JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Gain in knowledge of the scrap collectors about the segregation and safety.

[1]Dr. Sushmita Devi

Department of Family Resource Management,

I.C. College of Home Science, CCSHAU, Hisar, Haryana

[2]Dr. Binoo Sehgal

Professor, Department of Family Resource Management,

I.C. College of Home Science, CCSHAU, Hisar, Haryana

Abstract:

Economic development, urbanization and improved living standards in cities contribute to an increase in the quantity and quality of waste/scrap generated by people. Scrap collectors, commonly called *kabadiwalas / raddiwalas* come to the doorstep of homes, purchase high value recyclable waste / scrap and sell large quantities of well-sorted clean material at a higher price to a scrap trader who sells it to the recycling plants. Current paper covered the knowledge of the respondents regarding segregation, safety and assessment the knowledge after imparting information. The sample comprised of 100 scrap collectors who were randomly selected from four districts of Haryana state i.e. Hisar, Fatehabad, Bhiwani, and Charkhi Dadri. The results reveal that majority of the scrap collectors (43.00 %) were between 30-35 years of age, were married (66.00 %), were educated up to primary class (55.00 %), were illiterate (24.00 %), belonged to schedule caste (90.00 %). It was further found that majority of the respondents (41.00 %) were collecting scrap for the last 10-15 years followed by group (37.00 %) who are working as scrap collectors for the last 5 to 10 years and (12.00 %) of the respondents working from last 15-20 years as scrap collectors. Research showed gain in knowledge regarding different aspect

like knowledge about different color of dustbin, hazardous waste, ill-effects, harms, disposal of hazardous waste and knowledge about safety measures.

Key words: scrap, knowledge, hazardous, scrap collector, segregation, safety

Introduction:

Great potential exists in the scrap metal industry but hazardous material present in scrap causes tremendous health and safety risks like animal carcasses, needles and sharp material objects and above all diseases transmitted by vermin like tuberculosis, asthma, pneumonia etc. The scrap collector tends to have low social status and face public ridicule, harassment and occasionally violence. It has been shown that scrap metal processing could release heavy metals into the environment from metal smelting and refining industries as well as burning of waste containing these elements. A classic example is radioactivity in scrap (Kimani, 2007).

Scrap or waste collectors of India, the unsung environmental heroes collect scrap/ waste from individual households, sort and process the scrap, and sell the materials to larger recyclers for very small amounts of money (Drake, 2018).

Objectives of the study:

1. To study the knowledge of the respondents regarding segregation and safety.
2. To assess the gain in knowledge among scrap collectors.

Methodology:

To examine objectives 1 and 2, the study was conducted in four districts of Haryana state i.e., Hisar, Fatehabad, Bhiwani and Dadri which were selected randomly (out of total 22 districts of Haryana) so as to have a heterogeneous group of respondents. The sample comprised of 100 scrap collectors from four districts who were selected by snow ball technique (25 respondents from each district) who were found to be having low to medium pre-exposure knowledge and were interested and willing to cooperate for undergoing the study.

Tools and techniques of data collection:

Data were collected through a well-structured and pretested interview schedule, comprising of different sections. To assist the knowledge of scrap collectors, pre-knowledge was assessed of 100 scrap collectors regarding different aspects of scrap collection was studied with the help of interview schedule and simultaneously

knowledge was imparted to them on these aspects. After a period of one month, knowledge on these aspects was again studied and gain in knowledge of these 100 respondents was assessed.

Booklet covers knowledge about the following different aspects of scrap management:

- Knowledge about color of dustbins for segregation
- Knowledge about hazardous waste
- Knowledge about safety aids to be used to handle and segregate hazardous and other scrap

Plate 1: Imparting knowledge to the respondents with the help of booklet

After a period of one-month, post-exposure knowledge of these respondents was studied and gain in knowledge was assessed.

Results:

Table 1. Background profile of the respondents (n=100)

Sr. No.	Personal and demographic variables	f (%)
1.	**Age (in years)**	
	15-29	37.00
	30-45	43.00
	46-60	20.00
2.	**Education**	
	Illiterate	24.00

	Up to primary class	55.00
	Up to Middle class	21.00

Table 2. Period/ years of respondents engaged in scrap collection (n=100)

Sr. No.	Period (years)	f (%)
1.	<5	10.00
2.	5-10	37.00
3.	10-15	41.00
4.	15-20	12.00

Table 3. Method of collection and segregation of all type of scrap by the respondents (n=100)

Sr. No.	Method of collection and segregation	f (%)
1.	*Bare hands for collection and segregation of scrap	100.00
2.	*Use any tool for segregation of scrap	62.00

*Multiple responses

Table 3 shows that all the respondents used bare hands for collection of all types of scrap and 62.00 percent of the respondents used any tool for segregation of scrap.

Table 4. Disposal of hazardous waste (collected by mistake) (n=100)

Sr. No.	Disposal of hazardous scrap	f (%)
1.	Throw anywhere	91.00

2.	Throw in any municipality dustbin *	06.00
3.	Bury in earth	03.00

*Black dustbin (meant for hazardous waste) is not provided by the municipal committee.

Table 4 states that 91.00 percent of the respondents were throwing hazardous scrap (collected by them by mistake) anywhere, while 6.00 percent threw it in any municipal dustbin and only 3.00 percent buried the hazardous waste in earth.

Gain in knowledge of the respondents and 'z' value

Table 5 reveals the pre and post-knowledge and gain in knowledge of the respondents. Table shows that the maximum gain in knowledge regarding colour of dustbin for segregation was found in "black dustbin (for hazardous waste)" (MS=0.70) which was statically highly significant ('z'=15.19**) followed by gain in knowledge about "green" and "blue" dustbins (MS=0.60, 'z'=12.18**). Least gain in knowledge was about "yellow" dustbin (MS=0.57).

Maximum gain in knowledge regarding "knowledge about what is included under hazardous waste" was found in case of "cells" (MS=0.72) ('z'=15.95) and empty containers of "paints" (MS=0.60, 'z'=12.18**) followed by "bulbs, LED, CFLs, Tube lights" (MS=0.50), "battery" (MS=0.43), "medicines (expired tablets)" (MS=0.40), empty containers of "sprays, cleaners/ thinners" (MS=0.30, 'z'=6.51**). There is less gain in knowledge regarding "thermometers" and empty containers of fertilizers (MS=0.27, 'z'=6.05**), "medicines" (WMS=0.17, 'z'=4.50**) "empty containers of insecticides/ pesticides" (MS=0.10, 'z'=3.31**); there was no gain in knowledge in case of empty containers of "acid" because they all were already aware of it.

Regarding ill-effects/ harm caused during collection of scrap, maximum gain in knowledge was about burn (MS=0.47). Regarding knowledge about safety aids, it was found that maximum gain in knowledge was about Safety gloves (MS=0.90, 'z'=29.84**) followed by goggles (MS=0.67) and face mask (MS=0.44) and least about work boot (MS=0.13).

Table 5. Gain in knowledge of the respondents and 'z' value (n=100)

Sr. No.	Knowledge statements	Pre-knowledge (Mean Score)	Post-knowledge (Mean Score)	Gain in knowledge (Mean Score)	'z' value
I.	**Knowledge about color of dustbins for segregation**				
1.	Green (for wet waste)	1.30	1.90	0.60	12.18**
2.	Blue (for dry waste)	1.30	1.90	0.60	12.18**
3.	Yellow (for sanitary waste)	1.00	1.57	0.57	11.45**
4.	Black (for hazardous waste)	1.00	1.70	0.70	15.19**
II.	**Knowledge about what is included under hazardous waste**				
1.	Bulbs, LED, CFLs, Tube lights	1.50	2.00	0.50	9.94**
2.	Battery	1.57	2.00	0.43	8.64**
3.	Cells	1.14	1.86	0.72	15.95**
4.	Thermometers	1.36	1.63	0.27	6.05**
5.	Medicines (expired tablets)	1.43	1.83	0.40	8.12**
6.	Sharp objects (blades, knives, safety pins, broken glass etc.)	1.77	2.00	0.23	5.43**
7.	Empty hazardous containers of:				
i.	Paints	1.07	1.67	0.60	12.18**
ii.	Insecticides/ Pesticides	1.90	2.00	0.10	3.31**
iii.	Sprays, cleaners/ thinners	1.37	1.67	0.30	6.51**
iv.	Acid	2.00	2.00	-	-
v.	Chemical fertilizers	1.70	1.97	0.27	6.05**

vi.	Medicines	1.63	1.80	0.17	4.50**
III.	**Knowledge about ill- effects/ harm can be caused during collection of scrap**				
1.	Cuts	2.00	2.00	-	-
2.	Burn	1.43	1.90	0.47	9.36**
3.	Eye irritation	1.70	1.90	0.20	4.97**
4.	Skin irritation/ allergy	1.60	1.87	0.27	6.05**
5.	Respiratory problems	1.37	1.70	0.33	6.98**
6.	Body pain	1.83	1.97	0.14	4.01**
7.	Tiredness/ fatigue	2.00	2.00	-	-
IV.	**Knowledge about safety aids to be used to handle and segregate hazardous and other scrap**				
1.	Safety gloves	1.10	2.00	0.90	29.84**
2.	Any tools	1.93	2.00	0.07	2.72NS
3.	Face mask	1.23	1.67	0.44	8.81**
4.	Goggles	1.13	1.80	0.67	14.17**
5.	Work boots/shoes	1.57	1.70	0.13	3.84**
V.	**Knowledge about disposal of hazardous scrap**				
1.	Should be buried with precautions	1.23	1.57	0.34	7.14**
2.	Should be thrown in the black dustbin	1.00	1.63	0.63	12.98**
3.	To be collected by MC on fixed date and time (but not being regularly and properly implemented by MC)	1.00	1.23	0.23	5.43**
VI.	**Knowledge about safety measures**				
1.	Basic safety kit should be carried with them in case of any accident/ cut	1.17	1.70	0.53	10.56**

2.	Vaccination of Tetanus is essential after having cuts	1.57	2.00	0.43	8.64**

**Significant at 1% level of significance*

Regarding knowledge about disposal of hazardous scrap, gain in knowledge was found to be maximum in case of "should be thrown in the black dustbin" (MS=0.63, 'z'=12.98**) followed by "should be buried with precautions" (MS=0.34, 'z'=7.14**) and least in "to be collected by MC on fixed date and time" (MS=0.23, 'z'=5.43**)

Regarding knowledge about safety measures, maximum gain in knowledge of respondents was found in case of "basic safety kit should be carried with them in case of any accident/ cut" (MS=0.53, 'z'=10.56**) followed by "vaccination of Tetanus is essential after having cuts" (WMS=0.43, 'z'=8.64**).

This table further shows the overall comparative mean scores at pre and post-exposure stage. The significant difference between the pre-exposure and post-exposure mean scores indicated by the 'z' value confirmed that the respondents were able to gain significant knowledge.

Conclusion:

This study found that majority of the respondents (43.00%) belonged to 30-35 years of age were educated up to primary class (55.00%) followed by illiterate (24.00%) belonged to schedule caste (90.00%) and 41.00 percent were collecting scrap for the last 10-15 years. Regarding knowledge about disposal of hazardous scrap; gain in knowledge about what is included under hazardous waste, it was found that maximum gain in knowledge was about "cells" (MS=0.72) followed by "paints" (MS=0.60). Gaidajis *et. al.* (2010) also revealed from a study that many of the respondents were not aware about the hazardous waste. As per present study, regarding ill-effects/ harm caused during collection of scrap, maximum gain in knowledge was about "burn" (MS=0.47); regarding gain in knowledge about safety aids to be used, it was found that maximum gain in knowledge was about safety gloves (MS=0.90); as far as knowledge about disposal of hazardous scrap is concerned, it was found that maximum gain in knowledge was about "it should be thrown in the black dustbin" (MS=0.63); regarding safety measures, it was found that maximum gain in knowledge was about "basic safety kit should be carried with them

in case of any accident/ cut" (MS=0.53, 'z'=10.56**). No research study was found on similar knowledge aspects

References:

Devi, K. S., Swamy A. V. V. S., and Krishna, R. H., 2014. Studies on the Solid Waste Collection by Rag Pickers at Greater Hyderabad Municipal Corporation, India. *International Research Journal of Environment Sciences.* Vol. 3(1): 13-22.

Gaidajis, G., Angelakoglou, K. and Aktsoglou, D. 2010. E-waste: Environmental Problems and Current Management. *Journal of Engineering Science and Technology Review*. 3(1) 193 – 199.