

## Awareness, Attitude and Practice of University Students Towards Household Waste Management in Kashmir Valley

Bilal Ahmad Bhat<sup>1</sup>, M. Ashraf Wani<sup>2</sup>, Samira Khan<sup>3</sup>, Nusrat<sup>2</sup>, Shayesta Rahi<sup>4</sup>, Munazah Yaqoob<sup>5</sup>, Intizar Ahmad<sup>6</sup>

### Abstract

Household waste is an environmental and public health problem, especially for the large cities in any country. People around the world are aware of the impact of improper waste disposal practices, but the negative attitude of implementation gives rise to chaotic situations. The aim of the present study is to know the awareness, attitude and practice of students towards household management in Kashmir valley. A well designed and validated questionnaire based on the literature available on the topic was used to collect the information from a sample of 400 students selected randomly from different Universities of Kashmir valley. The data collected was analyzed using appropriate statistical tools with the help of statistical software SPSS version 20. The results obtained from this study reveal that both students male as well as female are aware about household waste management. It is observed that shortage of storage bins, inefficient collection and large stray dog population has severely damaged the environmental condition of the valley. Further, acute absence of waste segregation at the source all types of materials are being disposed along with municipal solid waste which make waste handling very risky especially dumping and disposal points. The lack of governance, unplanned urban settlement and encroachments, inadequate infrastructures for waste collection, transportation and management are the major constrains in designing a suitable waste management plan for the valley. It is concluded that there is an urgent need of giving mass awareness of solid waste and e-waste disposal practices.

**Keywords:** Environment; Waste Management; Awareness; Practice; E-Waste; Kashmir.

### Introduction

The growing concern with environmental issues and their impact on general awareness is one of the most noticeable phenomena in recent years globally but the practices of basic concepts waste disposal are often neglected. 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 and it has no boundary.

There is a fundamental link between all natural elements and if a man abuses or exhausts one element, the natural world as a whole will suffer. Holy Prophet Muhammad (PBUH) acknowledges that God's knowledge and power covers everything. Therefore, abusing one of his creations, whether it is living being or a natural resource, is a sin. He (PBUH) considered all of God's creations to be equal before God and he believed animals, land, forests and water resources have rights. According to Holy Quran (4:126), "To Allah belongs all that is in the heavens and in the earth, for Allah encompasses everything". Recently, Bilal et al (2016) discussed attitude of students

<sup>1</sup>Division of Social Science, FoFy, <sup>2</sup>Division of Entomology, SKUAST-Kashmir, J&K. <sup>3</sup>Faculty of Music and Fine Arts <sup>4</sup>S.H. Institute of Islamic Studies, University of Kashmir, Srinagar, 190006, J&K. <sup>5</sup>Dept. of Business Administration, University of Dammam, Kingdom of Saudi Arabia. <sup>6</sup>Department of Obstetrics and Gynaecology, Lalla Ded Hospital, Government Medical College Srinagar, Kashmir, Jammu and Kashmir.

**Correspondence and Reprint Requests:** Bilal Ahmad Bhat, Scientist, Division of Social Science, Faculty of Fisheries, Rangil Ganderbal, SKUAST-Kashmir, J&K-191121 India.

E-mail: bhat\_bilal@rediffmail.com

Received: November 14, 2016 | Accepted: November 26, 2016

towards environmental awareness and protection in Kashmir valley. Around the world; efforts are being made to make people aware about environmental protection. One of the main causes of environmental degradation is improper management in the disposal of solid waste and it is observed as a major cause of pollution and outbreak of diseases in many parts of the world. There is no permanent solution for environmental problems but we can reduce and control waste generation by proper awareness and practice. Proper management of the waste generated is most important in this matter. Waste management is defined as a science that addresses the logistics, environmental impact, social responsibility and cost of an organizations' waste disposal. The proportion of different constituents of waste varies from season to season and place to place, depending on the lifestyle, food habits, standards of living, the extent of industrial and commercial activities in the area, etc (Katju, 2006). Solid wastes comprise all the wastes arising from human and animal activities that are normally solid, discarded as useless or unwanted. The solid waste generation sources are mainly residential, commercial slaughterhouses, institutions, organization like hospitals, hotels and restaurants, small scale industries, construction and demolition waste (debris) etc. Solid wastes are organic and inorganic waste materials produced by various activities of the society, which have lost their value to the first user. Improper transport and disposal of solid wastes pollutes all the vital components of the living environment (i.e., air, land and water) at local and global levels. There has been a significant increase in solid waste generation throughout valley in the last few decades. This is largely due to rapid population growth and economic development. Poor collection and inadequate transportation are responsible for the accumulation of solid waste at nearly every nook and corner of the valley. According to Tchobanoglous *et al* (1993), solid waste management may be defined as the discipline associated with the control of generation, storage, collection, transfer and transport, processing and disposal of wastes in a manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics, and other environmental considerations that are also responsive to public attitudes. Management of municipal solid waste continues to remain one of the most neglected areas of urban development in India and same is the case of Kashmir valley. Solid Waste Management (SWM) has 3 basic components namely collection, transportation and disposal. Comprehensive solid waste management incorporates a diverse range of activities including

reduction, recycling, segregation, modification, treatment and disposal which have varying levels of sophistication (Zagozewski et al, 2011). The objective of SWM is to reduce the quantity of solid waste disposed off on land by recovery of materials and energy from solid waste in a cost effective and environmental friendly manner (MF, 2009). It is estimated that 1, 60000 MT (Metric Tonne) of municipal solid waste is generated daily in India. According to the 2001 census, per capita waste generation in India is 0.5 Kg/day (Vinod & Venugopal, 2010). Waste management activities generate potential environmental benefits if managed properly (Gentil et al, 2009). There has been hardly any effort in the past to create community awareness, either about the likely perils due to poor waste management or the simple steps that every citizen can take. This could have helped in reducing waste generation and promote effective waste management. But this scenario has changed. Nowadays more and more people are taking interest in environmental issues, as they have started to experience the ill-effects of ecological issues. Now environmental education is welcomed by all categories of people. It is an attempt to reorient education so that environmental competence is restored as one of its basic aims along with personal and social competence (Shobeiri et al, 2007). Environmental problems are many. It is mounting high with new problems like disposal of e-waste. E-waste is a collective terminology for the entire stream of electronic equipment such as TV, refrigerators, telephones, air conditioners, computers, mobile phones etc. that has reached its End of Life (EOL) for its current user. Such devices are generally considered toxic when disassembled or incinerated and are typically targeted for hazardous disposal or are slated for necessary recovery and reuse (MF, 2009).



**Fig. 1:** E-waste e.g., TV, Radio, telephones, air conditioners, computers, mobile phones etc.

Most of the Bulk consumers, viz., Hospitals, Banks, Educational institutions and other Govt. Offices in

Kashmir valley are not aware of the disposal of E-waste. E-waste generation in the State of Jammu and Kashmir has been estimated to be approximately 3260.4 tons for the year 2012-13. Similarly, there is other threat to the environment, that is improper management of hospital waste. Hospitals and other health-care establishments have a "duty of care" for the environment and for public health, and have particular responsibilities in relation to the waste they produce. Today, hospitals/clinics use a wide variety of drugs including antibiotics, cytotoxics, corrosive chemicals, radioactive substances, which ultimately become part of hospital waste. The introduction of disposables in hospitals has brought in its wake many ills such as inappropriate recycling, unauthorized and illegal re-use, and an increase in the quantity of waste. There is an urgent need of proper segregation and disposal of biomedical waste. The hazards of waste disposal from hospitals/clinics can be divided into two main areas. First, there is a wider environmental burden of a variety of hazardous products and second, the more immediate risks of potentially infectious materials that can be countered by individuals handling the waste. There is an urgent need of proper segregation and disposal of biomedical waste (Figure 2).



Fig. 2: Improper Hospital Waste Disposal in Kashmir valley

The Ministry of Environment and Forests, Government of India has notified the new draft Bio-medical Waste (Management and Handling) Rules, 2011 under the Environment Protection Act, 1986 to replace the earlier Bio-medical Waste (Management and Handling) Rules, 1998 and amendments thereof. Unfortunately, we observe violation of these rules in our valley. Hygiene starts from home. Our household waste accounts for major amount of solid rubbish. Some are reusable and others non-reusable. All these constitute megatons of municipal wastes. If it is not properly disposed off, the consequences are dangerous (Yadav & Mishra, 2004). So there is an urgent need to streamline and sensitize young minds to the environmental problems and concerns. It is the education which makes human beings

knowledgeable to environment and problems related to it. Students must have awareness about environmental problems so that they can play their role very effectively in proper waste management (Tartiu, 2011). Hence this study was an attempt to know how far the students are aware and practicing proper waste management?

## Materials and Methods

A questionnaire was given to 400 students selected randomly from different Universities of Kashmir valley. The study was carried out at SKUAST-Kashmir, Kashmir university and Central University Kashmir in Kashmir valley. Purpose and method of the study undertaken was explained to the students to get their consent. The instrument of research was a validated self administered questionnaire based on literature available on the topic. The questionnaire was designed to assess students' knowledge, attitude and practice on waste management at home. The questionnaire besides basic information included ten questions related to awareness, five questions each regarding practice and attitude in waste management. The data collected was tabulated and analyzed using appropriate statistical tools using SPSS (version 20), p value less than 0.05 is considered as significant at 5% level of significance.

## Results and Discussion

The sample represented 200 (50%) male and 200 (50%) female students between the age group of 19-24 years. The data presented in **Table 1** presents the distribution of study population as per the characteristics Habitat, Family status, Family type and Family size. It is observed that majority of the respondents both male as well as female were from urban areas, from middle class families, nuclear type family and having family size 5-6 members. Statistically, non-significant difference was observed between the male and female student respondents ( $p > 0.05$ ).

The data presented in **Table 2**, reveals that statistically there is a non-significant association in awareness of household waste management issues and gender in all the items ( $p > 0.05$ ). It was observed that majority of the respondents both male as well as female never attended any awareness programme conducted by local authority or any institute regarding household management, were not aware of principle of waste management and do not know

the complications of improper waste management, do not know how to dispose the e-waste. Further, majority of the respondents male as well as female accepted that local authorities have a role to play in the management of household waste, know the effective mechanism for household waste management, know the complications of improper waste management, were not aware of disposal of e-

waste, agreed to have environmental topics in curriculum and were eager to know about environmental problems. Here, it is important to note that we have examined students irrespective of their subject. It is reported that e-waste is the fastest growing segment of the solid wastes in India (0.01-1%). This rate is growing at an alarming pace and a

**Table 1:** Characteristics of the studied population

Characteristics		Male Students (n1=200)		Female Students (n2=200)		Chi square	p-value
		No.	%	No.	%		
Habitat	Urban	121	60.5	134	67	1.828	>0.05
	Rural	79	39.5	66	33		
Family Status	Low	23	11.5	18	9	0.679	>0.05
	Middle	177	88.5	182	91		
	High	0	0	0	0		
Family Type	Joint	57	28.5	66	33	0.950	>0.05
	Nuclear	143	71.5	134	67		
Family Size	Up to 4	17	8.5	13	6.5	4.760	>0.05
	5-6	146	73	132	66		
	Above 6	37	18.5	55	27.5		

**Table 2:** Awareness of students towards household waste management

S. No.	Question Asked	Male		Female		Chi Square	P-value
		Yes (%)	No (%)	Yes (%)	No (%)		
01.	Did you ever attend any awareness programme conducted by local authority/Institute regarding house hold waste management?	12(6)	188(94)	10(5)	190(95)	0.192	>0.05
02.	Do you know the principle of waste minimization?	54(27)	146(73)	47(23.5)	153(76.5)	0.649	>0.05
03.	Do you think that local authorities have a role to play in the management of house hold waste ?	192(96)	8(4)	193(96.5)	7(3.5)	0.069	>0.05
04.	Do you know about segregation of waste?	62(31)	138(69)	67(33.5)	133(66.5)	0.286	>0.05
05.	Do you know the effective mechanism for house hold waste management?	106(53)	94(47)	98(49)	102(51)	0.64	>0.05
06.	Do you know the complications of improper waste management?	58(29)	142(71)	47(23.5)	153(76.5)	1.562	>0.05
07.	Are you aware of e-waste?	62(31)	138(69)	49(24.5)	151(75.5)	2.107	>0.05
08.	Do you know how to dispose the e-waste?	18(9)	182(91)	13(6.5)	187(93.5)	0.874	>0.05
09.	Do you have environmental topics in your curriculum?	114(57)	86(43)	103(51.5)	97(48.5)	1.218	>0.05
10.	Are you eager to know about environmental problems?	174(87)	26(13)	161(80.5)	39(19.5)	3.104	>0.05

high percentage of electronics are ending up in the waste stream releasing dangerous toxins into the environment. So it is the need of the time to review this serious situation. In India, approximately 95% of total E-waste management is done by informal/unorganized sector. No reliable figures are available

as yet to quantify the e-waste. In spite of the higher literacy rate and well developed educational systems and status in the J&K state, there is lack of practicing proper waste management among people of Kashmir, whether young or old. There is no difference in students' practice about waste management based



on type of family they belong. This shows the growing trend of negative attitude to social commitment which was existing since long back in joint families. Our study showed that there is a serious lack of awareness about e-wastes and its management among both the groups. In this era of cybernetics, young generation

is being influenced by cyberphilia. As a result, worldwide e-wastes are generated uncontrolled and unchecked. Chinese domestic e-waste stockpiles are approaching a peak (Liu et al, 2006) and as of March 2009, approximately 4, 00,000 tons of e-wastes are produced in India.



Fig. 3: Garbage on roadside in Kashmir valley

The data presented in **Table 3**, reveals that statistically there is a non-significant association in attitude of students towards minimizing household waste and gender in items (ii), (iii) and (iv) ( $p > 0.05$ ). Both groups male as well as female are committed to minimize the wastes, segregate household waste and to avoid throwing the wastes outside their premises ( $p < 0.01$  and  $p > 0.05$ , **Table 3**). Regarding practice of proper waste management, students male as well as female do not have proper ideas and practice of waste segregation, conversion of waste to kitchen compost ( $p > 0.05$ ). A large amount of solid wastes are generated from homes and its major source is Household waste. The quantity of solid waste grows faster than population and our results obtained in this study are in agreement with the earlier studies (Vinod & Venugopal, 2010). Solid waste disposal has been identified as a major cause of pollution and environmental threat globally and very specially to Kashmir valley, globally known as Paradise on earth. In spite of the higher literacy rate and well developed educational systems and status in the valley, there is lack of practicing proper waste management among people of the valley, whether young or old. The findings of our study have made it clear that students

are well aware of the importance of waste management. But they are lacking in the practice of proper waste management. This study findings support the studies conducted by Ifegbesan (2008). Further, we found that there are serious drawbacks in the practicing of proper waste management among students of Kashmir valley irrespective of gender. This may be due to insufficient motivation from parents and teachers at the stage of growth period when they were preoccupied with preparation of qualifying examinations for future studies. This study revealed a most noteworthy and an eye opening situation prevailing in families i.e., owing household wastes outside their premises. It is observed that 37% (male) and 39.5% (female) participants responded with the answer 'yes' when asked about throwing household waste outside home? It demands a major shift in people's selfish attitude, not concerned about the serious negative impact on a residential neighbourhood. It is an environmental abuse to be corrected at the earliest if we want to save the mother earth our valley. It is reported that students with better awareness towards social duty are more aware towards environmental awareness (Astalin, 2011).

Table 3: Attitude of study population towards minimizing the household waste

S. No.	Question Asked	Male		Female		Chi square	P-value
		Yes (%)	No (%)	Yes (%)	No (%)		
01.	Are you committed to minimize the waste?	146 (73)	54 (27)	121 (60.5)	79 (39.5)	7.040	<0.01
02.	Do you segregate house hold wastes?	102 (51)	98 (49)	93 (46.5)	107 (53.5)	0.81	>0.05
03.	Do you use kitchen waste as compost?	6 (3)	194 (97)	11 (5.5)	189 (94.5)	1.536	>0.05
04.	Do you throw your household waste outside your home?	74 (37)	126 (63)	79 (39.5)	121 (60.5)	0.265	>0.05
05.	Do you see garbage on roadside while coming to college/University?	194 (97)	6 (3)	183 (91.5)	17 (8.5)	5.582	<0.05

Another significant finding of our study is that 97% (male) and 91.5% (female) participants responded that they are seeing garbage on roadside (**Figure 3**) while coming to University from residence, which proves the filthiest condition of the roads and the severity of improper waste management.

The data presented in **Table 4**, reveals that statistically there is a non-significant association in attitude of students towards practice regarding minimizing household waste and gender in items (i) and (v) ( $p > 0.05$ ). However, statistically, there is a

significant difference between male and female respondents when question (ii), (iii) and (iv) was asked ( $p < 0.05$ ). A large amount of solid wastes are generated from homes. Household waste is a major source of solid waste. The quantity of solid waste grows faster than population (Vinod & Venugopal, 2010). We found that there are serious drawbacks in the practicing of proper waste management among students of Kashmir valley irrespective of gender. Everyone has to play an important role in minimizing household waste.

**Table 4:** Attitude of students towards practice of minimizing household waste

S. No.	Question Asked	Male		Female		Chi square	P-value
		Yes (%)	No (%)	Yes (%)	No (%)		
01.	Improper waste disposal is a threat to environment.	184 (92)	16 (8)	191 (95.5)	9 (4.5)	2.09	>0.05
02.	Household waste management is the sole responsibility of my parents.	116 (58)	84 (42)	85 (42.5)	115 (57.5)	9.61	<0.01
03.	Household waste disposal is the sole responsibility of the local authorities.	174 (72)	56 (28)	167 (83.5)	33 (16.5)	4.014	<0.05
04.	I am also responsible for the generation of house hold waste.	182 (91)	18 (9)	135 (67.5)	65 (32.5)	33.58	<0.05
05.	I also have a role to minimize the house hold waste.	188 (94)	12 (6)	191 (95.5)	9 (4.5)	0.452	>0.05



**Fig. 4:** Waste management in Kashmir University and around Dal Lake (Source: field work, 2016)

## Conclusion

This study conducted in Kashmir valley tries to look at the crucial aspect of household waste management awareness among university students. In conclusion giving social duty awareness along with waste management awareness may improve the practice of waste management. Awareness program of waste management is greatly needed for students as well as parents. This can be given in the schools/colleges during parent teacher meetings or in community based programs. For this purpose, education departments of the states/country can implement environmental education programs to the teachers at all levels of education. Whether students are from joint family or nuclear family there is no significant difference in their awareness, practice and

attitude ( $p > 0.05$ ). The findings of the present study have made it abundantly clear that waste management is a serious environmental problem in Kashmir valley, and students are aware of it.

Throwing household waste outside home is a selfish attitude and an environmental abuse which need to be corrected. With collective efforts from the part of government, educational institutions and NGOs, proper guidance can be given in this neglected area of waste management. It is the birth right of every citizen to live in a pollution free environment, to get good air to breathe and to have safe water to drink. As long as these basic rights are denied or a conducive atmosphere is not created, a nation cannot claim of its amazing and sustainable development. To conclude, the study throws a light on the existing knowledge, attitude and practice of the University students in Kashmir valley. All this means that we

have to look at our waste management holistically and draw up an integrated plan for sustainable waste management of our pristine valley. The most important returns of household waste management are; improvement in health, promotion of hygiene, contribution to conservation of resources. It may require the foundation of a board-based interagency committee included authorities to establish a mechanism for consensus on waste management issue. This study indicates that there is an urgent need to train the people in general regarding the same. The world belongs to all of us. We must co-operate and work together for a better world, a better future, and a better environment.

### Acknowledgement

The authors are thankful to the respondents and the students Mr. Inam and Miss Shazia who helped in data collection despite the continuous disturbance in Kashmir valley since last 4 months.

### References

1. Astalin, P.K. Environmental Awareness in Relation to Awareness towards Social Duty and Some Educational Factors affecting it among Higher Secondary Students. *Journal of Education and Practice*, 2011; 2(3):54-62.
2. Bhat Bilal A. et al. Environmental Awareness Among College Students Of Kashmir Valley In The State Of Jammu And Kashmir And Their Attitude Towards Environmental Education, *International Journal of Innovative Research and Review*, 2016; 4 (2):20-25.
3. Draft Bio-Medical Waste (Management and Handling) Rules, 2011.
4. <http://moef.nic.in/downloads/publicinformation/salient-features-draftbmwmh.pdf>
5. Gentil, E., Clavreul, J., and Christensen, T.H. Global warming factor of municipal solid waste management in Europe. *Journal of Waste Management and Research*, 2009; 27(9):850-860.
6. Ifegbesan, A. Exploring secondary school students' understanding and practices of waste management in Ogun State, Nigeria. *International Journal of Environment and Science Education*, 2010; 5(2):201-215.
7. Katju C. V. Solid Waste Management: World Bank, Report 1994, 2006. World Web Page: [www.devalt.org/newsletter/jun04/lead.htm](http://www.devalt.org/newsletter/jun04/lead.htm).
8. Liu, X., Tanaka, M., and Matsui, Y. Electrical and electronic waste management in China: progress and barriers to overcome. *Journal of Waste Management and Research*, 2006; 24:92-101.
9. Ministry of Finance (MF). Position Paper on the Solid Waste Management Sector in India. Department of Economic affairs, Ministry of Finance, Government of India. 2009.
10. Shobeiri, S.M., Omidvar, B., and Prahallada, N.N. A Comparative Study of Environmental Awareness among Secondary School Students in Iran and India. *Int. J. Environ. Res.*, 2007; 1(1):28-34.
11. Tartiu, V. Evaluation of attitudes and knowledge regarding municipal waste among students, Case study: Bucharest Academy of Economic studies. *J. Economica. Seria Management*, 2011; 14(1):263-276.
12. Tchobanoglous, G, Theisen, H and Vigil, S. *Integrated Solid Waste Management: Engineering Principle and Management Issue*. International Ed. McGraw - Hill Book Co. Singapore, 1993.p.12-43.
13. Vinod, A., and Venugopal, K. *Environmental Studies*. 1st ed. Calicut University Central Co-operative Stores, LTD No. 4347. 2010.
14. Yadav, P.R., and Mishra, S.R. *Human Ecology*. N. Delhi, Discovery Publishing House. 2004.
15. Zagozewski, R., Judd - Henry, I., Nilson, S., and Bharadwaj, L. Perspectives of past and present waste disposal practices: A community based participatory research project in three Saskatchewan first nations communities. *J. Environmental Health Insights*, 2011; 5:9-20.