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Purchasing behavior in rural areas for food products during the COVID-19 pandemic

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Introduction: Most previous studies have investigated consumer purchasing behavior for food products in urban areas during the COVID-19 pandemic. In contrast, the present study is one of the very few to investigate consumer purchasing behavior for food products within rural areas.

Methods: To this end, research was conducted in Sicily taking as a case study a rural municipality whose population was subjected to a lockdown regime to contain the spread of the virus. The choice of carrying out the research in a rural rather than an urban area contributed to the emergence of new aspects concerning consumer behavior in rural areas during the COVID-19 emergency.

Results and discussion: The research reveals that the amount of money spent on food purchases, as well as the amount of food purchased, increased during the lockdown. In general, the research shows that COVID-19 impacted the purchasing behavior of consumers in rural areas even though they showed a high resilience and adaptation to the health emergency situation caused by the pandemic.

KEYWORDS

consumer behavior, food purchasing, economic sustainability, COVID-19, rural areas

Introduction

When the first cases of COVID-19 were detected in Italy in 2020, all media broadcast images of empty shelves and supermarkets being stormed by consumers. Panic buying was an extremely frequent event, leading to disruptions in the food supply chain (Yuen et al., 2020; Bentall et al., 2021; Kassas and Nayga, 2021; Cerroni et al., 2022). Fear of disruptions and lockdown restrictions caused a change in consumer purchasing behavior that led to an increase in food stocks and the amount of food purchased (Sim et al., 2020; Janssen et al., 2021). These behavioral changes can also be attributed to a feeling of insecurity that pervaded public opinion during that period (Farr-Wharton et al., 2014; During, 2016; Sturiale et al., 2022).

In addition, the containment measures envisaged by the Italian government to stem the contagion confined people indoors, causing an increase in the use of online sales platforms (McKinsey and Company, 2020a; Montanino et al., 2020). Even small neighborhood shops equipped themselves with their own platforms or used social media, such as Facebook and WhatsApp, to sell their products (Scuderi et al., 2022). In this regard, the pandemic has caused drastic changes in both sales and purchasing patterns (Zarbà et al., 2022) but, however, it is not yet sufficiently clear whether the post-COVID-19 situation will still be the same and whether online platforms will continue to be preferred by consumers. A recent market study showed that 61% of respondents said they would continue to shop online even after the pandemic (McKinsey and Company, 2020b).

During the lockdown, there was an increase in purchases of certain food categories, such as pasta, rice, sugar, eggs, and flour (Zinola, 2020; Fang et al., 2022). In addition, due to the closure of restaurants, there was a change in habits that pushed consumers to rediscover a passion for home cooking, almost as a psychologically positive response to the economic crisis caused by COVID-19 (Coop 2020 Report, 2020).

Another interesting aspect noted during the lockdown period concerns behaviors toward food waste. Residential lifestyles, panic buying, and restrictions to curb contagion are also possible causes of changing purchasing behavior in relation to food waste (Pappalardo et al., 2020). It is well-known that food waste is an extremely important issue, especially since it is one of the main causes of global warming (Scherhauser et al., 2018; Pappalardo et al., 2022). Landfilled food waste emits toxic substances that also affect groundwater (Tonini et al., 2018). Previous studies have also shown that the tendency to waste food varies between segments of the population (Setti et al., 2016) and depends on consumers' purchasing habits (Lazell, 2016). Scalvedi and Rossi (2019) have reported a typical attention of the Italian people to waste production, although unfortunately it does not correspond to proper management. However, although the pandemic contributed to an increase in panic buying (Wang et al., 2020), it is possible that consumers decreased food waste even though purchasing more food. This could be due to the increased focus consumers place on food waste in emergency situations, such as COVID-19 (Scuderi et al., 2016; Shiller, 2019).

Despite the numerous studies done on consumer food purchasing behaviors during the COVID-19 pandemic, some aspects remain underexplored even though they are potentially interesting in understanding how consumers react to emergency moments. One of the still under-explored aspects concerns the food purchasing behaviors of consumers living in rural areas during the COVID-19 pandemic. Almost always, studies conducted on this topic have not focused specifically on rural areas despite the fact that it is plausible to assume that the lifestyle habits of people living in rural areas differ from those living in metropolitan areas. This aspect may have relevant implications when intervention strategies have to be

planned to cope with periods of crisis since the degree of resilience of rural areas may depend on different factors than urban areas.

With this in mind, the objective of our survey was to observe the food purchasing behaviors of people living in rural areas during the lockdown period, when the maximum regulatory restrictions were imposed to contain COVID-19 infection. This represents a novel aspect in the scientific literature, since previous studies on this topic have not specifically focused on purchasing behaviors of people living in rural areas, but more generally on consumers living in metropolitan areas (e.g., Harrison et al., 2022), or belonging to specific population groups (e.g., Drichoutis and Nayga, 2022), or even on purchasing and consumption behaviors of specific food products (e.g., Malone et al., 2021). However, focusing on rural areas could bring out peculiar characteristics such as the different living habits of people living in those areas, knowledge of which could be useful in addressing emergencies measures consistent with the socio-economic context of rural areas (Bellia et al., 2015; Chenarides et al., 2020; Ingrassia et al., 2022a). Specifically, our survey was conducted in a small rural municipality (Capizzi) located in Sicily (Italy) whose population was subjected to the lockdown regime at the beginning of 2021 due to the high number of COVID-19 cases in the municipality. The results of our survey can provide useful insights for policy makers, particularly regarding the behaviors of rural people and the resulting strategies to be adopted to better manage emergency periods in rural areas (Safonte et al., 2018).

Materials and methods

The survey was conducted on a representative random sample of 207 residents in the municipality of Capizzi, which is a small rural municipality located in Sicily (Italy). The interviews were conducted during the lockdown period to which the population of Capizzi was subjected in January 2021. Due to restrictions imposed by the governmental authorities, the online Google Forms platform was used for data acquisition.

Specifically, the sample of consumers interviewed was first contacted by telephone to be invited to answer an online questionnaire in an accurate and thoughtful manner. Some screening questions were first asked by phone, namely whether they were of legal age (more than 18-year-old) and whether they were the person responsible for purchases within the household.

After obtaining positive answers to these questions and consent to complete the survey, each participant was sent the online questionnaire also containing socio-demographic questions such as gender, age, marital status, number of children, number of people with a job in the household, level of education, and net annual income.

Subsequently, questions on purchasing behavior were asked to consumers in relation to the COVID-19 emergency situation and the establishment of the so-called “Red Zone” (lockdown) within the municipality of Capizzi.

Specifically, respondents were asked a set of qualitative questions about whether their purchasing behavior, food expenditures, waste productions and other food-related behaviors had changed during the COVID-19 pandemic. These qualitative questions were grouped in the following four categories: (1) Structure of preferences (i.e., types of food purchases), (2) shopping behaviors (i.e., frequency of food purchases, amount of food purchased, food expenditure, and food stocked at house), (3) behavioral drivers (i.e., drivers underlying shopping behaviors), and (4) socio-demographic characteristics.

Participants were asked through five points Likert-scales questions to elicit whether their purchasing behaviors changed during the lockdown. This format has already been used in previous studies examining consumer behaviors during the COVID-19 pandemic to increase the significance of qualitative and quantitative information (Pappalardo et al., 2020; Goswami and Chouhan, 2021; Amicarelli et al., 2022). In particular, participants answered on a scale from 1 (significantly reduced) to 5 (significantly increased). Respondents were also asked to report the extent to which they agreed to a set of statements regarding possible reasons behind the reported change in food purchasing behaviors. An example of a statement is: “*My food waste production was reduced because I wanted to ease the work of people in the waste collection.*” Again, they had the option to choose on scale from 1 (do not agree at all) to 5 (completely agree).

Results

The summary of the main socio-demographic characteristics of the interviewed sample is reported in Table 1. A total of 74.4% of the consumers who participated in the survey declared themselves to be female, and 25.6% declared themselves to be male. It is evident that in the rural area of reference, that is the municipality of Capizzi, women are mainly involved in household shopping. The average age of the consumers involves was 41.5 years. The majority of the respondents answered that they are married (64.3%), and 34.3% of the respondents stated that they had two children living in their household. The average number of people with a paid job in the household of the respondents was 1.5 members. Furthermore, 47.5% of the respondents stated that they had a diploma as their educational qualification. Finally, 72.5% of the survey participants stated that they had a low income (<20,000 euros per year).

TABLE 1 Main socio-demographic characteristics of the interviewed sample.

Variables	
Gender (%)	
Female	74.4
Male	25.6
Age (years)	
Years	41.5
Civil status (%)	
Married	64.3
Cohabitant	8.7
Single	19.3
Divorced	2.9
Widower	4.8
Cohabiting children (members %)	
No children	31.9
One child	21.7
Two children	34.3
Three children	10.6
Four children	1.0
More than four children	0.5
Number of persons in paid employment	
Median	1.5
Education level (%)	
Primary school	2.9
Middle school	27.5
Diploma	47.3
Degree	18.8
Postgraduate	3.4
Income (euro %)	
<20,000	72.5
20,000 to 39,999	20.3
40,000 to 59,999	4.8
60,000 to 79,999	1.0
80,000 to 99,999	1.4
<100.000	0.0

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

Frequency of visits to the supermarket

The majority of the sample surveyed (48.3%) stated that the frequency of visits to the supermarket was unchanged during the lockdown. Examination of Table 2 also shows that the number of consumers who increased the frequency of visits to the supermarket was slightly higher than those who decreased the number of visits during the lockdown.

This almost equal distribution between those who have increased their purchase frequency and those who have decreased is shown in Table 3 shows that 56.9% increased the

TABLE 2 Summary statistics regarding purchasing purchases (on a scale of 1–5).

Variable	Frequency	%
Significantly reduced	7	3.4
Slightly decreased	42	20.3
Unchanged	100	48.3
Slightly increased	50	24.2
Significantly increased	8	3.9
Total	207	100

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

TABLE 3 Summary statistics of the main reasons for increasing purchasing frequency.

Motivation to increase frequency	Percentage of agreement
The amount of food I eat has increased since the start of the pandemic	56.9
The likelihood of contracting the coronavirus in supermarkets is low	19.0
I fear that there will be interruptions in food supply	20.7
I cook more and order less take-away food than before	60.3
I tend to accumulate more food reserves	63.8

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

frequency because the amount of food consumed increased during the lockdown. Moreover, total of 60.3% stated that they increased the frequency of visits to the supermarket because they preferred to cook more at home and order less take-away food, and 63.8% of the respondents stated that they increased their food stocks at home. In contrast, the main reason for the decrease in the frequency of shopping at supermarkets has been the fear of contracting the virus and becoming infected.

Purchased quantity of specific food items

Regarding the types of foodstuffs purchased during the lockdown, [Table 4](#) shows that flour was the product whose quantity increased more than any other product (48.8%). It is not easy to find a precise reason for this result, but it is probably due to a greater availability of time spent at home by the population with the ability to prepare homemade flour-based foods.

On the other hand, the product type with the smallest increase was “ready meals” (4.8%). For this type of good, 56.5% of consumers stated that the quantity purchased of ready meals

TABLE 4 Summary of changes in the quantity of specific foodstuffs.

Variable	Decreased (%)	Unchanged (%)	Increased (%)
Pasta	5.3	67.1	27.5
Rice	11.6	80.7	7.7
Flour	4.3	47.3	48.3
Oil and vinegar	8.2	72.9	18.8
Bread	7.7	63.3	29.0
Meat, fish, eggs	7.7	61.8	30.4
Milk	6.3	62.3	31.4
Frozen foods	14.0	60.4	25.6
Canned foods	16.9	68.1	15.0
Ready-made dishes	38.6	56.5	4.8
Vegetables and fruit	6.3	60.9	32.9
Snacks and biscuits	13.0	60.4	26.6
Organic products	16.9	68.1	15.0
Gluten-free products	26.6	66.2	7.2
Bottled water	8.2	61.8	30.0
Non-alcoholic drinks	17.9	67.6	14.5
Alcoholic drinks	29.5	63.8	6.8

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

TABLE 5 Summary statistics of the amount of money spent on food purchases.

Variable	Frequency	%
Decreased	23	11.1
Unchanged	91	44.0
Increased	93	44.9
Total	207	100

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

was unchanged, while 38.6% replied that it had “decreased.” This result may be attributable to the new residential lifestyle that consumers have to adopt during the lockdown period. This seems to be a potential interesting result and probably due to the context in which the survey was carried out and that is a rural area where both due to established habits and the lack of an adequate supply of ready foods, the use of them was found to be uncommon. Another interesting result is the percentage of consumers (32.9%) who responded that they had increased the amount of fruit and vegetables they bought, probably because these foods are recognized as having important health values.

Amount of money spent on food purchases

During a lockdown period, consumers can only move within the municipality to make food purchases. This leads to an

TABLE 6 Summary statistics of the main reasons for the increase in the amount of money spent on shopping.

Variable	Disagree	Indifferent	Agree
I tend to buy more food	18.3	25.8	55.9
I cook less and order more take-away food	79.6	9.7	10.8
I tend to buy more ready-made meals	80.6	10.8	8.6
Prices have risen	15.1	15.1	69.9
I tend to stock more food	7.5	26.9	65.9

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

TABLE 7 Summary statistics of food stored at home.

Variable	Frequency	%
Decreased	7	3.4
Unchanged	110	53.1
Increased	90	43.5
Total	207	100

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

increase in domestic demand and a likely increase in food prices. To find out whether prices had increased, consumers were asked whether the amount of money spent on food purchases during the lockdown had decreased, remained the same, or increased. It was found that the amount of money spent had increased for 44.9% of consumers (Table 5).

The main reasons for increasing the amount of money spent on food were (Table 6): “I tend to buy more food” for 55.9% of the consumers; 69.9% responded that prices had increased; and 65.9% agreed with the statement “I tend to stock more food.” The consumers who stated that the amount of money spent on food had increased disagreed with the following statements: “I cook less and order more take-away food” (79.6%); and “I tend to buy more ready meals” (80.6%).

Quantity of food stored at home

Table 7 shows that, for 53.1% of the consumers, the amount of food stored at home as a reserve remained unchanged during the lockdown. However, the percentage of consumers who answered that the amount of food kept in reserve increased was 43.5%, while that for those who answered that the amount of food kept in reserve decreased was only 3.4%.

Among the main reasons for increasing food stocks at home during the lockdown, 80% of the respondents answered that “I tend to buy more food,” while 61.1% stated that they shopped

TABLE 8 Summary statistics of the main reasons for increased food storage at home.

Variable	Disagree	Indifferent	Agree
I tend to buy more food	7.8	12.2	80.0
I tend to eat more	27.8	30.0	42.2
I tend to shop more online	20.0	18.9	61.1
I tend to be preoccupied with food supply problems	11.1	27.8	61.1

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

more online and were concerned about possible problems with food supply (Table 8).

Food shortages

A total of 58% of the respondents reported noticing shortages of food products during the lockdown, with the products most in short supply being flour (85.8% of respondents) and vegetables and fruits (44.2%; Table 9). Significant shortages were also found for pasta, milk, and frozen food. No shortages were found in the supply of products such as rice, water, and various beverages. This question was answered by 58% of consumers who had previously stated that they had noticed food shortages.

Quantity of food wasted

Concerning the amount of food wasted during the lockdown, 68.6% of the respondents stated that this amount remained unchanged. However, a significant result was that 24.6% of the participants stated that they had decreased the amount of food not consumed and thrown away. Only 6.8% stated that they had increased food waste during the lockdown (Table 10).

Concerning the main motivation for decreasing food waste (Table 11), 91.8% of those who had previously stated that the amount of food waste had decreased stated that they were paying more attention to these aspects because they were experiencing a period of emergency. Other reasons for decreasing food waste were not to add more pressure to the food management system (77.6%) and to buy less perishable food (73.5%). This latter result seems at odds with a previous finding that respondents were buying more fruit. Actually, the purchase of perishable foods such as fruit might actually be associated with the consumption of foods that have potential positive health benefits, and this is important in times of health emergencies. However, buying

TABLE 9 Summary statistics of percentages regarding shortages of specific food products.

Variable	Yes (%)	No (%)
Pasta	32.5	67.5
Rice	5.0	95.0
Flour	85.8	14.2
Oil and vinegar	20.8	79.2
Bread	19.2	80.8
Meat, fish, eggs	20.0	80.0
Milk	36.7	63.3
Frozen foods	33.6	66.4
Canned foods	23.3	76.7
Ready-made dishes	24.2	75.8
Vegetables and fruit	44.2	55.8
Snacks and biscuits	21.7	78.3
Organic products	25.8	74.2
Gluten-free products	15.0	85.0
Bottled water	15.0	85.0
Non-alcoholic drinks	7.5	92.5
Alcoholic drinks	7.5	92.5

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

TABLE 10 Summary statistics of the amount of food wasted and thrown away.

Variable	Frequency	%
Decreased	51	24.6
Unchanged	142	68.6
Increased	14	6.8
Total	207	100.0

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

TABLE 11 Summary statistics of the main reasons for the decrease in the amount of food wasted and thrown away.

Motivation to increase frequency	%
I want to facilitate the work of people involved in waste collection	70.6
I pay more attention because we are living in a time of emergency	91.8
I buy less perishable food such as salads and fruit	73.5
I don't want to add more pressure to the food management system	77.6

The data were collected during a lockdown period, i.e., during the establishment of the “Red Zone” in the village of Capizzi, in January 2021.

more perishable foods (e.g., fruit) does not necessarily imply an increase in food waste, which instead is reduced due to the uncertainty caused by the emergency, the risk of not being able to go to the supermarket, the risk of incurring economic

hardship such as job loss and finally the need to stay in good health status.

This question was answered by 24.6% of the consumers who had previously stated that they had reduced food waste.

Discussion and concluding remarks

The data collected provide a sufficiently comprehensive view of what happened during the lockdown within a small rural community. To the best of our knowledge, our study is the first that specifically focussed on the purchasing behaviors of consumers living in rural areas during the emergence of COVID-19 when severe movement restrictions and great uncertainty existed among the population (Prescott et al., 2020).

Overall, our findings contrast with previous studies conducted in metropolitan areas (Chenarides et al., 2020) suggesting that the pandemic condition may not have had significant effects on food purchasing behaviors among consumers that live in rural areas compared with those live in metropolitan areas. The lockdown has led to an increase in time spent at home and thus the ability to prepare food without excessive reliance on outside ready-to-eat food purchases. Moreover, in contrast with previous studies (Sim et al., 2020; Kassas and Nayga, 2021), we did not observe any significant panic buying phenomenon since the frequency with which consumers went to the supermarket to buy food remained for the most part “unchanged,” as well as the amount of food purchased. Actually, other previous studies had also noted that the phenomenon of panic buying is more pronounced in urban than in rural areas (Bentall et al., 2021). Consequently, our results seem to confirm this trend although the causes that might explain this result are not well-understood and would merit further investigation in future specific surveys. Perhaps, one possible cause could lie in the lower-middle income level that makes it more difficult to increase shopping if not even in the smaller social context that make more reassuring relations between consumers and small local retailers. However, like in the previous studies (Chenarides et al., 2020; Janssen et al., 2021; Fang et al., 2022), our findings showed that the main motivation for increased food stocks at home was the fear of food supply chain disruptions and the tendency to buy more food staying at home.

Among food items, there was an increase in the purchase of flour and, quite surprisingly, decrease in the purchase of ready meals. The decrease in ready meals purchases seems to partly contradict what has been observed in previous studies but referred to other socio-economic contexts (e.g., urban areas; e.g., Chenarides et al., 2020; Janssen et al., 2021). However, this result could be explained by the lifestyle habits that especially in rural areas enhance the role of preparing food at home even by resorting to traditional recipes

and eating habits. In other words, consumers in a time of crisis rediscovered their passion for cooking and combined it with proper application of expert advice that indicated better chances of defense against the virus in correlation with proper nutrition.

Instead, there was an increase in the amount of money spent on food, but this result is due to rising prices caused by an increase in demand of food products. However, like in the previous studies our findings showed that the main motivations for increased the amount of money spent on shopping was the tendency to buy and store more food at home (Ingrassia et al., 2022b).

Another interesting aspects regards the behaviors about food waste. Our findings showed that although the amount of food wasted and thrown away remained unchanged for the majority of respondents, a significant percentage of participants reported an increase in awareness about this issue. This result confirms what has already been observed in previous studies (Pappalardo et al., 2020; Cerroni et al., 2022), as living in times of emergency probably increases social awareness toward certain behaviors such as reducing food waste. Moreover, this result confirms what Scavedi and Rossi (2019) stated about the attention that Italians people typically show on food waste issue.

In conclusion, it can be said that the situation that arose in rural areas like the municipality of Capizzi in Sicily during the lockdown of COVID-19 pandemic had not a significant impact on the purchasing behavior of food products among local population. The resilience and adaptability of the rural population probably contributed to overcoming the difficulties imposed by the health emergency.

However, our survey present limitations that should be better explored in future studies such as exploring whether there are differences in behavior among various rural population groups (e.g., youth vs. adults, education level, and income classes). For this reason, for future studies it could be interesting to replicate the research in other rural areas in order to confirm our findings.

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Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

CB, RS, and GP: conceptualization, formal analysis, and writing—review and editing. CB and GP: methodology, writing—original draft preparation, and supervision. MP, CB, RS, and GP: validation. MP and GP: investigation. CB: project administration and funding acquisition. All authors have read and agreed to the published version of the manuscript.

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