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A STUDY OF HOUSEHOLD FOOD WASTEGENERATION AND AWARENESS AMONG WOMEN IN BHUBANESWAR SMART CITY, ODISHA

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ABSTRACT

Food waste is a global problem – and, at the same time, a great opportunity to feed the world sustainably. Each year, around 1.3bn tons of food are wasted worldwide, which, according to the Food and Agriculture Organization of the United Nations (FAO), amounts to one-third of all food produced.This is an inefficient way of using resources, has a negative impact on the economy, is a threat to food security, and limits the availability of resources like water and land. With the Sustainable Development Goal 12.3 (SDG 12.3), the United Nations is committed to halving the global amount of food waste and food loss per person by 2030. This contributes to one of the biggest challenges of this century: better food for more people. Food loss is mainly caused by the poor functioning of the production and distribution of the supply chain and/or the institutional and legal framework. Food waste refers to the removal of food from the overall supply that is fit for consumption, or which has been spoiled or expired, mainly due to economic behavior, poor stock management or neglect. The present paper study on household food waste generation and awareness among women in Bhubaneswar smart city, Odisha. The research was conducted using structured questionnaires with studied on 100 women in Bhubaneswar smart city. The present study also focusses on socio demographic profile of the respondents, cause leads to household food waste, knowledge & attitude of household food waste, food waste disposal method and awareness among the women.

Key words: -food waste, cause, attitude, knowledge, awareness

INTRODUCTION: -

Food loss is defined as "the decrease in quantity or quality of food". The causes of **food waste** or loss are numerous, and occur at the stages of production, processing, retailing and consumption. Food waste is part of food loss and refers to discarding or alternative (non-food) use of food that is safe and nutritious for human consumption along the entire food supply chain, from primary production to end household consumer level. Food waste is recognized as a distinct part of food loss because the drivers that generate it and the solutions to it are different from those of food losses. (FAO, 2014). Each year, an estimated one-third of all food produced for human consumption is lost or wasted world-wide. **FAO estimates** indicate that the per capita food waste at consumer level in Europe and North-America is 95-115 kg/year while in sub-Saharan Africa and South/Southeast Asia is 6-11 kg/year. (FAO, 2011).According to current estimates, India's total population will reach 1.45 billion by 2028, similar to China's, and 1.7 billion by 2050,

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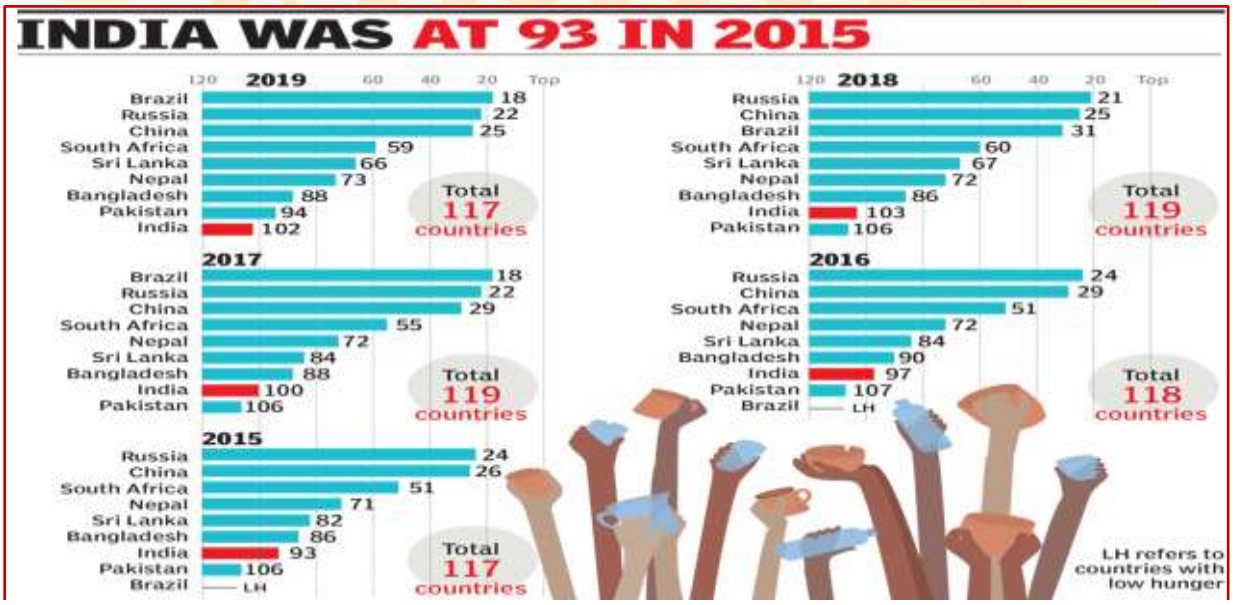
equivalent to nearly the combined population of China and the United States today. Given that India is already struggling to feed its population, its current food crisis could worsen significantly in the coming decades. More distressing, one-third of the world's malnourished children live in India. **According to UNICEF,** 47% of Indian children are underweight and 46% of those under three years old are too small for their age. Indeed, almost half of all childhood deaths can be attributed to malnutrition. "India will not have enough arable land, irrigation, or energy to provide enough nutritious food to India's future 1.7 billion people if 35-40% of food output is left to rot. The new Modi government should therefore consider alternative ways to solve India's food crisis

According to the Food Sustainability Index 2017, the countries with the lowest food waste generation per capita include **Greece** and **China** (44 kg per year), followed by India (51 kg). The countries with the highest waste creation are **Australia** (361 kg), followed by the U.S. (278 kg). Recently current estimatesthat India's total population will reach 1.45 billion by 2028, similar to China's, and 1.7 billion by 2050, equivalent to nearly the combined population of China and the United States today. Given that India is already struggling to feed its population, its current food crisis could worsen significantly in the coming decades.

Global hunger Index (2019): -Food loss is directly impact on global hunger according to the head of the International Fund for Agricultural Development (IFAD). Gilbert Houngbo, president of UN agency said "The lack of food management and huge food wastage is creating hungry population". According to Global Hunger Index 2019, India ranks 102nd out of 117 qualifying countries with a score of 30.3, India suffers from a level of hunger that is serious.



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OBJECTIVES: -

1. To study the socio demographic profile of the respondents.
2. To study the cause lead to household food waste.
3. To study the knowledge & attitude of household food waste among the women.
4. To study the household food waste disposal methods and awareness among the women.

Methodology: -

The study was carried out in capital Bhubaneswar (Odisha) from different residents. 100respondents were taken for this study. primary data were collected though structured questionnaire and interview methods. For the collection of data different appartment were selected from the city Bhubaneswar. Multistage random sampling method was adopted. Secondary data was collected from different source of literature review, journals, newspapers, research publication and other relevant source like internet.

Result and discussion: -

Table 1.1 socio demographic profile of the respondents

variables	characteristics	frequency	Percentage (%)	total
Age	20-30 30-40 40-50	45 40 15	45% 40% 15%	100
Qualification	Undergraduate Graduate Post-graduate Other qualification	_ 60 25 15	_ 60% 25% 15%	100
Occupation of the respondents	Working housewife	22 78	22% 78%	100
Monthly income of the family	20,000-30,000 30000-40,000 40,000-50,000 50,000 above	5 32 45 18	5% 32% 45% 18%	100
Types of family	Nuclear joint	85 15	85% 15%	100
No of family members	4 5 6	82 10 8	82% 10% 8%	100

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Table 1.1 shows that the socio demographic profile of the respondents. The majority (45%) respondents were 20-30 age groups. Majority (60%) were completed their graduation. Most (78%) of them were house wife. Monthly income of the family was maximum (40,000-50,000) having (85%) were living in a nuclear family with maximum (82%) have 4 family members. All the respondents were well educated and well established

Table 1.2 cause leads to food waste

causes	characteristics	frequency	Percentage (%)	Total
Insufficient cooking skill	**Yes** **No**	**58** **42**	**58%** **42%**	**100**
Cooking too much food	**Yes** **No**	**72** **28**	**72%** **28%**	**100**
Served too much	**Yes** **No**	**65** **35**	**65%** **35%**	**100**
Did not like food or ingredients	**Yes** **No**	**59** **41**	**59%** **41%**	**100**
Looked bad	**Yes** **No**	**48** **52**	**48%** **52%**	**100**
Leftover	**Yes** **No**	**86** **14**	**86%** **14%**	**100**
In fridge long time	**Yes** **No**	**82** **18**	**82%** **18%**	**100**
Smelled /tasted bad	**Yes** **No**	**73** **27**	**73%** **27%**	**100**
Wrong planning of meals	**Yes** **No**	**64** **36**	**64%** **36%**	**100**
Mouldily (spoil)	**Yes** **No**	**58** **42**	**58%** **42%**	**100**
In cupboard too long	**Yes** **No**	**89** **11**	**89%** **11%**	**100**
Wrong package size	**Yes** **No**	**48** **52**	**48%** **52%**	**100**
Incorrect storage	**Yes** **No**	**75** **25**	**75%** **25%**	**100**
Out of date	**Yes** **no**	**59** **41**	**59%** **41%**	**100**
Fig: -1				

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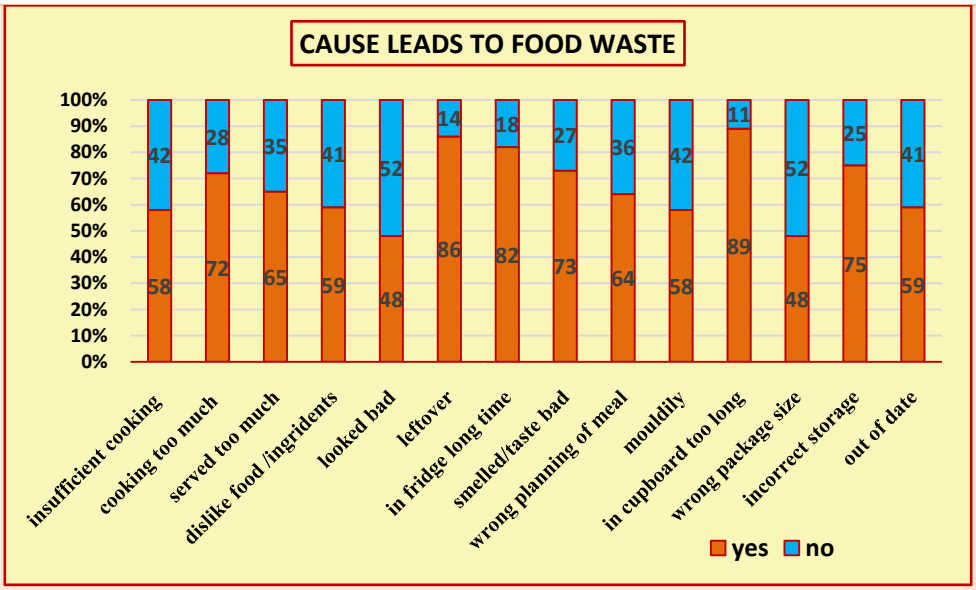

Table 1.2, & Fig-1 shows that the different causes leads to food waste. From the present study it was found that most (58%) of the respondents were waste food due to insufficient cooking skill. Cooking too much food (72%) is also a major factor and from the comments made it seems that this is either due to poor portion management or because children do not eat all of the food that they are given. Sometime too much serve (65%) food leads to waste.Most (595) do not like the food, majority of the respondents (52%) were avoid to eat because of bad appearance of dishes. Most (86%)avoid to eat leftover food and (82%) due to long time in fridge. Meal planning play a very important role in family. There must be acquired knowledge of the home maker whenever preparing food. In this present study it was found that most of (64%) respondents waste food just because of wrong meal planning. Sometime, some of the perishable food easily contact with the microorganism and contaminated leads to a major cause of food waste. It was notice that most (58%) respondents waste food due to mouldily, (48%) due to wrong package size, most (75%) incorrect storage and (59%) due to out of date.

Table -1.3 Different food items thrown away

Food items	always (frequency)	Percentage (%)	Sometimes (frequency)	Percentage (%)
Legumes/seeds	45	45%	55	55%
Salty snacks	35	35%	65	65%
Fats/oils	42	42%	58	58%
Sweet snacks	51	51%	49	49%
Fish,meat,poultry,eggs	38	38%	62	62%
Milk	42	42%	58	58%

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Cheese	**32**	**32%**	**68**	**68%**
Bread	**49**	**49%**	**51**	**51%**
Vegetables	**52**	**52%**	**48**	**48%**
Fruits	**44**	**44%**	**56**	**56%**

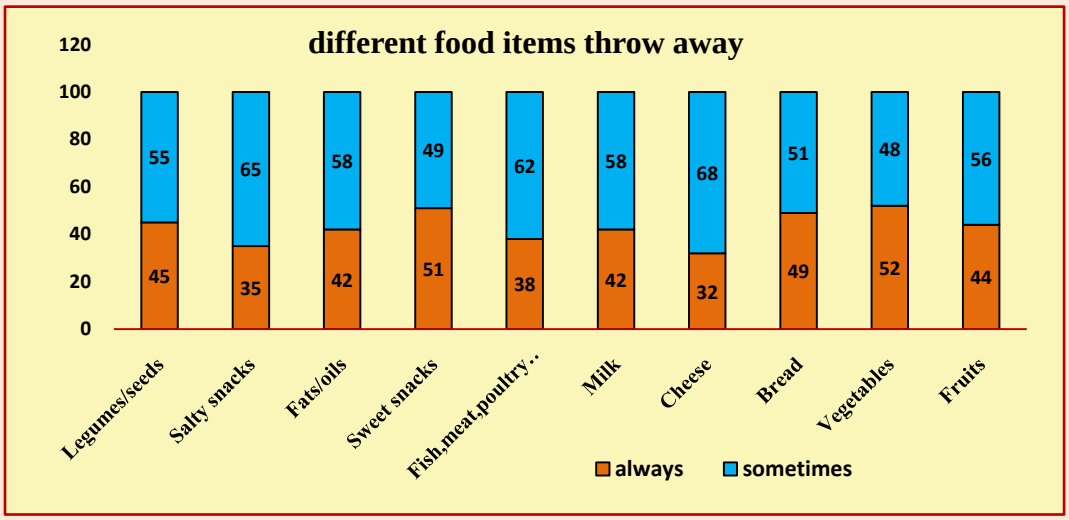

Fig-2

Table 1.3 & Fig-2, shows that the Different perishable food items and other food items thrown away by the respondents**.** Perishable foods, such as fruits and vegetables, dairy, fish, and meat products, have a limited shelf life after harvest or production. Such food items are easily contaminated by microorganisms and the food become lost its nutritive value both in physically and chemically. Beaver M in his study claimed that 60% of the household waste in U.K comprises of the food which is not used in time. Perishable foods are the major contributors towards the food waste. According to him behaviors and attitudes of customers regarding the packaging is the major barrier to reduce the food waste. Customer are ill-educated regarding the benefits of existing packaging & they do not read understand. The present study found that most of the respondents thrown away different perishable food sometime as compared to always. Such as Legumes/seeds (55%),Salty snacks (65%),Fats/oils (58%),Sweet snacks (49%),Fish,meat,poultry, eggs (62%),Milk (58%),Cheese (68%),Bread (51%),Vegetables (48%) &Fruits (56%).

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(Source WHO report)

Table-1.4 Interrelation between shopping behavior and food waste

variable	characteristics	frequency	Percentage (%)
Frequency of shopping	Daily	72	72%
	2-3 times a week	45	45%
	Weekly	36	36%
	Fortnightly	54	54%
	monthly	87	87%
Methods of transport uses for main shop	Personal vichele (Car, motorbike)	75	75%
	Taxi	42	42%
	Internet food	85	85%
	Shopping site	83	83%

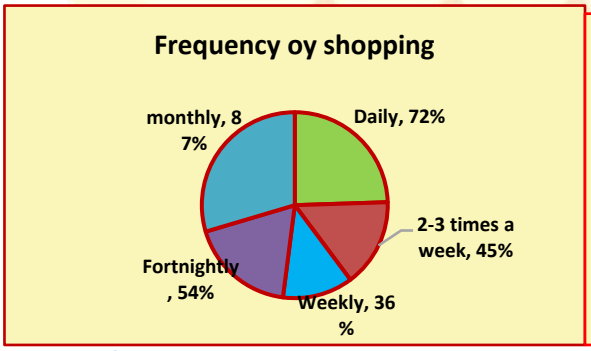

Fig-3

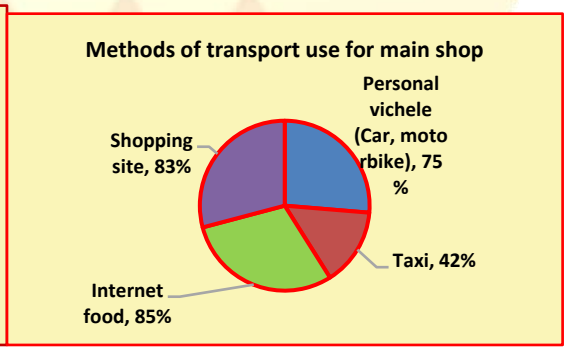

Fig-4

Table-1.4, Fig-3 & Fig-4 shows that the inter-relation between shopping behavior and food waste. HIKID (2011), claimed in his study that consumerism promotes the excessive purchasing of food products without the consideration of negative environmental impacts. He found that

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consumerist lifestyle which is boost to buying excessive food stuff is ultimately disposed. In this present study it was also found that most of the respondents (87%) were monthly shopping, daily shopping (72%), fortnightly (54%),2-3 times a week (45%). Among them most (75%) were used personal vichele like car & motor bike. Simultaneously they were also use shopping site (83% and internet food (85%).

Table 1.5 Shopping behavior and food waste

Shopping behavior	always	sometimes	Never	Total
Shopping in always in large supermarkets	65%	22%	3%	100%
Local market and others	55%	30%	15%	100%
Online shopping	58%	36%	6%	100%
Are you using shopping list	17%	79%	4%	100%
Are you checking the food stock in advanced	22%	38%	40%	100%
Are your attraction to special offers i.e. BOGOF (buy one get one free)	89%	6%	5%	100%

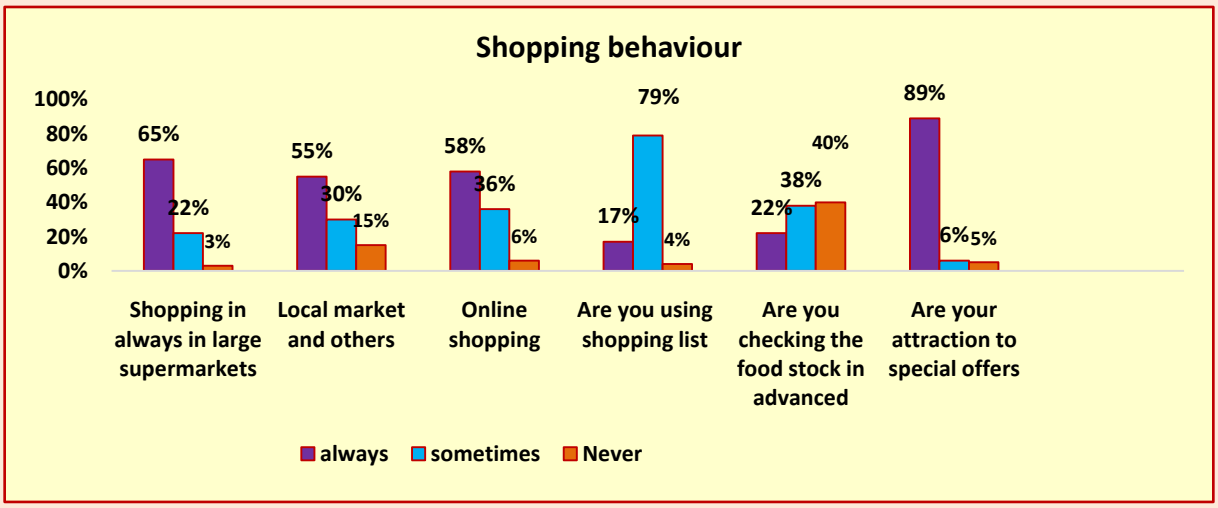

Fig-5

Table 1.5 & Fig-5 shows that Shopping behavior and food waste.Macy.J.(2002) in her study pointed out that unsuccessful food waste source reduction is because of in different attitude regarding the environment. Customer buys excessive food, don't plan for purchases, to avail bulk purchase discount. Often buy more than required, storing equipment's not functioning properly, improper storage of food, improper serving sizes and leftover not being used are some of the indifferent attitudes which contributes towards wastage. In this present study it was found that most (65%) of the respondents were always shopping in large supermarkets, most (55%) were from local market and others &majority (58%) were from online shopping. Among them most

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(79%) respondents were some time using shopping list before going to the market. Majority (40%) of the respondents were never checking the food stock in advanced. Majority (89%) of the respondents were always attraction to special offers i.e. BOGOF (buy one get one free).

Table-1.6 General food waste disposal methods of the residents.

Waste disposal methods	always	sometimes	Never	Total
Feed to animals	33%	18%	49%	100%
Home composting	13%	23%	64%	100%
Giving to the servant	42%	22%	36%	100%
Store in the fridge and reuse later	73%	21%	6%	100%
Throw it into general waste bin	57%	28%	15%	100%

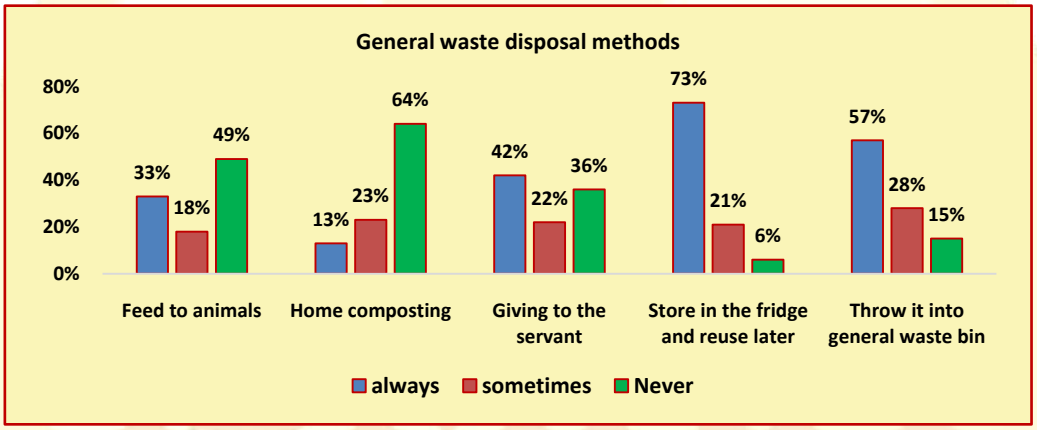

Fig-6

Table-1.6 & Fig-6 shows that the General food waste disposal methods of the residents. The present study found that majority (49%) never feed to animals, (64%) never use the waste for home composting, (42%) always giving to the servants. Among 100 respondents most (73%) store in the fridge and reuse later and (57%) respondents were always throw the extra food into waste bin.

Table-1.7Awareness among the family :-(motivation to reduce food discards)

Awareness among family	yes	No	Total
Do you know the correct temperature for keeping food in fridge	38%	62%	100%
Are you more concerned with the environment impact or financial impact of food waste	48%	52%	100%
Are you thinking about the hunger people	95%	5%	100%

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Are you regret about time/money spent	93%	7%	100%
Are you feel guilty about waste in general	96%	4%	100%
Do you use the separate dustbin for separate waste (degradable and biodegradable)	37%	63%	100%

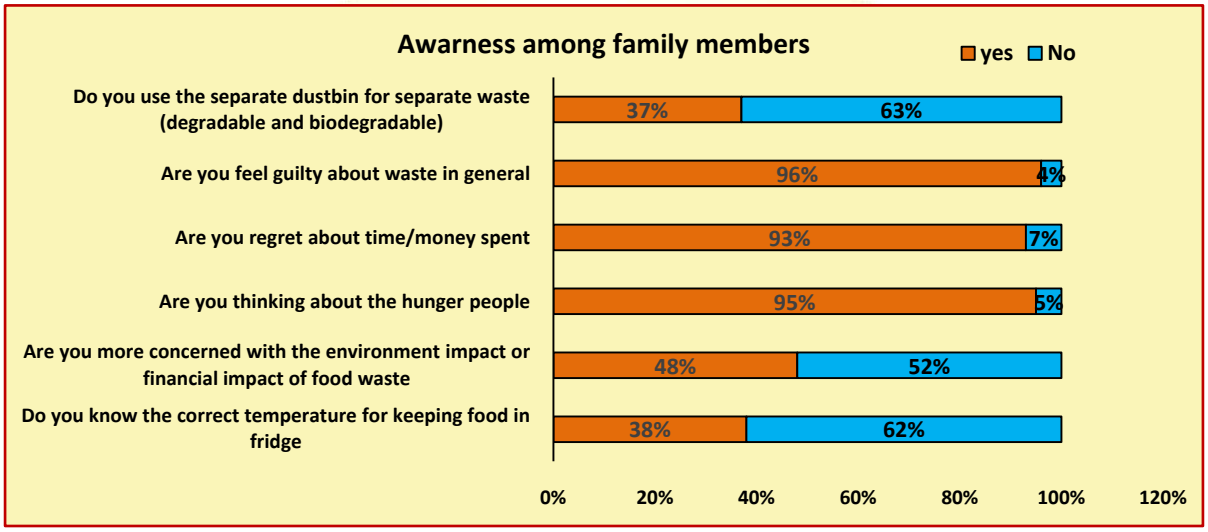

Fig-7

Table-1.7& Fig-7shows that the Awareness among the family members.Yang.et.al (2011) has claimed in the study that since the facilities for proper recycling are not available, it promotes the food waste generation in households. Proper sorting of garbage in households and socially responsible behavior is required for waste reduction. In the present study it was found that most (63%) do not used separate dustbin for separate waste, still (96%) were feel guilty about waste in general & (93%) regret about time/money spent. Also (95%) were thinking about the hunger people whereas (52%) respondents were no more concerned with the environment impact or financial impact of food waste and most (62%) do not know the correct temperature for keeping food in fridge.

The **Food Recovery Hierarchy (Fig-8).** prioritizes actions organizations can take to prevent and divert wasted food. Each tier of the Food Recovery Hierarchy focuses on different management strategies for wasted food such as source reduction, feed hungry people, feed animals, industrial uses and composting. The top levels of the hierarchy are the best ways to prevent and divert wasted food because they create the most benefits for the environment, society and the economy.

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From household level there are also different steps to reduce food waste show in (Fig-9).

ig-9

Conclusion: -Preventing household food waste is the top priority. Role of women is very important in-home management process. Purchasing the correct amount of food, using it while it is fresh, and consuming leftovers reduces food waste and saves money.Next importantstep is to focus moves to ensuring that edible food goes to hungry people through shelters, food banks, and soup kitchens. Food that cannot be used by humans may be useful in animal feed or industrial applications, such as biofuels. Composting food scraps puts nutrients back into the soil. With these strategies, landfill disposal becomes the last resort, rather than the top destination, for food waste.

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References: -

1. FAO. 2014 (a). Definitional framework of food loss. Working Paper. Rome.
2. HKIED, & CSD. (2011). Sustainable Development Hong.cong:Concepts,contexts and challenges by Hong Kong institute of Education and Council for Sustainable Development
3. Global Hunger Index, 2019.
4. Juliane Jörissen , Carmen Priefer and Klaus-Rainer Bräutigam (2015). Food Waste Generation at Household Level: Results of a Survey among Employees of Two European Research Centers in Italy and Germany. Sustainability.
5. Kalyani Srinivas C &Rina Dongre (2018).Astudy of generation of food waste and awareness regarding the food waste amongst Indian households.International Journal of Trend in Scientific Research and development(IJTSRD).Vol-2,ISSUE-4
6. Monier.V,Shailendra.M,EscalonV.O'Connor,C.Gibon,T.Anderson,G.Hortense,M.Reisinger,H.(2010).Preparatory study on food waste across EU27.European Commission (DGENV) Directorate C-Industry.Final report 2010.
7. Macy,Jack.(2002).Food residuals put city on track to over 50 percent diversion.Biocycle,43(2),40-46
8. S. Vasantha1 *, S. Vijaylakshmi2 and Prabha Kiran1(2015). Review on impact of changing lifestyles on dietary pattern. International journal of current of research and academic review.3(6).
9. Tara Janssen and Lisette van de Hei(2018) From Food Waste to Future Value Economic Report
10. Times of India,India falls to 102 in hunger index, 8 ranks below Pakistan,2019
11. Yang,Lei,Li,Zhen-Shan,&Fu,Hui-zhen.(2011).Model of Muncipal Solid waste source separation Activity:Acase study of Bejing.Journal of the Air & Waste Management Association,61(2),157-163.
12. Tara Janssen and Lisette van de Hei(2018) From Food Waste to Future Value Economic Report