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Knowledge and Practices Regarding Solid Waste Disposal among Rural Community of Muchhali Panchayat, District Una, Himachal Pradesh, India

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Abstract: ***Waste management is one of the major environmental problems of India. Improper disposal of waste causes hazardous to inhabitant's .Various study reveal that about 90%disposal of unscientifically in open dumps and landfills, creating problem to public health and the environment. The study has been carried for the current status of waste disposal. Objectives: purpose of the study was to assess the knowledge and practices regarding waste disposal among people of rural community.***

Methodology: A cross sectional study was carried out on 160 respondents from mucchali panchayat of Una district, Himachal Pradesh, selected by Convenience sampling technique with the help of Semi structured questionnaire following interview technique from January to February, 2015.Result: 80.6% respondents had good knowledge regarding waste disposal followed by 19.4% were having satisfactory knowledge. Regarding practices most of respondent (62.5%) had the satisfactory practices towards waste disposal 37.5% poor practices. Conclusion: The knowledge regarding solid waste disposal in the most of respondents was found good and in minimum of respondents having satisfactory knowledge, in spite of good knowledge the respondents having poor practices regarding waste disposal due to lack of awareness, unavailability of public dustbins.

Keywords: Solid Waste, Disposal, knowledge, practices, rural community.

I. INTRODUCTION

The term "solid wastes" include garbage (food wastes) rubbish (paper, plastics, wood, metal, throw away containers, glass), demolition products (bricks, masonry, pipes) sewage treatment residue, dead animals, manure and other discarded material. [1]Almost any substance that is discarded is designated as waste, but it may also be considered a potential resource or Waste is any material/liquid that is thrown away as unwanted. As per physical properties, waste can be categorized as solid waste, biodegradable waste, non-biodegradable waste, recyclable waste, non-recyclable waste and liquid waste. [2]

Waste management is the process of collecting, transporting, processing or disposing, managing and monitoring of waste materials. The term usually relates to materials produced by human activity and the process is generally undertaken to reduce their effect on health, the environment or aesthetics. [3]Waste includes all items that people no longer have any use for, which they either intend to get rid of or have already discarded and these include: packing items garden waste, old paints containers, vegetables, metals etc. [4] Poor waste management has been a major problem to human health and existence, affecting both rural and urban areas. A clean environment influences good health and good health further affects the productivity of man. Therefore, it can be said that a good and clean environment invariably affects the wealth and economic status of the nation. [4] There are various methods of waste disposal including: land filling: which involves burying the waste in abandoned or unused quarries, mining voids or burrow pits and covering it with layers of soil. Incineration: involves subjection of solid organic wastes to combustion at a very high temperature of about 10,000 so as to convert them into residue or gaseous products. Open dumping: whereby dumping can be done on open land or sea. Composting: this is an aerobic, biological process of degradation of biodegradable organic matter. Hog feeding: this involves feeding animals like pigs with left over materials of waste. Mechanical destructor: this involves the use of machines to destroy waste materials. Recycling of waste which means taking waste materials and transforming them into raw products, results in saving natural resources, saving energy, reducing disposal costs, reducing harmful emission to air and water, saving money and creating job. [4]

Improper waste management deteriorates public health, reduces quality of life, and pollutes local air, water and land resources. It also causes global warming and climate change and impacts the entire planet. Studies have shown that poor waste management and disposal could lead to various diseases, infections and infestation and these include fly transmitted diseases like, diarrhoea, typhoid, cholera; rodent transmitted disease like lassa fever plague, leptospirosis, murine typhus; mosquito borne diseases such as malaria, yellow fever, filariasis, and dengue hemorrhagic fever. Using water polluted by solid waste for bathing, food irrigation, and as drinking water can also expose individuals to disease organisms and other contaminants. [5]

*In 2011-12, Mumbai alone accounted for 6.11% of the total waste generated daily in India. As its waste piles up, the land-starved city is staring at the big question— where to dump?*Of the 1, 27,486 tons of waste generated daily in India in 2011-12,

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Mumbai alone accounted for 6.11 per cent. It is estimated that every resident in the metropolis now generates about 630 grams of waste daily, a figure that is expected to touch 1 kg in the coming years. [6]There has not been such study conducted in Muchhali panchayat. So the present study was conducted to assess existing solid waste disposal knowledge and practices among rural people.

II. MATERIALS AND METHODS

DESIGN AND SETTING

A Descriptive Cross Sectional survey was carried out on rural community of Muchhali Pancahyat, Una District, HP

SAMPLING TECHNIQUE

Convenience sampling technique with Semi structured questionnaire following interview technique was used and the sample size was 160

DATA COLLECTION TOOLS, TECHNIQUE AND ANALYSIS

Semi structured questionnaire following interview technique was used to collect information on socio-demographical variables, solid waste knowledge and practices among people of rural community. The questions regarding waste disposal were framed based on pertinent literature in simple language for clarity and ease of understanding. The questionnaire was then circulated among experts for elimination of ambiguous questions and ascertaining reliability and validity.

ETHICAL CONSIDERATIONS

Approval was taken from Akal School of Public Health and Hospital Administration, Eternal University for conduction of research. Approval was also taken from the Pardhan of panchayat .Written informed consent was taken from respondents and participation in the study was voluntary. Confidentiality of each respondent has been maintained strictly.

III. RESULTS AND DISCUSSION

This deals with the findings of the study obtained from analysis and interpretation of the data. Respondents were interviewed in order to obtain necessary information regarding knowledge and practice on solid waste disposal.

Table –I
Socio Demographic Characteristics of Respondents

Variables	Frequency (n=160)	Percentage
Age of respondents		
20-25	23	14.4
26-30	12	7.5
31-35	29	18.1
Above 36	96	60
Gender		
Male	87	54.4
Female	73	45.6
Family		
Nuclear	108	67.5
Joint	52	32.5
Religion		
Hindu	155	96.9
Sikh	5	3.1
Education		
Illiterate	8	5.0
Middle	48	30
High secondary	77	48.1
Graduation and above	27	16.9
Occupation		
Not working	42	26.3
Govt. gob	26	16.3
Private job	74	46.3

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Student	18	11.3
Monthly income		
5000-10,000	49	30.6
10,000-15000	48	30
15,000-20,000	11	6.9
Above 20,000	52	32.5
Source of information	Multiple Response	
Radio	120	75
TV	160	100
Newspaper	108	67.5
Internet	104	65
Friends and relatives	160	100

Table-1indicatesthat majority (60%) of respondents were above 36 year of age followed by (18.1%) of 31-35years of age, (14.4%) of 20-25 years, and (7.5%) were 26-30years. majority of respondents were male (54.4%) and rest werefemale. Most (96.9%) of respondents were Hindu and 3.1 % were Sikh. Regarding education maximum respondents (48.1%) were educated up to higher secondary level and minimum (5.0%) were illiterate. 67% were belonged to nuclear family followed by joint (32.5%). Maximum respondents (46.3%) were engaged in private jobs. Majority (32.5%) of respondents was having monthly income above Rs. 20000. All of the respondents were aware about waste disposal by television.

Table-II
Respondents' Knowledge on Waste Disposal

Knowledge Related Information	Frequency (160)	Percentage (%)
Recycling of Waste		
Deep burial	24	15.0
Breakdown and reuse	118	73.8
Burning or incineration	7	4.4
Sanitary landfill	11	6.9
Categories of Recyclable Wastes		
Plastic, glass products	133	83.1
TV, mercury, lead	23	14.4
Food waste	4	2.5
Composting		
The recycled remains of organic matter that has rotted into a natural fertilizer	105	65.6
Sanitary landfills	23	14.4
Burning of disposal	19	11.9
Dumping of waste	13	8.1
Hazardous Waste		
Battery , pesticides, poison	73	45.6
Mercury, paint,	2	1.3
Newspaper, broken furniture,	2	1.3
a or b both	83	51.9
Harmful Effects of Open Defecation		
Yes		100
Best Method of Waste Disposal		
Burning	67	41.9
Decomposition	63	39.4
Thrown in open places	2	1.3
Burial	28	17.5

Table-II reveals the level of knowledge of respondents; Majority of respondents(73.8%) reported breakdown and reuse of component material is the method of recycling of waste and most of respondents (83.1%) reported that glass product ,paper are the recyclable waste. All the respondents were aware about the harmful effect of open defecation. 41.9% reported that burning is the best method for waste disposal.

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Table-III
Respondents Practices on Waste Disposal

Practices on Waste Disposal	Frequency(n=160)	Percentage (%)
Garbage Generate per Week		
1bag	89	55.6
2bag	57	35.6
3bag	7	4.4
>4bags	7	4.4
Different Bins Used for Segregation of Waste		
Yes	45	28.1
No	115	71.9
No. of Bins for Waste Disposal		
No	9	5.6
One	115	71.9
Two	31	19.4
>3	5	3.1
Waste Disposal Method	Multiple response	
Decomposed	141	88.1
Burning	117	73.1
Thrown in open places or river	116	72.5
Disposal of Household Hazardous items		
I throw them in trash	33	20.6
throw some of them in trash or in household Waste	29	18.1
drop off sites	33	20.6
some of them in trash rest stored at my house	65	40.6

Table-III reveals the level of practice of respondents. Majority of respondents i.e. (55.6%) reported that they generate 1 bag of garbage per week .Most of them (71.9%) responded they were using only one bin for different type of waste collection or disposal. Majority of respondents (88.1%) reported that they were using decomposing method for waste disposal followed by 73.1% using burning method and (72.5%) throw waste in open places or rivers.

Percentage Distribution of Respondents on the Bases of Their Knowledge and Practices

Figure-I
Waste Disposal Method Used

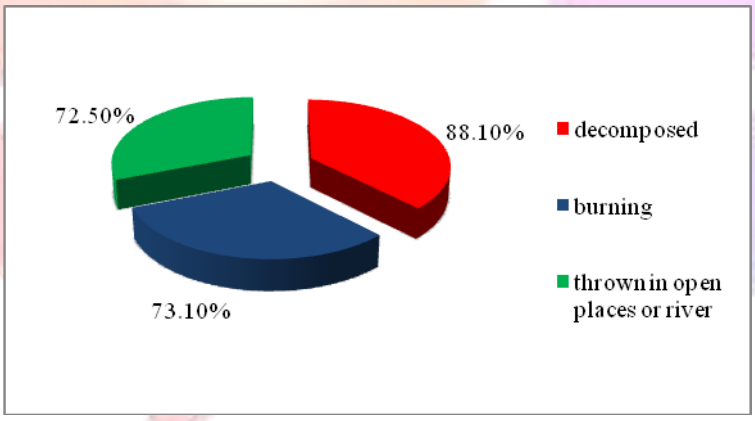


Figure -1reveals Majority of respondents (88.1%) were using decomposing method for waste disposal followed by 73.1% using burning method and 72.5% were throwing waste in open places or rivers.

Figure-II
Distribution on the bases of waste collection mechanism provided by the Govt

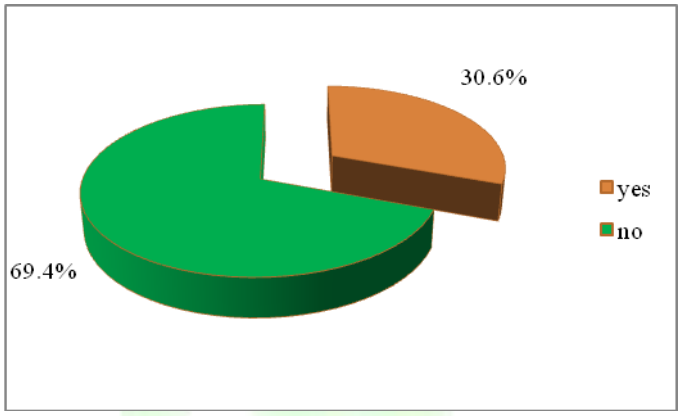
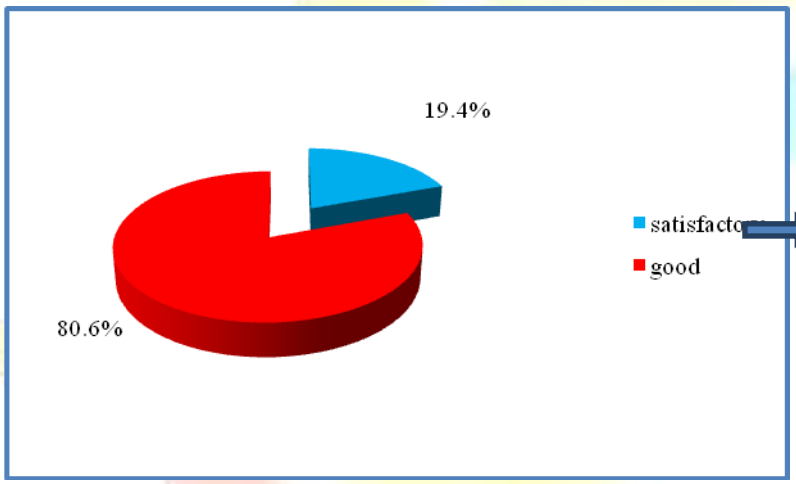


Figure-II reveals majority (69.4%) of respondent reported that there was no waste collection mechanism provided by Government.

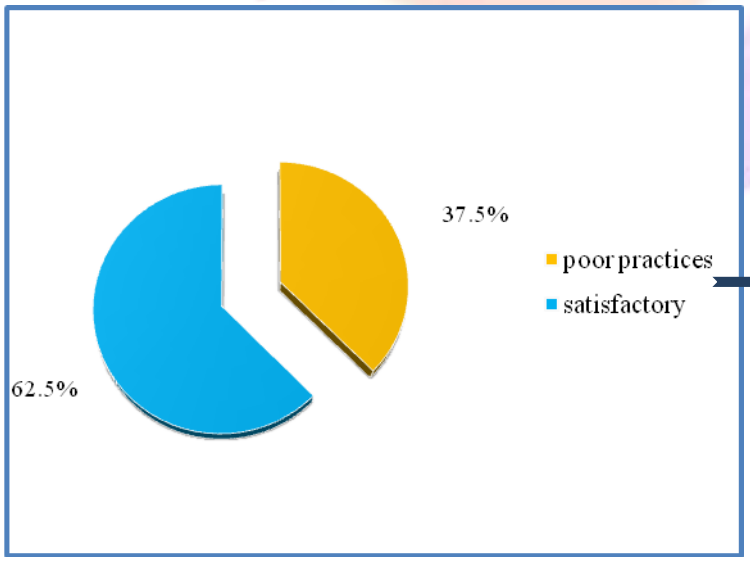
Figure-III
Distribution of Respondents on the Bases ofKnowledge Level



Knowledge Level	Scoring Pattern (max.15)
Poor	<6 (40%)
Satisfactory	6-9 (40%-60%)
Good	>9 (60%-100%)

Figure-III indicates that majority 80.6% respondents had good knowledgeregarding waste disposal followed by 19.4%were having satisfactory knowledge

Figure-IV
Distribution of Respondents on the Bases of Practice Level



Practice Level	Scoring Pattern (max.17)
Poor	<7 (40%)
Satisfactory	7-10 (40%-60%)
Good	>10 (60%-100%)

Figure IVshows that majority of respondent (62.5%) had the satisfactory practices towards waste disposal followed by poor practices (37.5%).

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IV. DISCUSSION

The study was done in Muchhali Panchayat of District Una Himachal Pradesh, majority (60%) of respondents were above 36 year of age. Majority (54.4%) of respondents were male followed by female (45.6%). Most of respondents were Hindu (96.9%) and 3.1 % were Sikh. Regarding education maximum respondents (48.1%) were educated up to higher secondary and (5.0%) were illiterate. Regarding family type majority of respondents (67%) were belonged to nuclear family. Maximum of respondents (46.3%) were engaged in private jobs. Regarding monthly family income Majority of respondents were having above Rs. 20000 (32.5%). Majority of respondents (100%) reported that they were aware about waste disposal by television. The knowledge regarding solid waste disposal in the most of respondents was found good and in minimum of respondents having satisfactory knowledge regarding waste disposal but in spite of having good knowledge the respondents were having poor practices regarding waste disposal due to lack of awareness, unavailability of public dustbins. The respondents who have good knowledge performing poor practices by throwing waste in the open places or in river. In Present study 72.5% respondents throw waste in the open places or in river. Similar study conducted by Muffed Sharholy and associates in the year 2007 showed that 90% of MSW is disposed of unscientifically in open dumps and landfills the results are higher than that of present study. [7] In present study 80.6% respondents had good knowledge regarding waste disposal and burning was practiced by 73.1% of respondent's .Similar study conducted by Adogu et al. in the year 2015 showed that 90% of respondents were aware about waste management which is higher than that of present study and burning of waste is practiced by 62.4% which is lower than that of present study. [4]

V. CONCLUSION

Level of knowledge regarding solid waste disposal among the people of rural area was found good. Majority of respondents were aware about the composting, recycling of waste, and hazardous waste and harmful effect of open defecation.

The practices of rural people regarding solid waste disposal was found substantially poor. Despite of having good knowledge the respondents were performing poor practices. Maximum respondents throw waste in open places or river.

VI. RECOMMENDATIONS

Provision of sanitary measures like dustbins at the community level should be made available by Panchayats and concerned agencies for the proper disposal of solid wastes. Awareness and environmental sanitation promotion programs should be organized by local communities, NGOs, INGOs to aware the people about proper methods of waste disposal.

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