

AWARENESS, APPROACH AND TRAINING OF STUDENTS IN COMMUNITY COLLEGE DAMMAM AND QATIEF REGARDING HOUSEHOLD WASTE MANAGEMENT

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ABSTRACT

The degradation of environment is a global concern and its protection has no confines. One of the main causes of environmental degradation is improper management in the handling of household waste and it has been observed to be one of the major causes of pollution and outbreak of diseases in many parts of the world i.e., household waste is a major environmental and public health problem, especially for the large cities in any country. Municipalities are governing MSW management in the KSA. The current MSW practices in the KSA are simple: collect and dump in landfill sites. The low cost of landfills limits the potential for large MSW recycling program. The only large-scale recycling system currently exists is the trash sorters collection of metals and cardboards from garbage containers. A few initiatives for MSW recycling are in place in the Eastern Province of Saudi Arabia. These initiatives are in small scale and their contributions are not well documented. The KSA currently generates about 14 million tons of MSW per year. The average daily per capita generation is estimated to about 1.2 to 1.4 kg. The landfill requirement is about 28 million cubic meter per year. KSA MSW wastes consists of 37% organic materials, 28.5% paper, 5.2% plastics, 8.3% mineral, 4.6% glass, 8% wood, 6.4% textile, and 2% others. This study was conducted to obtain baseline information about awareness of waste management practices among students from different community colleges of Eastern province in the city of Dammam and Qatif.

Keywords: *Environment, Waste Management, Awareness, Practice, Dammam, KSA.*

1. INTRODUCTION

The topic of environmental conservation has attained a highest importance in this era globally but the practices of basic concepts of waste management are often neglected. We are born from the earth, we return to the earth and are sustained by the earth. It is said that man is the product of his environment; hence the environment in which we live is of colossal importance and affects our lives directly. Proper management of solid waste generated is most important in this matter. Solid wastes are those 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 the city in the last few decades. This is largely due to rapid population growth and economic development. Municipalities are governing MSW management in the KSA. The current MSW practices in the KSA are simple: collect and dump in landfill sites. The low cost of landfills limits the potential for large MSW recycling program. The only large-scale recycling system currently exists is the trash sorters collection of metals and cardboards from garbage containers. A few initiatives for MSW recycling are in place in the Eastern Province of Saudi Arabia. These initiatives are in small scale and their contributions are not well documented. The KSA currently generates about 14 million tons of MSW per year. The average daily per capita generation is estimated to about 1.2 to 1.4 kg. The landfill requirement is about 28 million cubic meter per year. KSA MSW wastes consists of 37% organic materials, 28.5% paper, 5.2% plastics, 8.3% mineral, 4.6% glass, 8% wood, 6.4% textile, and 2% others. Management of municipal solid waste continues to remain one of the most neglected areas of urban development in Saudi Arabia and same is the case of Dammam and Qatif city 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. 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 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 14 Million tons of municipal solid waste is generated daily in Saudi Arabia. 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 matters. 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 capability (Shobeiri et al, 2007). Environmental problems are many and are mounting high by the day 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). 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. 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 are practicing proper waste management.

2. MATERIALS AND METHODS

A self-administered questionnaire was used to assess students' sources of knowledge, attitudes, and practices towards the solid waste problem. This cross sectional study was conducted using a well-designed and validated questionnaire, consisting of 200 students selected randomly from different community colleges of Imam Abdul Rehman Bin Faisal university Dammam. Purpose and method of the study undertaken was explained to the students to get their consent. The data collected from community college Dammam and Qatif in Dammam city was analyzed using appropriate statistical tools with the help of statistical software SPSS version 20.

3. RESULTS AND DISCUSSION

The sample represented 100 (50%) from Dammam and 100 (50%) from Qatif college between the age group of 19-24 years. The data presented in Table 1, shows 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 were from

middle class families, nuclear type family and having family size 5-6 members. Statistically, non-significant difference was observed between the students of two colleges ($p>0.05$).

Table 1: Characteristics of the studied population

Characteristics		Students from Dammam (n1=100)		Students from Qatif (n2=100)		Chisquare	p-value
		No.	%	No.	%		
Family Status	Low	17	17	11	11	1.737	>0.05
	Middle	73	73	76	76		
	High	10	10	13	13		
Family Type	Joint	23	23	27	27	0.427	>0.05
	Nuclear	77	77	73	73		
Family Size	Upto 4	12	12	10	10	0.833	>0.05
	5-6	55	55	51	51		
	Above 6	33	33	39	39		

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 male students were well aware of principles of waste minimization and the role of local authorities in waste management, segregation of wastes, effective mechanism for house hold waste management, complication of improper waste management and eager to know about environmental problems than the female students. However, both the groups lacked awareness about e-waste and its disposal. The reason may be as we have examined students irrespective of their subject and demographic background. 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 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 spite of the higher literacy rate and well developed educational systems and statuses in the state, there is lack of practicing proper waste management among people of Dammam, 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. 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 country India.

Table 2. Awareness of students towards household waste management

S.No.	Question Asked	Male		Female		Chisquare	P-value
		Yes	No	Yes	No		
01.	Did you ever attend any awareness programme conducted by local authority/ Institute regarding house hold waste management?	8	92	6	94	0.307	>0.05
02.	Do you know the principle of waste minimization?	22	78	29	71	1.290	>0.05
03.	Do you think that local authorities have a role to play in the management of house hold waste ?	89	11	91	9	0.222	>0.05
04.	Do you know about segregation of waste?	31	69	27	73	0.389	>0.05
05.	Do you know the effective mechanism for house hold waste management?	61	39	52	48	1.648	>0.05
06.	Do you know the complications of improper waste management?	38	62	28	72	2.614	>0.05
07.	Are you aware of e-waste?	45	55	33	67		>0.05
08.	Do you know how to dispose the e-waste?	15	85	11	89	0.707	>0.05
09.	Do you have environmental topics in your curriculum?	59	41	55	45	0.326	>0.05
10.	Are you eager to know about environmental problems?	84	16	82	18	0.142	>0.05



(Figures showing improper household waste management in Dammam city, KSA)

The data presented in Table 3, reveals that statistically there is a non-significant difference in attitude between the students of two colleges towards minimizing household waste and gender in all the items ($p>0.05$). Both groups are committed to minimize the wastes and to avoid throwing the wastes outside their premises ($p>0.05$). Regarding practice of proper waste management, students of both colleges do not have proper ideas and practice of waste segregation, conversion of waste to kitchen compost ($p>0.05$). Towards attitude, both student groups have responded positively for minimizing the house hold waste ($p>0.05$). A good 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 conducted in other parts of the world (Vinod & Venugopal, 2010). It has been noticed that solid waste disposal has been identified as a major cause of pollution and environmental threat globally. In spite of the rising literacy rate and well developed educational systems and statuses in the city, there is lack of practicing proper waste management among the people, 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. The findings of our study support the study conducted by Ifegbesan (2010). Further, we found that there are serious drawbacks in the practicing of proper waste management among students of Dammam city 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 11.5% 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 that ought to be corrected at the earliest if we want to save the mother earth. It is reported that students with better awareness towards social duty are more conscious towards environmental awareness (Astalin, 2011). Another significant finding of our study is that 27.5% participants responded told that they are seeing garbage on roadside while coming to University. It is suggested, we keep our environment clean as it is our religious duty to keep our body, areas, and the surroundings clean. Islam considers the citizens to be responsible for any damage done on earth. Holy Quran says, “*And do no mischief on the earth after it has been set in order: that will be best for you, if ye have Faith*” (Surat Al A’raf, ‘the Heights’, verse 85)

Table 3. Attitude of students towards minimizing the household waste

Statement(s)	Dammam		Qatif		X ²	P-value
	Yes	No	Yes	No		
1. Are you committed to minimize the waste?	81	19	85	15	0.567	>0.05
2. Do you segregate house hold wastes?	63	37	71	29	1.447	>0.05
3. Do you use kitchen waste as compost?	21	79	13	87	2.268	>0.05
4. Do you throw your household waste outside your home?	14	86	09	91	1.229	>0.05
5. Do you see garbage on roadside while coming to college/University?	31	69	24	76	1.229	>0.05

4. CONCLUSION

The results obtained from this study show that students understudy are apprised of household waste management. Our study reveals that due to lack of funding and unscientific management, the existing waste management system in Eastern Province is not working successfully. It is observed that the shortage of storage bins, lack of environmental awareness programmes and trainings has severely damaged the environmental condition of the city. Further, due to acute absence of waste segregation at the source, all types of materials are disposed along

with municipal solid waste which makes waste handling very risky, especially at dumping and disposal points. The lack of governance and inadequate infrastructure for waste collection, transportation and disposition are the major constraints in designing a suitable waste management plan for the city. Apart from that, unplanned urban settlements and encroachments are also responsible for poor waste collection and disposal system. The study reveals that the awareness of e-waste disposal is lacking and necessitates an urgent need to rectify this gap in knowledge and practice by spreading mass awareness of the impact of waste disposal practices from the beginning of school education. Committed environmental education will inculcate a proper and appropriate environmental culture in the students. Waste management is an integral part of the environment, planning and development of the urban infrastructure to ensure a safe and healthy human environment, while considering the promotion of sustainable economic growth. The study examined the attitudes and behaviour and practice concerning solid waste management (SWM) among 5 and 6 Level students of Associate Diploma in Business Administration. So giving social duty awareness along with waste management awareness may improve the practice of Solid waste management. Awareness program of waste management is greatly needed for students as well as for general public. The respondents' show high level of behaviour and practice that they engage in waste management. This is because they value cleanliness and want to alleviate the possible disease occurrences. However, it is apparent that there is the necessity to develop student's attitudes and willingness to reduce problems related to SWM. 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 achieve this, we suggest that a carefully thought-out waste education and awareness strategy should be developed in order to change students' habits and behaviour and traditions. We also propose that waste management education must be given in educational institutions during academic programmes and also be graded in community services. It may require the foundation of a board-based interagency committee included authorities to establish a mechanism for consensus on waste management issue.

ACKNOWLEDGEMENT

We would like to thank Students of **Imam Abdul Rehman Bin Faisal University** of Kingdom of Saudi Arabia eastern Province Dammam for actively participating in this research.

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