JOURNAL OF TOURISM AND GASTRONOMY STUDIES

Causes of Household Food Waste and Motivations to Reduce Food Waste: Sample of Mersin Province

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Abstract

Food sustainability and food security are critical issues that need to be addressed for the continuation of life. It is necessary to focus on food waste to ensure food sustainability and food security, which means access to food. This study, which aims to reveal causes of food waste and motivations to reduce food waste, is performed between September 30, 2019 and September 30 2020 with 50 housewives who live in Mersin, Turkey, selected through purposive sampling and snowball sampling methods. The data collected through a semi structured interview form were assessed through descriptive analysis. It finds out that (1) bread, (2) pasta and rice, along with (3) greens, are the most wasted foods. The causes of food waste are reported as (1) children and grandchildren in the household, (2) cooking more than required, (3) deterioration of the sensory properties of food. The motivations of the participants in this study to reduce food waste include (1) budget, (2) religion (sin) and (3) human responsibility. This study also emphasizes the importance of having about food waste and recycling, information about edible parts of food, access to food, mechanisms of social control, being a good role model for children in food waste.

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INTRODUCTION

The concepts of food waste, food loss and food wastage are defined in different ways. Food waste refers to a decrease in food quality and quantity due to the decisions and actions taken by retailers, food service providers and consumers (Food and Agriculture Organization of the United Nations, n.d., pp. 8-9). Food loss is edible parts of plants and animals produced and harvested for human consumption but not consumed by people. Food loss is the unintended result of agricultural processes or technical limitations in storage (Lipinski, Hanson Lomax, Kıtınoja, Waite & Searchinger 2013, p.1). Food wastage refers to any food lost by wear or waste. Thus, the term "wastage" includes both food loss and food waste (FAO, 2013).

It is known that 1.4 billion hectares of land, approximately 30% of the world's agricultural area, is used to produce food not consumed (FAO, 2013, p. 6). Based on the 2020 data, the average annual amount of food waste per household in Turkey appears to be 93 kilograms. The total annual amount of food waste in Turkey is 7.762.575 kg (UNEP Food Waste Index Report 2021, p. 65).

Food waste has many adverse economic and environmental impacts. It reduces the income of farmers and increases the costs of consumers, leading to a series of wasted investments. From an environmental point of view, it causes energy loss and greenhouse gases as well as inefficient use of water and land resources (Lipinski, Hanson, Lomax, Kıtınoja & Searchinger, 2013, p. 1).

Wastewater generated during the storage of food waste may contaminate water resources and soil. Further, the resulting methane gas causes air pollution (Çirişoğlu, 2019, p. 14). It is clear from the numerical data on the amount of waste that food waste has reached a level that threatens environmental sustainability and the lives of future generations (UNEP Food Waste Index Report 2021, p. 65). These being, the rapid consumption of natural resources and the resulting food waste highlight the importance of the issue.

As stated in the paragraph above, food loss, food wastage and food waste have different meanings. However, the concept of wastage covers both of them. From the Turkish literature and international literature, it appears that there are more studies on household food waste than on household food wastage. Also, focus of their content has been on "household food waste" based on the definitions proposed by FAO on the concepts of waste and wastage.

This study, which probes into the causes of household food waste as well as motivations to reduce it, aims to examine the food wasted the most, the causes of household food waste and motivations to reduce food waste. To that end, this study seeks to present some suggestions to reduce food waste based on the findings obtained on household food waste. Later in this study, an interview form has been designed benefiting from the studies by Djekic, Miloradovic and Tomasevic (2019) and Graham-Rowe, Jessop and Sparks (2014). As the results of this study differ from the results of existing studies in the literature, this study will hopefully provide important insights for the literature.

Literature Review

The literature was reviewed using the key words "household food waste and household food waste/household food wastage" to focus on the subject. A review on the literature was performed with these key words on Google Scholar between 01.04.2019 - 03.09.2021 to reveal the relevant studies performed between 2018 and 2021.

There are a number of indicators of household food waste. One of them is socio-demographic factors. Studies have proven that variables such as the age of individuals, household size, number of children, if any, and income level affect household food waste (Szabó-Bódi, Kasza, & Szakos, 2018; Ramukhwatho, duPlessis & Oelofse, 2018; Grainger, Aramyan, Piras, Quested, Righi, Setti, Vittuari & Stewart, 2018; Fami, Aramyan, Sijtsema & Alambaigi, 2019; Giordano, Alboni & Falasconi, 2019; Chalak, Abiad, Diab & Nasreddine, 2019; Ilakovac, Voca, Pezo & Cerjak, 2020; Demir, 2020). An indicator of household food waste is consumer behaviours in the period between purchasing and consumption. As a result of the research that excessive cooking, buying in excess, being tempted to buy discounted products, poorly planned food shopping and poor storage conditions respectively (Ramukhwatho, duPlessis, and Oelofse, 2018; Bravi, Francioni, Murmura and Savelli, 2020; Jribi, Ismail, Doggui and Debbabi, 2020; Demir, 2020; Daysal and Demirbaş, 2020; Ahmad, Mansor, Yaacob, Kamaruddin and Ali, 2021; van der Werf Seabrook and Gilliland, 2021), picky eating (Grainger et al. 2018; Ahmad et al. 2021), owning a house, spending too much money on food (Chalak, Abiad, Diab and Nasreddine, 2019), food expiration, poor taste and smell, food spoilage, overstayed food, not eating leftovers, poor appearance, not liking the food or ingredients, failure in meal planning or purchasing, large portions, poor cooking skills, purchasing large packages to save money and confusing labeling (Giordano, Alboni and Falasconi, 2019; Ündevli, Kadam, Bekdik, Yılmaz and Çobanoğlu, 2019; Huho, Kosonei and Musyimi, 2020; Demir, 2020), availability of perceived time to cook (Ahmad et al. 2021), perceived busyness (Attiq, Chau, Bashir, Habib, Azam and Wong, 2021b) increase household food waste. Besides, it was proven that possessing the right information on food waste and applying this information decrease in food waste (Fami et al., 2019; Wharton, Vizcaino, Berardy & Opejin, 2021). Another indicator of household food waste is the sensory properties of food. Research has shown that poor sensory properties may cause food to be discarded (Fanelli, 2019; Djekic, Miloradovic & Tomasevic, 2019; Berjan et al., 2019; Hazuchová, Tuzová, Macková & Stávková, 2019; Preka et al., 2020; Moreno, Tran & Potts, 2020).

There are also various motivations to reduce household food waste. In this regard, Pellegrini, Sillani, Gregori and Spada (2019) claimed that individuals are motivated to reduce household food waste due to "their awareness on food prices, concerns over the environment and time management." Ahmad et al. (2021) claimed that the motivations for reducing food waste are feelings of guilt and financial concerns after food waste. Cammarelle, Viscecchia and Bimbo (2021) examined the intentions of individuals living in Italy to purchase active and smart packaging in order to reduce domestic food waste in the context of Planned Behavior Theory. As a result of the research, it was concluded that the participants purchased smart packaging to reduce household food waste, attitudes, perceived behavioral control, economic-social-environmental awareness and shopping routines were important factors in reducing food waste. Van der Werf Seabrook and Gilliland (2021), in their study in Canada, found that the motivation sources for reducing food waste are reducing the amount of money spent, reducing the impact on the environment and reducing hunger, respectively. Attiq, Habib, Kaur, Hasni and Dhir (2021a) found that individuals' expected feelings of guilt, awareness of the consequences of food waste, and knowledge of the environment increase their intention to reduce food waste, utilize leftovers on the plate, and recycle food waste. They found that awareness of being a community increases the intention to reduce food waste and to evaluate food waste.

It is notable that household food waste differs depending on factors such as socio-demographic variables and materials used in cooking. Research show that among the food that tends to be over-purchased and discarded, there are vegetables, fruit, dairy products, ready to eat food, and meat, respectively in South Africa (Cronje, van der Merwe,

and Müller, 2018), cereals and bakery products in Montenegro (Berjan et al., 2019), bread, pasta, fresh fruit, vegetables, milk, yogurt, eggs, meat, desserts and biscuits and seafood in İtaly (Fanelli, 2019), bread and bakery products, convenience foods, fresh vegetables, fresh fruits, dairy products, processed vegetables, beverages, solid fats and oils, meat/fish, desserts and processed fruits in Serbia (Elawad, Agied, Althani and Abusin, 2018), homemade and ready to eat meals, bakery products, fresh vegetables, dairy products, fresh fruits, soft drinks/tea-coffee, canned foods and pickles, flours, raw meat, sauces, marmalade-jams, snacks, pastry products (yeast, muesli, eggs, baking powder), frozen meat and vegetables, fats and spices in Hungary (Kasza, Dorkó, Kunszabó and Szakos, 2020), bread and bakery products, meat and fish products, dairy products, fruits and vegetables and dry foods in Canada (Van der Werf, Seabrook and Gilliland, 2020), fruits, vegetables, bread and buns, potatoes, meat, milk and dairy products, pasta and rice, fish, ready meals, cakes and biscuits and prepared products based on fruits and vegetables in Croatia (Ilakovac, Voca, Pezo and Cerjak, 2020), bread and bakery products, cereals, vegetables, milk and dairy products, tea and coffee, fruits, meat and meat products and seafood in Kenya (Huho, Kosonei and Musyumi, 2020), bread and bakery products, vegetables, fruits, dairy products and cereals in Tunusia (Jribi, Ismail, Doggui and Debbabi, 2020), grains, breads, fruits and vegetables, dairy products in Turkey (Demir, 2020), breads, fruits and vegetables and cereals in Turkey (Aydın and Çelik, 2020), dairy products, fruits and cereals in Aydın-Turkey (Ündevli et al. 2019),

Materials and Methods

This study, which aims to identify the causes of household food waste and the motivations to reduce it, was performed in Mersin, Turkey. It was conducted with housewives as they are the ones actively involved in cooking at home. Participants were selected through purposive sampling and snowball sampling methods. During the data collection, the responses of the interviewees were recorded, upon their permission, via a Sony branded ICDPX470.CE7 model voice recorder. Interviews took place about 5 to 10 minutes and face to face.

The data were collected using a semi structured interview form with open-ended and closed-ended questions. The participants were asked questions about food waste as well as some demographic questions. The interview form was designed based on the studies by Djekic, Miloradovic and Tomasevic (2019) as well as Graham-Rowe, Jessop and Sparks (2014). The interview form included both demographic questions (name-surname, age, marital status, income, education, number of people living in the house and the number of children) and questions about food waste (the most wasted foods, causes of food waste and the reasons for avoiding food waste). The questions in the interview form designed based on the literature were tested for further clarification. To that end, pre-tests were performed on September 6, 2019. Following these tests, the interview form was finalized. 51 participants were interviewed between September 30, 2019 and September 30, 2020; and, a total of 50 interview forms were identified valid.

The data collected through a semi structured interview form were assessed through descriptive analysis. The data analyzed through descriptive analysis may be presented using research questions or pre-identified themes, or using questions or dimensions in the interview and observation processes. In descriptive analyses, direct quotations may be included to reflect the opinions of the participants or observed individuals in a striking way. The purpose is to present the findings to readers in an organized and interpreted way. To achieve this, the data are first described systematically and clearly; then these descriptions are explained and interpreted to examine cause-effect relationships and to make some deductions (Yıldırım & Şimşek, 2013, p. 256).

Result and Discussion

The table on the demographic characteristics of the participants shows that the majority of the participants are primary school graduates (30%), or high school (26%) graduates or undergraduate (24%) degree holders. Based on the data on household size of the participants and their children, 72% of them have 2 to 4 people in their households whilst 70% of them have children. This implies that nuclear family type is prevalent among the participants. Also, the household income of the majority of the participants (26%) is between 3001-5000 Turkish liras whilst 24% has an income equal to the minimum wage and below. It is notable that most of them (90%) are married.

Table 1. Demographic characteristics of the participants

Educational level	n	%	Age	n	%
-	1	2	27-41	24	48
Primary school	15	30	42-56	15	30
High school	13	26	57-75	11	22
Associate degree	4	8	**Household income**	**n**	**%**
Undergraduate	12	24	2826 T and below	12	24
Graduate	5	10	2827-3000	7	14
Household size	**n**	**%**	3001-5000	13	26
1	2	4	5001-7000	6	12
2-4	36	72	7001-1000	7	14
5 and more	12	24	1001 and more	5	10
Children	**n**		**Civil status**	**n**	**%**
No	15	30	Married	45	90
Yes	35	70	Single	5	10

As seen in the table, the most wasted food is bread (20.0%). The reasons stated by the participants for the waste of bread are as the following: favouring freshly-baked bread on daily basis, consuming meals that does not need bread accompaniment, purchasing excess quantity of bread and the easy-perishable nature of bread. Rice and pasta (13.8%) is the second most wasted food category. "Lack of a meal that goes with rice from the day before, stale rice, lack of appetite towards bulgur pilaf" are considered as the causes of throwing rice and pasta away. The greens category is the third most wasted and not consumed food category (13.8%). The participants reported that they throw greens away as "they quickly spoil; as they are sold in bunch it is not possible to use the whole bunch; they are forgotten in the refrigerator; they end up being leftovers after the dinner and they are not consumed later because of the deterioration in sensory properties after they are brought to the table." For the causes of throwing stews away (13.8%), the participants expressed that "too much food is cooked; food goes bad; food is forgotten in the refrigerator; stews with yoghurt or garlic are not consumed for a second time; and they do not know how to use the leftover stews." It is also remarkable that some participants reported that vegetable stews look unattractive to eat when heated. The statements on leftovers (12.3%) mostly focus on serving too much food as well as shared dishes not consumed. On fruits (10.8%) and vegetables (7.7%), the participants expressed that they are rotted quickly, are over-purchased and frozen in the refrigerator. Also, on milk (7.7%), the participants reported that milk spoils quickly and is thrown away because they do not know how to use up leftover milk.

Table 2. Categorization of food waste

Category	n**	%	Descriptions
Bread	13	20.0	We usually throw bread away. Other than that, there is not any other food that we throw away. *(P.11).
Rice and pasta	9	13.8	Bulgur pilaf, pasta, stews, etc. I cannot find the fine line as I have a crowded family (P. 14) …
Greens	9	13.8	In my household, we do not throw too much food. It is very rare; what we throw away is usually greens. When I forget about it or did not use it (P.5) …
Stews	9	13.8	Leftover stews. We do not eat stews from the day before much and thus we discard them (P.35) …
Leftovers	8	12.3	…Well, I am trying to keep them, but this does not work. If I find somewhere to keep them, it works. Leftovers left in small plates, for example. (P.4)
Fruits	7	10.8	The fruits rot quickly (P.43).
Dairy products	5	7.7	Dairy products and bread, yoghurt, cheese and milk. Because they spoil quickly, when I don't consume them, they spoil (P.32)…
Vegetables	5	7.7	We chop tomatoes, cucumbers for the breakfast in the morning, and only 3 or 5 slices are consumed… I throw them away (P.22)…

*The abbreviation "P." refers to participant.

**Analysis was made based on more than one answers of the participants.

The most wasted household food reported by the participants is bread, rice and pasta as well as greens. The study by Ilakovac, Voca, Pezo and Cerjak (2020) indicates that food waste includes fruit - vegetables, eggshell, tea leaves, coffee powder, bread and buns, potatoes, meat, dairy products, pasta and rice, fish, ready meals, cakes and biscuits and fruit and vegetable products. When compared, the wasted food reported by Ilakovac, Voca, Pezo and Cerjak (2020) is varied. The reason is perhaps that the number of individuals in the sample is higher and that information on food waste is noted by the participants. This study, with a sample of Mersin, concludes that only edible parts of food are considered as waste by consumer. This may be caused by the lack of knowledge of the participants about food waste and recycling. The findings of Elewad et al. (2018), Berjan et al. (2019), Fanelli (2019) and Kasza et al. (2020) show that one of the most striking foods not consumed and wasted is seafood. Although Mersin has a long coast to the Mediterranean, seafood is not consumed much due to the fact that the majority of the local people are Yorouks (Kırmızı, 2016, p.127) and migrated especially from the Southeastern Anatolia; therefore, seafood is not wasted as it is not consumed. Besides, it is remarkable that meat is not wasted, which may imply that when the cost of a product increases, people pay more attention not to waste it (Huho et al, 2020).

The results of the study are similar to other studies conducted in Turkey (Ündevli et al., 2019, Demir, 2020; Aydın and Çelik, 2020) in terms of the types of food thrown away. However, greens stand out as wasted foods in this study. The reason for this situation can be explained by the fact that the habit of consuming greens besides meals is higher in Mersin than in other provinces. In addition, it is thought that the summer season in which the research was conducted may affect the result in this respect.

Table 3 shows that food waste is primarily caused by the factor of children and grandchildren (21.9%) as they are picky or leave the meal unfinished. The second cause of food waste is cooking more than required (19.2%). The participants said that they cook more than required because they consider the possibility that guests might come over to their place, do it by force of habit as they used to have a crowded family, and as they cook food when they are hungry. Sensory properties (15.1%), which are critical in the consumption of food, are the third factor considered as the cause of food waste. The participants stated that food is not consumed when it gets stale and that products purchased from supermarkets spoil too quickly.

On over-purchasing of food (12.3%), the participants expressed that they over-purchase as "family members go shopping unaware of each other, buy more products than needed, buy more as they like the sensory properties of fresh fruits and vegetables in the market, and products in the night market are sold at half price." The statements of the participants on the causes of stew-waste (13.8%) imply that people desire to consume cooked food on daily basis and prefer to throw away the left-overs for vegetable stews in particular. The causes of leftovers (12.23%) are too much food served and shared dishes not consumed. Moreover, as for fruits (10.8%) and vegetables (7.7%), the participants expressed that they are rotted quickly, are over-purchased and are not consumed as they are frozen in the refrigerator.

Table 3. Causes of food waste

Category	n*	%	Descriptions
Children and grandchildren	16	21.9	Children are picky eaters. When they do not want to eat something, I make something else and throw away the other (P. 26) .
Cooking more than required	14	19.2	…cooking too much (P. 15) …
Deterioration of the sensory properties of food	11	15.1	Usually I do not throw meals away, but I discard food for breakfast, tomatoes, etc. as they become soft. But not too often as I live alone (P. 49).
Over-purchasing	9	12.3	Sometimes we purchase too many vegetables. When I go to the market, I buy a lot. I want everyone to come, eat and drink. When I see a lot in the fridge, I feel full. If there is nothing in that fridge, even when I am full, I worry about that (P. 12)…
Not eating regularly at home	8	11.0	I do not like to eat; I live alone. Products I purchase from the supermarket deteriorate very quickly. (P.32).
Problems related to cooling equipment	5	6.8	…I have to put all the food I purchase in the fridge. Since there is no space in the fridge, I have to put some food outside. I waste food due to lack of technical equipment (P.18).
Forgetting food in the refrigerator	4	5.5	Absent-mindedness. That is all. So, for example, we bought a product, for example, an eggplant. We cook eggplant for a long time, and then we forget about it (P.1)…
Failing to find a way to use up leftovers	4	5.5	As they are not consumed, and we do not know how to use leftovers (P.47).
Serving too much food	2	2.7	We have got a lot on our plates. We refrain from asking for more. Whether it is a child or an adult, s/he always has got a lot on his/her plate. This of course leads to waste (P.29).

* Analysis was made based on more than one answers of the participants.

Szabó-Bódi, Kasza and Szakos (2018)'s research is similar with regards to have children increase household food waste. Some participants expressed that eating out increases in household size food waste. This finding is congruent with the findings of Ilakovac et al. (2020) in this regard. Among the causes of household food waste, there are two causes worth further consideration: over-purchasing and cooking more than required. It is notable that the participants stated that they over-purchase and cook more than required because they consider the possibility that guests might come over to their place. The conception that hospitality brings great abundance in Anatolia, the characterization of the host with the dinner prepared by himself/herself as well as the preparations of the host before guests arrive, (Gökçen and Ulutaş, 2018, p. 125) underline the importance given to guests. This study with a sample of the participants who live in Mersin reveals that the participants cook more than required, that other people in the house do not want to eat stews or breads when they get stale, resulting in food waste. Davenport, Qi and Roe (2019) report that odor, appearance (whether it looks safe to eat), passed date on package, trust store food quality, date label phrase, plan to use soon, expense and compostability are respectively considered important in deciding whether to keep or discard an item.

This present study concludes that focus has been on factors such as stagnation and deterioration of sensory properties of food, and that few participants mentioned label reading and compostability. Further, it can be argued that the cost of a food is considered as a driving factor in the decision about discarding it or creating food waste. This study remarkably reveals that the participants did not mention any waste related to expensive foods such as meat; however, they reported that vegetable stews were consumed once and sometimes not consumed at all. Moreover, it seems that the prevalence of meat in the cuisine culture of the region (Kırmızı, 2016, p.127) and the "delicious taste of meat" may be influential in this.

The factors such as "forgetting food in the refrigerator, failing to find a way to use up leftovers, and serving too much food" are among the causes of food waste. This is supported by the findings of Hazuchová et al. (2019), Berjan et al. (2019), Huho et al. (2020), Preka et al. (2020) and Moreno et al. (2020); yet, these studies further mentioned factors such as "dislike, package-related problems, labeling information, poor cooking, destroying food while storing or before bringing it home, having too little to save, leaving it in the refrigerator for too long." Such difference in the findings may be caused by different data collection methods and sampling size.

As for the causes of food waste, Barone, Grappi and Romani (2019) believe that the pursuit of quality and comfort the participants in their study while purchasing food will not affect their spending intentions. Based on the findings of this study with a sample of Mersin, it seems that budget is the main motivation of the participants to reduce food waste and thus income level or spending intentions are the two factors that differ these studies from each other.

This study also explores the motivations to reduce food waste. As the findings demonstrate, the reasons vary from budget-plan to religious beliefs or personal choices. Under the category of budget (32.5%), the participants stated that food waste is damaging the budget of both the state and their own homes; that they should be spending carefully because their income is low, and that they have difficulty in making a living. Under the category of religion (sin) (21.3%), the participants highlighted the concepts such as "Fear of God, fear of sin, something that God does not like and sin." Also, under the category of human responsibility (16.3%), the participants mentioned that there are hungry people outside; that people cannot afford and buy what they have, and people in Africa cannot meet their basic needs. Under the category of environmental sustainability (7.5%), the participants further stated that it is damaging to nature and the environment and that natural resources are used and contaminated from the field to the table. It was also reported under the category of considering the labor-effort spent (3.8%) that production is carried out under difficult conditions and labor is spent. Lastly, under the category of being a role model for children (2.5%), the participants expressed that they were careful about this so that their children look up to them and that other family members cared about food waste as well.

Table 4. Motivations to reduce food waste

Category	n*	%	Description
Budget	26	32.5	Throwing food away is both financially and environmentally damaging (P.19).
Religion (sin)	17	21.3	I purchase as much as I can eat. Living conditions... It is a sin; consider those who cannot afford to find something to eat (P.41)…
Human responsibility	13	16.3	It is a sin; people are starving to death in Africa. They are hungry, weak; I'm recklessly wasting food here. First of all, it is a sin (P.21).
Not wanting to throw it away	8	10.0	I want to use as much as I need. I do not want to throw it away. After all, I do not want to throw something that I can use again away (P.18)…
Environmental Sustainability	6	7.5	Because it will damage the environment… (P.27).…
Food sustainability	5	6.3	… This seems like a huge pertness to me: unconsciously using food, water, or the environment. (P.4).
Considering the labor-effort spent	3	3.8	… We are also involved in production in Maraş. I know that it is challenging to produce something (P.40).
Being a role model for children	2	2.5	So that my children can look up to (P.33)…

* Analysis was made based on more than one answers of the participants.

Pellegrini, Sillani, Gregori and Spada (2019) report that motivations of individuals to reduce household food waste are "their awareness on food prices, environmental concern and time management." Although the data of the study by Pellegrini et al. were collected using questionnaire, the findings are similar. This study with a sample of Mersin determines that "religion-sin and human responsibility" are the main motivations of the participants to reduce household food waste. In this regard, it seems that food waste and the concept of wastage are associated with religion, thus being considered as a motivating force by the participants. Unwillingness to throw food away and considering the labor-effort spent are also among the factors that motivated the participants to reduce food waste. In this sense, this result is congruent with the findings of Graham-Rowe, Jessop and Sparks (2014), who reveal that "worrying about wasting and doing the right thing" are motivational resources to reduce food waste. Fami et al. (2019) find out that having correct information about food waste and applying it in one's life positively affect the motivation to reduce food waste. This study with a sample of Mersin reveals that although having correct information about food waste is not reported as a motivation to reduce food waste, some participants mentioned compostability and stated that they sometimes store small leftovers in the freezer.

Conclusion and Future Direction

This study, which seeks to identify the causes of household food waste and motivations to reduce food waste, presents its findings obtained through interviews with housewives who live in Mersin, Turkey.

The most wasted household food reported by the participants is bread, rice and pasta as well as greens. The causes of household food waste include children and grandchildren, cooking more than required, deterioration of the sensory properties of food. Budget, religion (sin), human responsibility are among the motivations of the participants in this study to reduce food waste.

In the light of the findings obtained from the research, it can be said that the cost of a food, society's foodway, the availability of food in terms of climate change food waste from society to society. However, the causes of food waste can be classified as socio-demographic factors, deterioration in the sensory properties of food that occurs over time, the attitudes of the individual who cooks at home about shopping and cooking, the attitudes of family members and problems with the cooling equipment. Based on the findings obtained from the sources of motivation for reducing

food waste, it has been seen that the idea of protecting materiality and spirituality, ensuring sustainability and being a role model for children is important.

Suggestions for future academic research

This study has some limitations as in many other studies. Firstly, the findings are limited to the answers of the housewives in Mersin who voluntarily participated in the interviews. Secondly, the interviews were performed face to face. It appears that social desirability response bias might have occurred while the participants responded to the questions posed. Another limitation of the study is that it is possible that the participants may not remember household food waste and the practices aimed at reducing it during the interviews. For that reason, this study suggests that further research may be conducted with different samples and data collection tools. Also, it is necessary to perform more studies to fully explore motivations to reduce food waste. Understanding of the most wasted food in a region and practices related to the "product development" of the identified food can enhance the economy of the region. As for the causes of food waste, scholars may investigate the factors of food waste for children, who are the youngest members of a family, through various data collection methods and propose ways to prevent it.

Suggestions for practitioners

The kitchen diary is a data collection method used in research to measure waste food formation. Based on the personal statement of the household, the type, amount and reason of food waste are determined. Collecting data using a kitchen diary in research is a time-consuming and expensive method (Coşkun, 2019, p. 40). Although it takes time, it is thought that it can be used to provide food waste management in kitchens as well as being a data collection method. A kitchen diary for this purpose should provide with which foods are stored in the refrigerator, where, which packages are opened and when. This gives individuals effective kitchen management skills. Moreover, noting how much of which food is thrown away would enable individuals to raise awareness and insight of the food and the amount wasted. For this reason it is recommended that individuals keep a kitchen diary at home. Based on the findings on the motivations to reduce food waste, local governments are recommended to enforce various incentives in order to raise public awareness and reduce food waste so that food waste can be recycled and food sustainability can be ensured. An example of such incentives is providing freshly-baked breads for free of charge or granting one free travel on transport when individuals bring stale breads. Also, trainings on how to use up leftovers, the food waste generated during the chopping and peeling of fruits and vegetables will be effective in reducing food waste. Based on the statements of the participants, this study suggests that local governments establish centers for the collection of wasted oils. It is essential for the sustainability of food and beverage and thus the sustainability of life to apply measures taken to control the amount of food waste and to ensure food safety, first among families, which are the smallest building blocks of the society, and then among food and beverage enterprises.

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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