



## **Study the Kitchen Waste Management Practices in Rural Household**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

The problem of waste is a universal one as waste exists in every society. India is now the world's 3<sup>rd</sup> largest garbage generator. Now a day waste is becoming more complex as a variety of materials are discarded as waste together. So the research was conducted to study the wastes management practices in the rural household of Koraput district, Odisha, India, with a sample of 110 female respondents. Investigations were carried out on SWM practices. The respondents were selected using multistage purposive random and proportionate sampling method. A pre-tested interview schedule cum observation sheet was used to collect the data. The findings of the study clearly revealed that biodegradable and non-biodegradable waste (3.63%) separation was not ready in practice. The main reason for not separating was lack of awareness (13.6%) followed by lack of discipline in home (4.54%) and laziness (3.63%). Improper waste disposal methods such as dumping in open (80.9%) and gutter (60.9%), burning (90.0%) were practised more readily in comparison to environmentally friendly methods like composting (4.5%) for kitchen waste.

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## 1. INTRODUCTION

Since the beginning, human kind has been generating waste. Any unwanted or unusable materials or any substance which is discarded after primary use or it is worthless, defective and of no use is known as waste. The problem of waste is a universal one as waste exists in every society. Business for Social Responsibility, BSR [1] carried out a study on "The New Frontier in Sustainability" concluded most businesses define waste as "anything that does not create value". Increasing population level, urbanization, consumerism, industrialization and increasing living standards have enhanced the waste generation in developing countries. Waste management problems only appear more serious in developing economies because of the poor management framework. India is now the world's 3<sup>rd</sup> largest garbage generator. Around 45 million tonnes or 3 million trucks of untreated garbage are disposed in an unhygienic manner every day [2]. According to Union Ministry of State for Environment, Forest and Climate Change, 62 million tonnes of waste is generated annually in the country at present. Out of these waste, 5.6 million tonnes is plastic waste, 0.17 million tonnes is biomedical waste, hazardous waste generation is 7.90 million tonnes per annum and 15 lakh tonnes is e-waste. Further added that only about 75-80 percent of the municipal waste gets collected and only 22-28 percent of this waste is processed and treated [3]. According to forest and environment ministry in Odisha 43 million tonnes waste was generated in 2014-15.

Now a day waste is becoming more complex as a variety of materials is discarded as waste together. It is very important to understand the wastes, their nature, problems associated with them, and how to dispose them off hygienically. Indhira et al. [4] conducted a study on Awareness and attitudes of people perception towards to household solid waste disposal: Kumbakonam Town, Tamilnadu, India concluded that they were disposing three and six kilograms of biodegradable and non-biodegradable waste /week. The type of household solid waste disposal items were food items, vegetables, dry leaves, plastics, garden waste, batteries, electronic goods, clothes, rubbers and glasses. Waste can be divided into 3 types, i.e. municipal waste, commercial and industrial waste, construction or demolition waste. Kitchen waste forms a significant constituent of municipal

waste. It can be biodegradable like food waste, green waste, vegetable peels, paper or non-biodegradable like glass, bottles, cans, metals, certain plastics etc. The biodegradable waste decomposes easily while the non-biodegradable contents can be of serious concern as they stay for long in the environment and hard to decompose.

Present day kitchen wastes are collected in mixed scale and disposed in places, which are environmentally very sensitive. A study on People's perception of household solid waste management in Ojo local Government area in Nigeria revealed that most of the respondents did not separate their waste; out of the 364 households, only 63 (17.3%) separated their waste when storing it, while the remaining 301 (82.7%) did not do any kind of solid waste separation, which is a reflection of what happens in most African cities by Longe et al. [5]. Disorganized and inappropriate kitchen waste disposal creates severe environmental issues such as air pollution, water pollution, reduction of aesthetic value of the environment etc. that have direct impact on the society and the country's development. So there is a need to "Study The Kitchen Waste Management Practices In Rural Household" to understand the extent of different management practices.

## 2. MATERIALS AND METHODS

A systematic methodology is an important step to a research because it directly influences the validity of the research findings. The exploratory research design was adopted to gain familiarities and to acquire a new insight into the existing aspects of various issues related to kitchen waste management practices. Multi-stage purposive random and proportionate sampling method was used to select the respondents for the study. The locale for this present study was Similiguda and Nandapur block of Koraput district, in the state of Odisha. Further, from a total of 37 Gram panchayats from the above two blocks, Khurji and Subai Gram panchayat were selected purposively as the researcher could easily reach the respondent. Two villages from each gram panchayat such as Muliaput, Khatalaput, Dalaiguda, Luhaba were selected randomly out of which 110 female respondents were selected proportionately. An interview schedule cum observation sheet was used to elicit data from the respondents at their

residence through direct interview cum observation method. The data collection tools were pretested in 10 houses to check its practicability. The data collected was further analysed using various statistical tools like frequency and percentage.

### 3. RESULTS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under the following head.

The Table 1 revealed that 30.0 percent of the sample belonged to the age group below 30 years, 31 to 45 years each and remaining 21.8 percent were in the age group of above 45 years. According to the study 37.2 percent respondents were illiterate and 62.8 percent were literate. Among the literate respondents it was found that 31.8 percent completed primary school education and only 10.9 percent had educational qualification of intermediate and above.

It was found that all of the respondents under study were married and most of them belonged to the nuclear family (79.0 %), which showed that joint family system is gradually disintegrating from the society. It was evident that 17.2 percent of the total samples were housewives and only 3.6 percent were employed. Majority of them, i.e.

79.0 percent were labourers by occupation and worked in agricultural field. The table also showed that 50.0 percent of the sample belonged to the income range Rs 10,000/- to 15,000/- followed by 20.0 percent belonged to income range Rs 15,001/- to Rs 20,000/- and 30.0 percent belonged to the income range below Rs10,000/- per month. Majority of respondents had semi pucca house (75.4%) followed by 20% had pucca house, rest of the 4.5% respondents (4.5%) lived in katcha house.

An observable number of illiteracy was found. Very few respondents had higher education. It may be due to the absence of college and school in the nearby area as well as poor transportation facility in that area. Majority of the respondents belonged to the nuclear family, which showed that joint family system is gradually disintegrating from the society.

Table 2 depicted the waste handling practices used by the households. Out of the 110 respondents, 74.54% separated the solid and liquid waste and only 3.63% separated biodegradable and non-biodegradable waste prior to disposal. The rest of the respondents didn't bother to separate the waste. The results of the study were in agreement with the findings of Warunasinghe and Yapa [6].

**Table 1. Profile of the respondents**

n=110			
Variables	Categories	Frequency	Percentage
Age	young (<30)	43	39
	middle age (31-45)	43	39
	old (>45)	24	21.8
Education	Illiterate	41	37.2
	Primary school	35	31.8
	High school	22	20
	Intermediate and above	12	10.9
Type of family	Nuclear	87	79.0
	Joint	23	20.9
Occupation of respondent	Housewife	19	17.2
	Labourer	87	79
	Service	4	3.6
	Skilled worker	-	-
Total income of the family from per month(Rs.)	<10,000/-	33	30
	10,001/- to 15,000/-	55	50
	15,001/- to 20,000/-	22	20
Type of housing	Katcha	5	4.5
	Semi Pucca	83	75.4
	Pucca	22	20.0

**Table 2. Handling of kitchen waste prior to disposal by the respondents**

n=110			
Variables	Categories	Frequency	Percentage
Separation of waste	Solid and liquid waste	82	74.54
	Biodegradable and non biodegradable waste	4	3.63
	Do not separate	24	21.8
Feeling about separation	Like it very much	24	21.8
	In a habit to do so	62	56.3
Reasons for not separation	Laziness	4	3.63
	Not aware	15	13.6
	Lack of discipline in home	5	4.54
Responsibility of cleaning	Respondent	90	81.8
	Any other member	20	18.1
Method of collection	polythene bags	27	24.5
	Covered dustbins	10	9.09
	Uncovered dustbin	61	55.45
	Any other	12	10.9
Transportation of waste from home to final point	Respondent	90	81.8
	Any other member	20	18.1
Method of transportation	Hand carrying to the Community disposal point	110	100

While questioning the respondents about the reason of waste separation, 56.3% replied that they were in a habit of doing so. Reason for non-separation of waste was due to unawareness (13.6%), laziness (3.63%) and lack of discipline in home (4.54%).

The findings of research conducted by Adogu et al. [7] and Yoda et al. [8] was in agreement with the findings of the researcher that majority of respondents don't separate waste prior to disposal.

According to the data majority of the respondents (81.8%) preferred to clean their house themselves as well as transport waste from home to final disposal point. Around 18.1% respondents revealed that both cleanings of house and disposal of waste were performed by other members of the family like daughter-in-law or daughter etc. Uncovered dustbins were preferred for waste collection by 55.45% of respondents while 9.09% of respondents used covered dustbins for waste collection. Around 24.5% respondent stated that they used polythene bags to store waste products and 10.9% respondents used to throw in open space directly as soon as the waste was generated.

As there was no community waste disposal facility or any other waste disposal facility

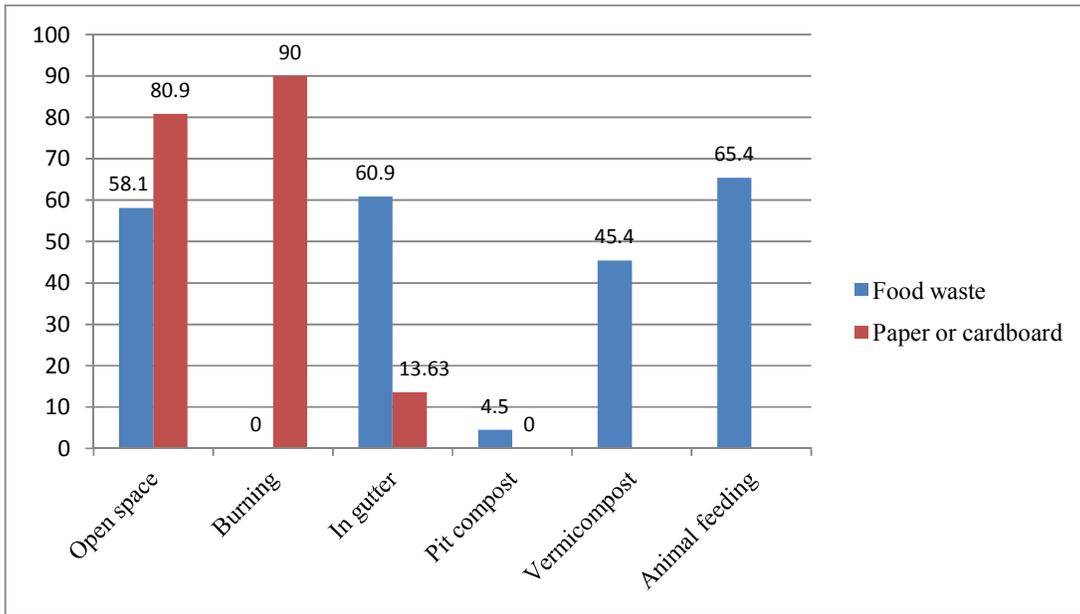
available in the study area, waste was carried by hands and thrown at disposal point. It is also observed that none of the male members was involved in kitchen waste management practices like cleaning, collection and transportation of waste from household to final point. Only female members were responsible for such activities.

The findings of the research were disintegrating with the findings of the research of Adogu et al. [7] and Yoda et al. [8] which revealed that wheeled borrower or paid collector was more effective method of waste transport and covered dustbin was primary choice to store waste.

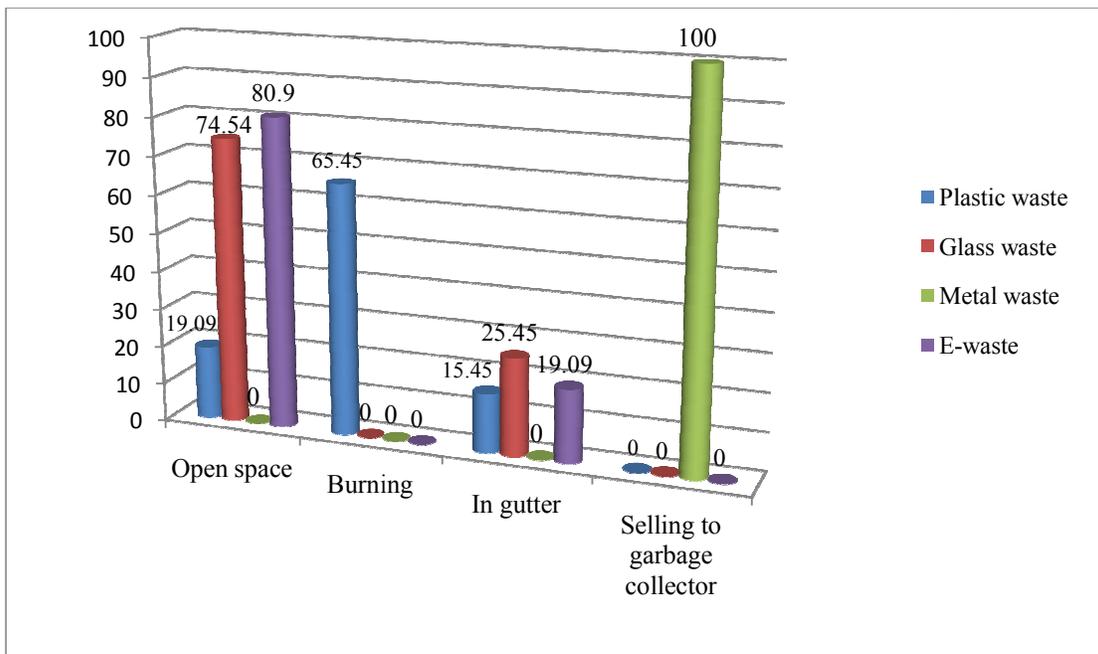
#### ❖ Multiple response

Waste management or waste disposal is all the activities and actions required to manage waste from its inception to its final disposal. There is various kind of disposal practices are in action, some are good some are not. Fig. 1 revealed the waste disposal practices by the respondents for biodegradable kitchen waste product.

Biodegradable kitchen waste in study area included food waste generated before (vegetable waste) and after cooking, paper and cardboard. It was observed that many of them practised improper waste disposal method such as dumping the food waste in open space (58.1%)



**Fig. 1. Waste disposal practices for biodegradable kitchen waste products**



**Fig. 2. Waste disposal practices for non-biodegradable kitchen waste product**

and in gutter (60.9%). Though composting was one of the environmentally friendly ways to manage the biodegradable waste, only 45.4% of the respondents prepare vermicompost and 4.5% prepare pit compost domestically. Very fewer amounts of paper and cardboard waste were generated which they either threw in open

space (80.9%) and gutter (13.63%) or burnt it (90.0%).

Multiple responses were observed in this table because of the type of biodegradable waste such as veg - nonveg, solid-semisolid waste etc. The finding of researcher was not in line with the

findings of Warunasinghe and Yapa [6] that majority of respondents dispose the waste in garbage tractors followed by burning.

Non-biodegradable waste should be handled separately like plastic bags, glass bottles etc. which cannot be decomposed, their disposal poses a big problem. Waste disposal practices by the respondents for non-biodegradable kitchen waste product is described in Fig. 2.

Non-biodegradable kitchen waste includes plastic, glass, metal and E-waste, which most of the respondents were in a practice of throwing it in an open space. There was an increased use of plastics due to changes in lifestyle and industrialisation in which plastic packages replace other forms of packaging. It was estimated that over 65.45% of households burn plastic waste, a non-biodegradable component of their domestic waste which add toxic gaseous emissions in the atmosphere. Burning plastic pollutes the air and destroys the ozone layer, thereby increasing the risk of health hazards, including cancers.

The findings of the researcher were in line with the findings of Yoda et al. [8] that burning plastic was practise more which is harmful to both health and environment.

Glass waste and E-waste were thrown in gutter by 25.45% and 19.09% respondents respectively. Different type of metal waste was generated which was either sold to garbage collector or purchased new one with exchange offer.

It is felt that there is a need for effective disposal facilities for biodegradable and non-biodegradable waste. The respondents suggested that there should be the proper and adequate placement of municipality waste bins or door to door collection regularly by Municipal Corporation to enable effective management of waste at community level.

The findings of the researcher were not in line with the findings of Warunasinghe and Yapa [6] that majority of respondents disposed the waste in garbage tractors followed by burning.

#### 4. CONCLUSION

The result of the study revealed that solid and liquid waste separation was quite in practice and

awareness must be created among other respondents about practise of biodegradable and non-biodegradable waste to separate prior to disposal. The main reason for not separating was lack of awareness followed by laziness and lack of discipline in home. Improper waste disposal methods such as dumping in open and gutter, burning were practised more readily in comparison to environmental friendly methods like composting for biodegradable kitchen waste due to laziness and lack of discipline. As per food waste was concern majority of the respondents used the waste as animal feeding. The common disposal practices for non-biodegradable kitchen waste was dumping at any place followed by burning, resulting due to lack of awareness about the effect of such action on human life as well as environment. Due to available facilities metal waste was the only waste which was either sold or exchanged rather than throwing.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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