Reduction of Food Wasting - Attitude and Activities of Senior Households

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Abstract
It is a truism to say that wasting food is an extremely important problem these days. The aim of the article is to define the attitudes and behaviours of seniors towards this problem. The framework was developed with the use of qualitative methodology. Individual in-depth interviews were used as the research method. The study was conducted in Poland, Croatia and the Czech Republic with 16 seniors. The study shows that seniors are aware of the phenomenon of food waste. Seniors declare that they are trying not to waste food and suggest several ways to prevent food waste. The study contributes and expands the knowledge about food waste of old people in the conditions of the COVID-19 pandemic.

Keywords: food waste, seniors consumption, qualitative research

JEL Classification: D12, Q01, Q56

1. Food waste as a global problem

The goals of sustainable development as the overarching goal are to improve the quality of people's life - through appropriate shaping of environmental, social and economic conditions. Each of the 17 goals indicates what is expected of countries, organizations, enterprises and households in this regard. They indicate the need for a systemic and integrated approach and involvement of all market participants for their implementation (Chen at al. 2020).

One of the goals - 12.3 is dedicated to preventing food waste: “By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses”. The consequences of wasting food include the following negative effects for:

− the environment – there is a need to find land for waste, the emission of greenhouse gases and poisonous methane as a result of decomposition processes, the infiltration of the environment of harmful waste (water contamination, consumption by birds, etc.);
− economy (waste of raw materials needed to produce food, including water, soil, human hours, energy);
− society - hunger, wars for access to water and food.

As a result, food waste is a waste of land, water, energy and inputs, as well as an unnecessary contributing factor to climate change (Kummu et al., 2012).
According to the data, food waste alone represents around 3–5% of global warming impacts, more than 20% of biodiversity pressure, and 30% of all of the world’s agricultural land (EU 2014). In other research an estimated 8-10% of global greenhouse gas emissions are associated with food that is not consumed (Mbow et al., 2019). The Food Waste Index Report 2021 estimates that around 931 million tons of food waste was generated in 2019, 61% of which came from households, 26% from food service and 13% from retail (UN, 2021). Meanwhile, 842 million people still suffer from under nourishment (FAO, 2013), while obesity has become a significant public health issue with 500 million obese adults (Allen and Prosperi, 2016).

To sum up, it is worth emphasizing that the statistics on food waste presented above are frightening. The analyzed problem is very serious, especially in Poland, because in all three countries the most food is wasted in households, while fruit and vegetables, bread, meat are among the most discarded products. As indicated, the waste of these products causes enormous damage to the natural environment. Of course, it is worth adding that statistics are not precise, sometimes different studies present different values, different methodologies, but regardless of this, the problem of food waste is becoming more and more important.

2. Senior households

In the context of food and its waste, both producers and intermediaries are responsible for its production and distribution, while households, i.e. consumers, are particularly responsible for reducing food waste (Benton 2015). This study focuses precisely on consumers and their involvement in the development of sustainable consumption and responsible food waste management.

Households contribute to a different degree and to a different extent to both food waste and the prevention of this phenomenon. There are also different attitudes of households (Coskun 2021). Due to significant intergenerational differences in consumer attitudes, the article focuses on senior households. Several arguments support this approach:

- experiences related to the lack of availability of basic products,
- limited access to food products,
- a different value system compared to the generations of younger consumers,
- experience of the entire life cycle of the family - this factor causes the senior to experience a period when it was necessary to purchase more food and reduce during the "empty nest" period or transition to the one-person farm phase,
- experiencing universal access to food now,
- being affected by promotions of stores that encourage the purchase of larger packages or larger quantities (multi-packs),
- seeking savings by looking for the best bargains in stores,
- perceived anxiety about ensuring a “peaceful old age” in a situation where retirement benefits are significantly lower than remuneration in the period of professional activity.

We assume that not all households contribute to the problem of food waste equally. To conclude senior households may be less involved in the creating problem with food waste because they may create less wastes, be better organized and know more solutions to creatively use leftovers.

3. 3R and 5R concept

The above factors undoubtedly shape the attitude of households towards food (Borusiak 2021). There are a number of different ways of preventing food waste, which can be described as a 3R (reduce, reuse, recycle) or 5R (additionally repair and rot) model. Much of the food waste is inevitable, the
majority of food waste is preventable. Some of them can be directly adopted by senior households. We also assume that the creativity of seniors toward preventing food waste is high.

In the case of reduce - we mean reducing the number of products purchased and thus reducing consumption. Both methods bring benefits such as savings and avoid falling into the obesity trap associated with reduced physical activity. Regarding reuse - the food can be reused - in its same form or after having been modified. Recycling, on the other hand, relates primarily to packaging and the possibility of recovering them for reprocessing, but also for re-use. Rot is about getting rid of leftovers in the form of composting them.

The above-mentioned ways of managing food scraps are conditioned by various additional, unforeseen factors - e.g. the COVID-19 pandemic. For example, during the lockdown in Great Britain, the amount of food thrown away decreased by about 1/5, which was related to the fact that more people prepared their meals at home. In turn, studies from Australia indicate that during a pandemic COVID-19 the quantity and composition of household food waste was found to be strongly influenced by the number of people and children in a household, and somewhat influenced by socioeconomic factors and neighborhood food environment characteristics, including the availability, density, and proximity of retail food outlets (Everitt 20140). The factor determining the attitude towards food may also shape the material status and education. The UNEP Food Waste Index Report (2021) shows that levels of household food waste (the total of edible and inedible parts) are similar for high-income, upper middle-income and lower middle-income countries.

In order to identify the attitudes of senior households towards the phenomenon of food waste and prevention, a qualitative study was carried out among senior households.

4. Data and Methods

Primary research was conducted to identify the attitudes of senior households from Poland, the Czech Republic and Croatia about the 5R concept in the context of sustainable food consumption. There is pilot study research. Qualitative studies were performed in which the method of individual-in-depth-interviews was applied (also because of the coronavirus pandemic). They were followed by semi-structured interviews and field note-taking. The scenario consisted of four parts:

- attitudes towards food waste according to the 5R concept,
- food waste and education (including sharing knowledge and experiences between generations),
- new technologies as a support for not wasting food,
- Covid-19 and changes in food waste.

This study was conducted in February 2022, among older people from Poland, Croatia and the Czech Republic. Participants were selected through purposive sampling, which is useful in qualitative research, particularly among populations which are difficult to access, and when the research issues may be perceived by the respondents as difficult and sensitive.

The survey was conducted among 16 respondents. There were 8 pensioners from Poland, 4 from Croatia and 4 from the Czech Republic. In total, 12 women and 4 men participated in the research, aged 63-84. As far as size of the sample is concerned, one of the rules of qualitative research is that the selection of respondents is based on the experience of other researchers carrying out research on a similar subject. Also the typical size in that type of research is 12-16 interviews (Stefańska and Olejnik 2021). For comparison, in the UK research 15 household food purchasers were interviewed (Graham-Rowe, Jessop and Sparks 2014). In another study among seniors with the same subject matter, 16 respondents over 65 years of age were surveyed, but in retirement
living communities (McAdams, von Massow and Gallant 2019). Most of the respondents participating in our survey were the main persons responsible for purchasing in households.

The duration of each study was approximately 45 minutes. The interviews, with the consent of the participants, were recorded and then transcribed. The results were processed with the use of the Atlas.ti computer program. The analysis of the content of the collected material was performed according to the principles developed by Miles and Huberman (1984), and with the use of the descriptive, attribute and process coding of statements in accordance with Saldana's recommendations (Saldana, 2021).

5. Results

5.1. Spontaneous associations with “food wasting”

At the beginning, all respondents agreed that generally food plays a very important role in their lives (4-5 points) and that money doesn't bring happiness, but can make living and decision making much easier.

Food waste in the context of the global problem is perceived by retirees through the prism of tons of food that are thrown away primarily by restaurants and large stores, but not necessarily households. The problem in this case arises from production that is not adapted to the needs of society and from improper distribution. The result, according to pensioners, is world hunger. It is worth quoting here two examples of respondents' statements: “We throw out and others starve, it is unfair that we do what we do and others would give a lot for a piece of bread; It is a global problem, too many tons of food are thrown away” (3PL) and “poor kids in Africa” (3CZ).

On the other hand, in the case of the second group of associations - closely related to the respondents, retirees in the first associations emphasize that the problem of wasting food does not directly concern them, because they personally do not waste food: “I use everything to the end, and the rest is for animals” (2PL), „With me, there is no waste, I hate it, I process the bread differently, I dry, I make casseroles, grated bread, nothing is wasted in the countryside (4PL). In general, wasting food is also associated with throwing food into the trash bin, too large purchases resulting from e.g. “buying with your eyes” (7PL) and “Useless wasting and use, consumption, not effective redistribution, expiry” (1CZ). One of the respondents, in turn, associates not wasting food with „logic of thinking, being active in life, being someone” (8PL).

5.2. Food reuse

The research shows that retirees try to manage their food in such a way as not to waste it, but also not to waste much of it for re-use. All respondents agree that they save leftovers and use it another day. In order not to spoil, they hide the rest in the refrigerator (or „if it's cold I can put it on the balcony”, 1CZ). Both they and their family members have no problem eating the same dish again. Sometimes, however, if there is too much of this food, the household “without enthusiasm, but they eat; they are not happy, but whoever does not want to, don't eat” (5PL). Some of the respondents are emotional when household members do not eat leftovers, for example sadness (1CRO, 2CRO, 4CRO), angry or worried due to attitude that it is a financial loss as well (4PL, 1CRO, 3CRO, 4CRO).

As they emphasize, they try to buy and prepare as much food as they or their loved ones are able to eat. As one pensioner points out: “I buy and prepare as much as I have to eat, and even less, I don't make unnecessary supplies. If I need 1 cucumber, I don't buy any more because it will break. When I do more, I heat it up in the microwave the next day and continue eating it. It doesn't matter that I don't feel like eating it. I must” (1PL).
Another strategy for dealing with the food left over from a meal is to make it into a different dish (2PL, 3PL, 5PL, 6PL, 1CRO, 4CRO). It is worth quoting here: “Something is going to be done the next day, for example if there are potatoes left, you can cook carrots and other vegetables and make a vegetable salad” (2PL). Retirees provide examples of such solutions. It is very common to make tomato soup from chicken soup (3PL), fry potatoes, make potato dumplings (5PL), or use excess meat to bake (6PL).

In addition, the still working pensioner emphasized that if there is any food left, she takes it to work the next day, “I take the cake to work to share with my friends” (3PL). Retirees, so that the food they have prepared is not wasted, they also share their excess with their relatives, giving them home (3PL, 4PL, 3CZ): “When I see that there is too much left, I separate the guests so that they don't get wasted. Children and grandchildren get taken away” (3PL). Another solution is to freeze excess food prepared (4PL, 5PL, 2CZ, 3CZ).

Rarely, but it happens that such residues are thrown away “I often throw out when it is stale, or I get bored, or there is nobody to give to” (7PL). In the case of retirees, especially those living in the countryside, food leftovers are often used as food for animals, not only farm animals, but also dogs or cats, not only their own, but also those who walk freely in the countryside (2PL; 4PL, 8PL).

Another aspect raised in the research was the attitudes of retirees towards wasting food by leaving uneaten portions on the plate. They strongly emphasize that this is a very good rule, although not always possible to be strictly adhered to (5PL, 1CZ, 2 CZ). For example, as one respondent notes: „Sometimes it may happen that the kid is not feeling well, maybe he or she would like to eat something else. It is a useless stress” (3CZ).

The way to avoid wastage in this case is to put a portion size on the plates that you can eat. “As everyone puts himself on, he throws away less. Everyone knows how much he wants to eat” (2PL), “It's better to have smaller portions and make toppings. Then I would have leftovers for sure” (5PL). Also all Croats respondents agree that each individual is responsible for their own plate and they claim that there is a tradition and culture in their families to eat everything that is taken to one’s plate.

In the case of placing dishes on plates, the way to reduce food waste may be to eat the leftovers of the loved ones, “In the family I can I can even finish after someone (after my wife) or I was able to finish a meal after my kids. But if there is any leftover on the plate it was not consumed by a visitor/guest, those I would throw away. From this perspective serving on a platter is better as guests can take as much as they like” (1CZ).

On the other hand, some people see the advantages of putting food on the plates right away, but on the condition that each reveler indicates how much he or she wants to eat „Putting food on the platter means for me more work and at the end even more dishes” (3CZ).

Sometimes, however, especially at some ceremonies, the hostess herself imposes or encourages us to eat more. As the respondents emphasize, they do not like such situations: “There is no such obligation to eat everything. If someone puts too much on me, first I scream not to put more on me, and when he does, it's his housewife’s problem, because I will leave it. But in a restaurant, I would rather eat everything, even by force. I will not leave it there, because it would be wasted. Or a dishonest restaurateur will give it to someone else, and if they throw it away, it's a waste of food. I would challenge someone if someone throws away food” (1PL). At the same time, they notice that people often put too much food on their plates during holidays or trips. In their opinion, such behavior may result from greed, ill-considered behavior, fear that there will be no more for them, they consider it a little-sense approach.
In turn, being the hostess, they also try not to force anyone to eat the entire portion, even if someone put it on their plate and did not eat it all. “Maybe someone did not like it and did not eat it. You cannot force anyone” (2PL). There are times, however, that leaving food on the plate may be misunderstood by retirees and may be irritating. As one of the respondents points out, “When the son-in-law arrives, he must always leave some crumbs, uneaten pork chop, and half-finished tea. He has such a habit from home. But we leave our plates clean” (4PL).

6. Discussion and Conclusion

The results presented above show great engagement of senior households in managing food wasting. This conclusion is confirmed by the results of studies carried out in other countries, including in Spain by Conde-Caballero at al. (2021) who insist that “the inductive-deductive analysis revealed enduring memories that shaped present-day attitudes towards food - i.e. maximization of ingredients and “zero-waste” practices”. Also a study in Italy by Lanfranchi at al. (2016) indicates that seniors are characterized by high skill levels due to their involvement in food management, including the problem of food wasting. However, as explained by Schanes at al. (2018), “There is no consensus about how far food waste generation is subject to age”. Generally in many research we can observe a negative correlation between the amount of food wasted and age (Secondi et al., 2015; Ishangulyyev at al 2019; Bozdag and Cakiroglu, 2021), but in other studies their authors indicate that seniors waste more food than younger (Cecere et al., 2013).

The attitudes of seniors towards wasting food depend on where they live. Like Secondi at al (2015) who indicated that “at individual level it was observed that people living in towns and large cities tend to produce more waste thus emphasizing the need of diversifying policy interventions at local level according to the extent of urbanization”, our research also confirms this relationship. This is because seniors living in the countryside have a greater ability to feed their animals with food scraps or compost, which is not seen as a waste of food by them.

The results presented above lead to some general conclusion. As far as the level and the structure (categories) of food waste is concerned, we observed large differences among countries. Second - food plays an important role in their life. Next - senior households represent a similar attitude toward food waste no matter the country of origin. They perceive that as both a global problem but also economic, social and environmental consequences. Seniors are very creative in the ways to reduce food waste (and money waste). We don’t observe differences in respondents' answers and that leads to the conclusion that their attitude is a result of problems experienced by them when they were children.

To conclude, this study has deepened the understanding of the food waste problem in seniors households and ways of preventing the problem. It seems clear that seniors respect food and are very creative in decreasing losses. At the same time they are aware that nobody can be forced into any solutions. It also seems clear that much of the attitude of people comes from home. This is the first place of education.

7. Limitations and future directions of research

The studies are pilot studies, they were carried out on a small sample and in only three countries. And in a rather specific time - the covid-19 pandemic. Since it’s not obvious whether age is in fact the determinant of household attitude toward food waste, in that article we concentrated our research on the older generation to explore their attitude, motives and behaviour. We didn't analyze younger households due to the unsolved and pending conclusions from other research that generation X and Y, and maybe Z can represent different attitudes toward the food waste
problem. Future research may be oriented on recognition of the attitude of their households toward the problem of food waste and methods of education and adaptation of new technologies to prevent the phenomenon, as a kind of exchange of knowledge and experience between generations.

We didn’t either ask respondents in detail how they understood the expiration date. It’s worth mentioning here about the interpretation of labels. According to research by Zielińska et al. (2020) people have difficulty distinguishing and understanding the terms on the label and that a significant proportion of the respondents consume food products after the “best before” date. The authors tested in laboratory milk, pasta, mayonnaise and jam and they confirmed the microbiological safety of the products even six months after the “best before” date. Other features (texture, colour and sensory quality) slightly changed after one month for milk and mayonnaise (the colour had become more yellow) and after three months for pasta (its hardness had decreased) and jam (it had become browner). Similar problem with understanding labels was among Greek households - in the research of Abeliotis, Lasaridi and Chroni (2014) about 40% of respondents misunderstand the meaning of food date labels. We may expect that a similar problem is faced by seniors, who in interviews inform that they throw out food after expiration date, and it can also be another topic of future research.

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