

Approach of People Towards Food waste Management and its Impact on Environment in District Baramulla, Kashmir Valley

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Abstract

Food waste plays an important role in economy and its wastage has straight impact on environment. The food wastage reduction in any area clearly would lead to better land usage and water resources management. The current study based on survey method was conducted in district Baramulla of Kashmir valley during 2024 by designing a suitable questionnaire to bring out the current methods practiced for food waste disposal in the study area. The data collected from 400 respondents selected at random from the study area on their consent was analysed statistically using appropriate statistical methods. It was found that food waste is directly or indirectly responsible for in environment pollution in the study area. Food wastage is an environmental, social as well as a religious crime. so every individual should play his/her role in its reduction.

Keywords: Baramulla; Food waste; Waste management; Environment; Statistics.

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INTRODUCTION

The present study was carried out in district Baramulla, popularly known as Vammul in Kashmir. Baramulla a major centre of business as well as in education in North Kashmir is located on river Jhelum banks downstream from district srinagar and was serving as the major distribution centre for goods in Kashmir from Punjab through Muzaffarabad and then distributed along Jhelum valley road towards Bnihal.

In the literature, we come across various definitions of food waste. Food waste as per Brian *et al.* (2013) is defined as as "food that is still fit for human consumption but is discarded before or after it spoils." Further, Parftt *et al.* (2010) characterize it as "spoiled food at the end of the food cycle, including waste from retailers and consumers." The Food and Agriculture Organization (FAO, 2013;2017) defines food waste



as any food suitable for human consumption that is discarded, whether due to surpassing its expiration date or deterioration. While some food waste occurs naturally at the retail and consumption stages of the food chain, a significant portion is a result of either carelessness or intentional disposal. Food waste extends beyond simply not using edible items; it also includes the inefficient utilization of energy, water, and land resources (Tsang *et al.*, 2019). In addition, it's crucial to acknowledge the significant impact on environmental quality that accompanies food waste (Mishra *et al.*, 2020). Globally, food waste has emerged as a pressing issue, posing financial, ethical, and environmental challenges in both underdeveloped and developed nations. It was found that (Wani *et al.*, 2023) food waste occurs primarily at the production stage, it stems from a combination of factors such as inadequate skills, natural disasters, insufficient infrastructure, and ineffective waste management practices. Worldwide, about one-third of the food produced for human consumption is lost or wasted each year. It was reported that developed countries, on average, discard between one-third to half of the food materials purchased for consumption by consumers (Boon and Anuga, 2020). Disposing of food isn't only a matter of humanitarian or social concern; but it carries significant environmental implications as well. Food waste that accumulates in landfills and decomposes generates substantial methane emissions - a greenhouse gas more potent than CO₂. It was found that food discarded in landfills contributes to approximately 8 percent of global emissions. In fact, world produces enough food to sustain double the current population, food wastage remains a significant contributor to malnutrition affecting billions of people worldwide.

In India, addressing food waste has emerged as a significant environmental concern. The output of food waste is on the rise in Indian urban areas due to the country's urban expansion, modernization, and population growth. Inadequate management of food waste can result in adverse environmental impacts and pose health risks to the public (Sahoo *et al.*, 2023).

In India, a country with a population exceeding 1.3 billion, each individual generates approximately 0.5 kg of organic waste daily (Paulraj *et al.*, 2019). Various sectors such as hostels, supermarkets, apartments, restaurants, cafeterias on airplanes, and the food processing industry contribute significantly to the overall production of food waste in the country.

In Kashmir valley food wastage also poses

a significant challenge, compounded by its geographical isolation and frequent shortages of food and other essentials during harsh winters. Lack of knowledge about the use of latest technologies in agriculture, transportation, adverse weather, irresponsible behaviour among individuals etc. contribute to food waste.

In view of the literature available as reported in this study, we chose present topic with an objective to examine the behaviour of people towards food waste management in district Baramulla of Kashmir valley.

METHODOLOGY

In present study quantitative as well as quantitative methods were employed to collect the information from 400 respondents in the study area (Cochran, 1977).

A well-designed validated questionnaire was employed for collection of data from respondents who showed their willingness to participate in our study. Group discussions were also held with the elders of the study area to know the past. The data collected was analysed and interpreted statistically using standard statistical techniques. Statistical software SPSS (Version 20) was used for analysis of data.

RESULTS AND DISCUSSION

The data presented in Table 1 shows the Residence, Education status, Economic status and type of family of understudy. The majority of the respondents 79.25% were from urban area, 72.0% respondents were educated, 88.50% respondents belong to middle class families and majority of respondent's understudy (73.0%) were involved in business and majority of respondents understudy were from nuclear families (78.25%).

Table 1: General information of the participants understudy in District Baramulla

| Variable | Count | Percentage |
|---|-------|------------|
| <i>Residence</i> | | |
| Rural | 83 | 20.75 |
| Urban | 317 | 79.25 |
| <i>Education Status</i> | | |
| Educated | 288 | 72.00 |
| Illiterate | 112 | 28.00 |
| <i>Profession of Head of the Family</i> | | |
| Business | 252 | 73.00 |
| Government employee | 27 | 6.75 |
| Private employee | 21 | 4.25 |

table cont....

| | | |
|------------------------|-----|-------|
| Economic status | | |
| Lower class | 43 | 10.75 |
| Middle class | 354 | 88.50 |
| Upper class | 3 | 0.75 |
| Type of family | | |
| Joint | 87 | 21.75 |
| Nuclear | 313 | 78.25 |

The data presented in Table 2 revealed that in response to statement 1, *i.e.*, What is the Approx. total amount of waste generated per day (in kg), majority (80.75 %) of respondents revealed that upto 1 kg of waste is generated daily in their home. In response to statement 2, *i.e.*, Do you categorize waste into biodegradable and non biodegradable, majority (89.25%) of respondents said no. In response to statement 3, *i.e.*, How do you dispose the food waste generated, majority (73.25%) of respondents revealed that they Pack in Waste box. In response to statement 4, *i.e.*, How do you dispose the plastic waste? Majority (79.50%) of respondents

revealed that they dispose waste unscientifically. In response to statement 5, *i.e.*, Do you dispose waste on regular interval of time or non-regularly, majority (67.75%) of respondents revealed that they dispose wastage regularly. In response to statement 6, *i.e.*, Are you aware of government and NGOs role in waste management, majority (68.50%) of respondents revealed that they are aware. In response to statement 7, *i.e.*, Is there separate team for waste disposal and management, majority (100%) of respondents revealed that they don't have separate teams for waste management. In response to statement 8, *i.e.*, Do you have a special budget dedicated for waste management, majority (79.75 %) of respondents revealed that they have special budget for waste management. Majority of respondents revealed that they are paying regularly for our household waste management. In response to statement 9, *i.e.*, Are you implementing 4R's of waste management, majority (80.75 %) of respondents said no.

Table 2: Food waste management of People living in Baramulla district of Kashmir valley

| S. no. | Statement | Response | Count | % |
|--------|--|-------------------|-------|-------|
| 1. | What is the Approx. total amount of waste generated per day (in kg)? | Upto 1 kg | 323 | 80.75 |
| | | Upto 2 kg | 44 | 11.00 |
| | | > 2 kg | 33 | 8.25 |
| 2. | Do you categorize waste into biodegradable and non biodegradable? | Yes | 43 | 10.75 |
| | | No | 357 | 89.25 |
| 3. | How do you dispose the food waste generated? | Pack separately | 107 | 26.75 |
| | | Pack in Waste box | 293 | 73.25 |
| 4. | How do you dispose the plastic waste? | Scientific way | 82 | 20.50 |
| | | Non-scientific | 318 | 79.50 |
| 5. | Do you dispose waste on regular interval of time or nonregularly? | Regularly | 129 | 32.25 |
| | | Non-regularly | 271 | 67.75 |
| 6. | Are you aware of government and NGOs role in waste management? | Yes | 126 | 31.5 |
| | | No | 274 | 68.5 |
| 7. | Is there separate team for waste disposal and management? | Yes | 0 | 0.00 |
| | | No | 400 | 100 |
| 8. | Do you have a special budget dedicated for waste management? | Yes | 81 | 20.25 |
| | | No | 319 | 79.75 |
| 9. | Are you implementing 4R's of waste management ? | Yes | 5 | 80.75 |
| | | No | 395 | 11.00 |

The data shown in Fig. 1, revealed that majority of respondents (89.5%) reported that food waste causes wastage of natural resources, followed by 86.5% respondents who reported that food waste causes degradation of land, followed by 71.5% respondents who reported that food waste contribute to climate change and 43.5% respondents believe that food waste harm to biodiversity.

Kashmir Valley had over a thousand small and large water bodies but unfortunately over the last century, massive urbanisation around these water bodies has led to pollution, siltation due to deforestation, and over exploitation of the many streams and lakes, huge number of water bodies have shrunk to a fraction of their original size while many have disappeared.

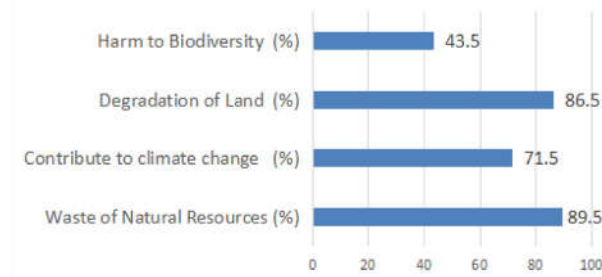


Fig. 1: Important impacts of Food waste on Environment

The elders revealed that 30-40 years back people used to drink water from Jhelum and canals as water was pure. Water bodies of Kashmir as per State Water Mission, are the worst victims of human interference and rapid urbanisation. Further, many water bodies in Kashmir have disappeared due to natural causes such as glacial action and low precipitation. In Baramulla during the past century more than 50% of water bodies and its suburbs have been lost.

It was observed that stray dogs are fed around the dumps, like landfills or garbage dumps everywhere in the study area. We know dog is a loyal animal so develops an affinity towards these areas because of food availability, become territorial and aggressive. It has been found valley of Kashmir recorded 6,800 animal bite cases in 2022-23, highest in the past three years, with over 80% bites by stray dogs. Overpopulation of stray animal is a complex and pressing issue that affects human well-being, animal welfare, and environmental sustainability of the area. Government as well as people have to play a crucial role in handling this serious issue.

We see in Kashmir valley and other parts of the world during marriage and other functions lot of food gets wasted as is shown in picture below.

Food wastage during marriage and use of disposals causes economic as well as environmental problems. It was reported by FAO 40% of food served in marriages of Kashmir gets wasted which is a social as well as a religious sin.

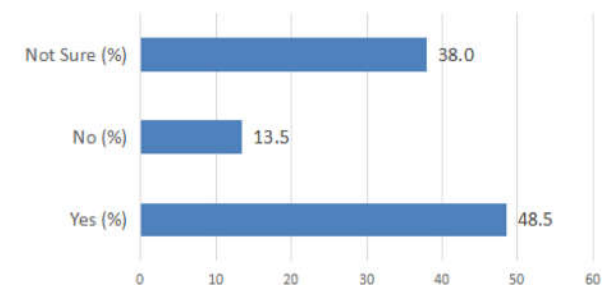


Fig. 2: Willingness to pay more for less damage to environment

The data presented in Fig. 2, revealed that majority of respondents (48.5%) showed willingness to pay for proper waste management. In majority people were aware about the ill effects of improper /unscientific waste management.

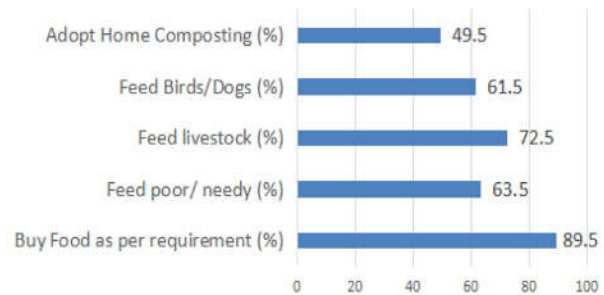


Fig. 3: Ways of management of unused/extra food as per respondents under study

The data shown in Fig. 3, revealed that majority of respondents (89.5%) were of the opinion that we should buy food as per requirement to avoid food waste. They believe purchasing of extra food is wastage of resources as well as it is a sin. Further, 63.5% respondents were of the opinion that we should feed surplus food to poor/ needy to avoid wasting of food as besides environmental protection it's a good deed, 72.5% respondents were of the opinion that surplus food should be used for livestock, 61.5% were of the opinion to feed birds/dogs and 49.5% respondents were of the opinion to adopt home composting to avoid wastage of food. Discussion with elders revealed that earlier food waste was not seen on roads as people were considering it a greatest sin. Today food waste is observed in drains in most places.

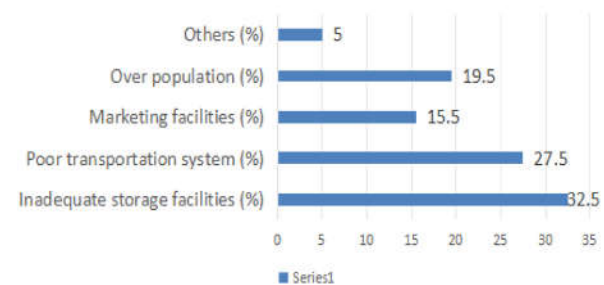


Fig. 4: Main reasons for food waste in the study area

The data presented in Fig. 4, revealed that as per discussion with respondents it was found that the main reasons for food wastage as per respondents were inadequate storage facility, poor transportation system, marketing preference, over production and others.

A large number of people ignored the religious as well as govt guidelines towards food waste management which resulted in environmental degradation.



Fig. 5: Pictures showing food waste on road side, around water bodies etc

CONCLUSION

Food wastage is a critical issue as it has social as well as economic impacts worldwide.

Food wastage reduction is very important for reducing environmental impact and conservation of natural resources. We can minimize food wastage at larger scale by adopting techniques such as plan meals and shopping, proper storage, following FIFO, donating surplus food, understand expiry

date, compost wasted food, raising awareness about impact of food waste in scientific as well as in religious perspective. The study revealed that majority of respondents were aware of the impacts of food waste in scientific and Islamic perspective. Modern life style is the main cause of food waste.

We notice in marriages tonnes of food items get wasted and wasted food is not properly disposed. Generally, wasted food is thrown on road side or

around water bodies in many areas as revealed by respondents. Group discussion with elders revealed that a number of water bodies vanished in last 30-40 years. Earlier people used to drink water from Jhelum and other water bodies of the study area but at present due to pollution we cannot drink water from these water bodies. There is a basic linkage between all natural elements and if a man abuses one, the whole natural world will get disturbed.

It was concluded that food waste is directly or indirectly responsible for in environment pollution. It was suggested that responsible persons of area and government should play their role in controlling food waste and proper disposal of food wastage as food wastage is a social as well as religious crime.

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