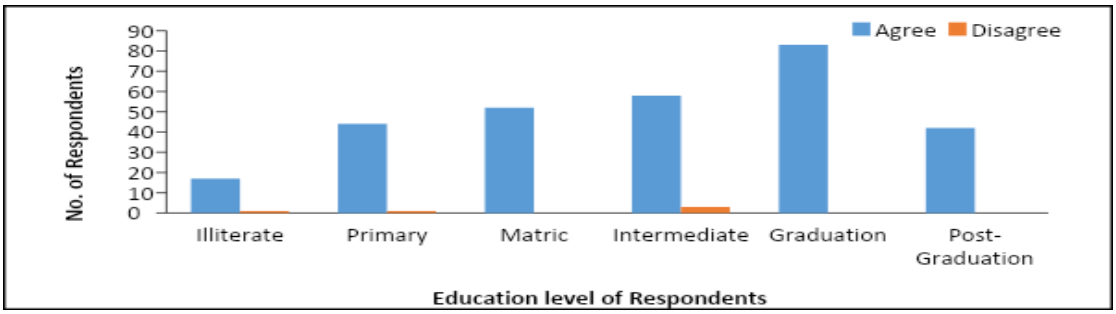

Figure 1: Education level of the respondents with willingness for solid waste

Majority of the respondents during the survey were found to be in favor of solid waste education as shown in Figure 1. People were well aware about the importance of waste management and its health implications. They showed willingness to get education and awareness in order to alleviate waste management problems. Statistical results ascertained positive association (P-value=0.016) in order to get necessary solid waste education and awareness. Therefore, the education level of the respondents was positively associated with willingness for SW education as 75% came up with a positive response. However, 24% respondents were reluctant to have education and had no prior knowledge about waste issues.

3.3. Education Level of Respondents at School Level

When they were asked about education for effective solid waste management from school level, the majority of them, 99% of the respondents, were willing to encompass solid waste education at school level (Figure 2). It is said that, there is a dire need to contrive a strategy that ensures awareness sessions at community level on regular intervals. Secondly, concerned authorities must be engaged to make solid waste or environmental education a part of curriculum. This would surely witness fruitful results.

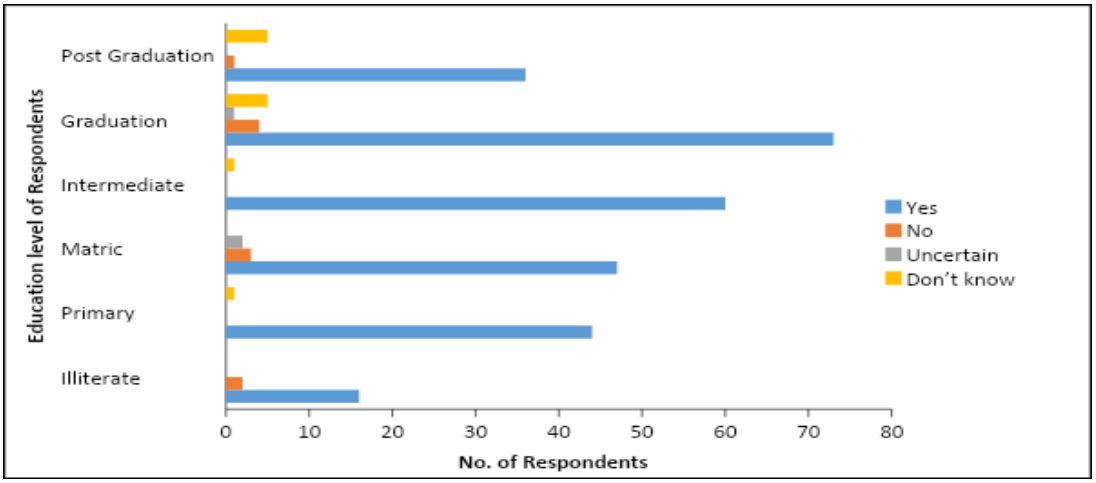

Figure 2: Education level of the respondents with environmental education from school level

3.4. Willingness to Pay (WTP) for Recycling

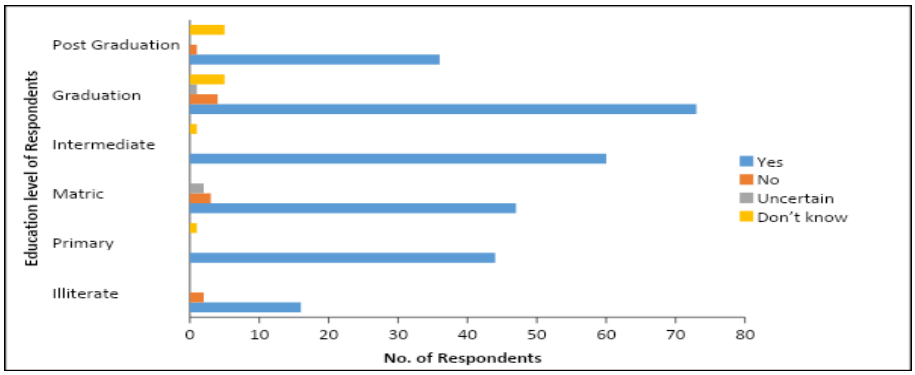

Figure 3: Education level of the respondents with WTP for recycling

Sustainable solid waste management practices are essential to cope with waste related issues or to keep the environment clean, healthy and green. Hence, respondents were asked whether they would pay for recycling of their waste or not. Fortunately, most of them were concerned about the problems related to waste and found to be in favor of recycling of waste as depicted in Figure 3. Majority of respondents, about 77% showed greater interest towards recycling with P-value (0.002) that confirms the positive association of education with WTP for recycling.

3.5. Awareness and Knowledge about solid waste

Citizens of the respected areas were concerned about the diseases owing to uncollected solid waste but their reluctant approach did not compel them to take desired steps to overcome the threatening issue. Overall, they were found to be least bothered about managing their own waste. P-value=0.032 indicated positive correlation as 92% of the educated public had serious apprehensions about diseases due to uncollected solid waste as shown in Figure 4. Moreover, most of them were against open burning of waste and had serious concerns about this issue. Although education, social and electronic media played important role to create awareness among general public, there are still some gaps that need to be addressed at all through continuous awareness campaigns at grass root level that would be helpful to change their behavior and attitude pertaining to SWM practices.

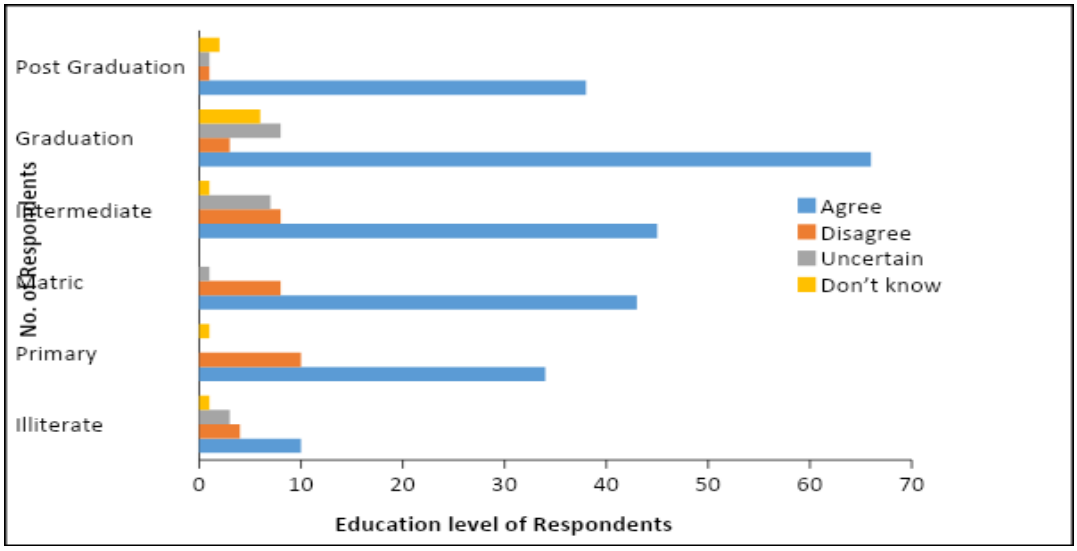

Figure 4: Education level of the respondents with diseases from waste burning

3.6. Thinking about Dumping

Open dumping of waste was observed as the common practice in the city as there were huge piles of waste found nearby on streets, roads, vacant plots and outside the container. Same trend was observed in all selected income areas of Lahore. However, education somewhat played a pivotal role to create awareness among people for perception regarding adequate disposal of waste as 42% of public considered dumping illegal and wrong practice, 31% considered it right and a good way while 21% were of the view that it is illegal but there is no other way around. Similarly, (P-value=0.006) showed positive correlation of education with thinking about

dumping as shown in Figure 5.

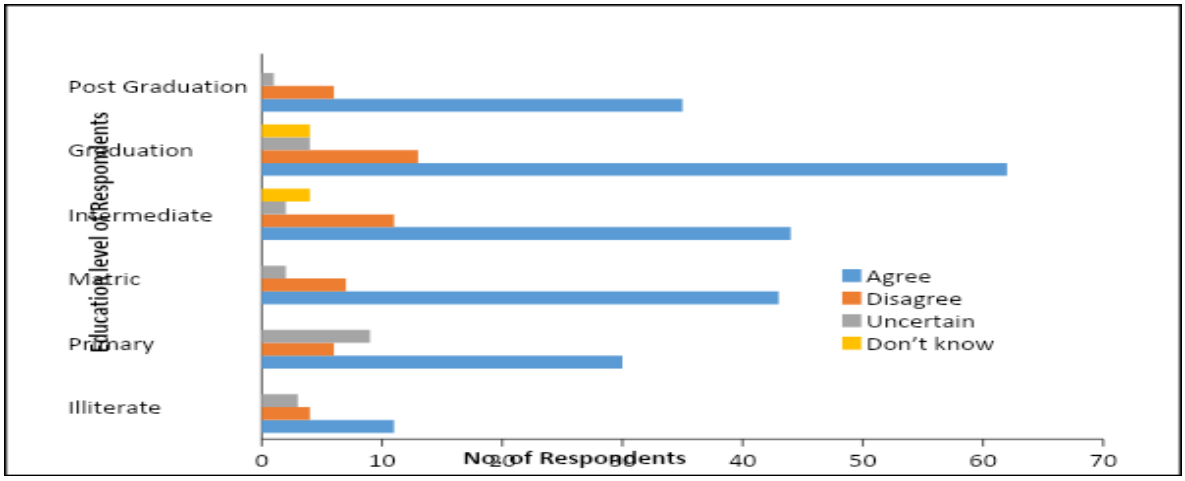

Figure 5: Education level of the respondents with thinking about dumping

3.7. Causes of Solid Waste

It was observed throughout the survey that people had some knowledge about the harsh and serious health consequences of waste that remains uncollected for a very long time. The only obstacle that made them reluctant was their attitude and behavior as they considered its collection and management as someone else's duty. According to them, the bad consumption patter at household level was the main reason of too much waste around. Among them, 36% of citizens were of the view that lack of management from people was the cause of this menace, 22% considered the government and concerned department were the main culprits while 15% believed that sanitary workers did not perform their duties as per requirement; hence, it witnessed heaps of waste in vicinity. The view of the people about too much waste is shown in Figure 6.

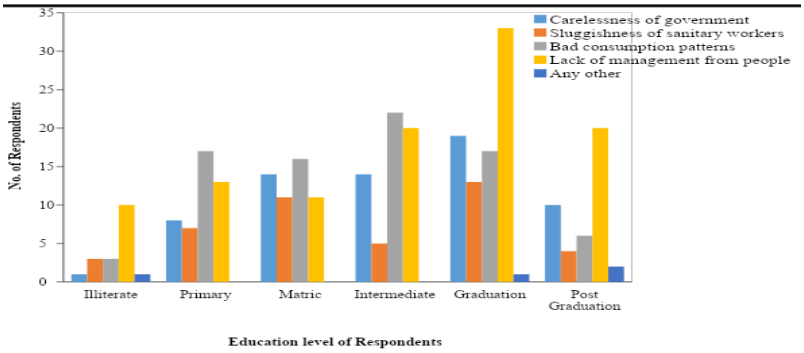

Figure 6: Education level of the respondents with cause of too much waste

4. Conclusion

This study ascertains that solid waste handling is an uphill task in selected income areas of Lahore. Population expansion and lack of collection mechanism have made it formidable and simultaneously aggravated the

situation. Citizens of different income levels were interviewed and it was found that education and awareness are pivotal to overcome this conundrum and manage waste efficiently. The major obstacle was the attitude of the respondents that seriously needed to be changed positively. Therefore, this study strongly recommends solid waste management at all levels along with frequent campaigns at regular intervals. It would surely reap desired results.

Acknowledgements

The authors would like to acknowledge the University of Punjab and their teachers for their support and guidance**.**

References

[1] Bhuiyan S. H. (2010): A crisis in governance: Urban solid waste management in Bangladesh. Habitat. Int. 34:125–133.

[2] Khoso A. R., Kaynat A., Mehgwar S. L. & Pathan A. A. (2017). Solid Waste Management: Practices and Problems of Hyderabad City. In Proceeding of the Seventh International Conference on Environmentally Sustainable Development. Pp. 26-28.

[3] Chung S.S. & Carlos L.W.H. (2008). Local waste management constraints and waste administrators in China. Waste. Manage. 28 (2): 272–281.

[4] Imam A., Mohammed B., Wilson D.C. & Cheeseman C.R. (2008). Solid waste management in Abuja, Niigeria. Waste. Manage. 28 (2): 468–472.

[5] Zhen-shan L., Lei Y., Xiao-Yan Q. & Yu-mei S. (2009). Municipal solid waste management in Beijing City. Waste. Manage. 29 (10): 2618–2624.

[6] Batool S.A. & Chaudhary M.N. (2009). Municipal solid waste management in Lahore city district, Pakistan. Waste. Manage. 29: 1971–1981.

[7]Shekdar A. (2009). International report: municipal solid waste management in Bosnia and Herzegovina with special reference to the Republika Srspska entity. Waste. Manag. Res.17: 59–64.

[8] Korfali S.I. & Jurdi M. (2007). Assessment of domestic water quality: case study, Beirut, Lebanon. Environ. Monit. Assess. 135: 241–251.

[9] Okumu O. J. & Nyenje, R. (2011). Municipal solid waste management under decentralisation in Uganda. Habitat. Int. 35 (4): 537–543.

[10] Al-Khatib I.A., Arafat H.A., Basheer T., Shawahneh H., Salahat A., Eid J. & Ali W. (2007). Trends and problems of solid waste management in developing countries: a case study in seven

Palestinian districts. Waste. Manage. 27 (12): 1910–1919

[11] Collivignarelli C., Sorlini S., Cavallari S. & Vaccari, M. (2007). Waste management and recovery in developing countries. Managing solid wastes in developing countries. CISA, Padova. Pp. 33-40.

[12] Oguntoyinbo O.O. (2012). Informal waste management system in Nigeria and barriers to an inclusive modern waste management system: A review. Public Health. 126 (5): 441–447.

[13] Vaccari M., Bella V.D., Vitali, F. & Collivignarelli C. (2013). From mixed to separate collection of solid waste: Benefits for the town of Zavidovic´ i (Bosnia and Herzegovina).Waste. Manage. 33:277–286.

[14] Ezeah C. & Roberts C.L. (2012). Analysis of barriers and success factors affecting the adoption of sustainable management of municipal solid waste in Nigeria. J. Environ. Manage.103: 9-14.

[15] Abbasi M. N. & Sheikh N. A. (2016). Attitudes and Motivations towards Plastics Recycling: A Multi-tier Supply Chain Approach. Pak. J. Soc. Sci. 36(2).

[16] Al-Khatib I.A., Monou M., Abu Zahra A.F., Shaheen H.Q. & Kassinos, D. (2010). Solid waste characterization, quantification and management practices in developing countries. A case study: Nablus district – Palestine. J. Environ. Manage. 91: 1131–1138.

[17] United Nations Environment Programme –UNEP. (2003). Desk Study on the Environment.

[18] Ababio M.O., Arguello J.E.M. & Gabbay O. (2013). Solid waste management in African cities: Sorting the facts from the fads in Accra, Ghana. Habitat. Int. 39: 96-104.

[19] Zaman A. & Lehmann S. (2011). Urban growth and waste management optimization towards 'zero waste city'. City. Cult. Soc. 2: 177–187.

[20] Bari Q. H., Moniruzzaman S. M. & Uddin M. A. (2009). Recycling of solid waste in Khulna city of Bangladesh. Scenario of solid waste management program of selected municipalities in Bangladesh. In Proceeding of the International Conference on Solid Waste Management, WasteSafe, KUET, Khulna, Bangladesh. Pp. 623-630.

[21] Bari Q.H., Hassan K.M. & Haque M.E. (2012). Solid waste recycling in Rajshahi city of Bangladesh. Waste. Manage. 32: 2029–2036

[22] Koser R. (2017). Role of mass media in public awareness about household waste management: A case study in Lahore, Pakistan (Master's thesis, Norwegian University of Life Sciences, Ås).