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Change in Food Consumption Behavior During the COVID-19 Pandemic in Surakarta City

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	Abstract
Keywords: Shopping pattern, Consumption pattern, Household, Socio-demography, Surakarta	The uncontrolled COVID-19 transmission has changed the socio-demographic conditions of households in Surakarta City. These changes influenced households' decisions on spending and consumption due to the implementation of social distancing and mobility restriction policies. Thus, this study aims to (1) identify the socio-demographic characteristics of households, (2) identify food shopping and consumption patterns of households due to COVID-19 and the implementation of the PSBB policy, and (3) estimate the relationship between socio-demographic conditions and food shopping and consumption patterns during the COVID-19 pandemic in Surakarta City. This study collected data from 120 respondents through an online survey from August 2021 to September 2021. The results indicated that households reduced food purchases, often bought food from local stores, and often shopped in small stores. Meanwhile, the change in consumption patterns was the increased frequency of in-home activities, namely eating alone or with family and sparing time to improve cooking habits at home. Through chi-square analysis, changes in households' shopping and consumption patterns were found to be significant to some socio-demographic characteristics, including age, education level, income, and occupation. The results of this study can provide information to the government to design evidence-based policies during post-pandemic recovery in Surakarta City.

INTRODUCTION

Consumption behavior is a complex issue related to decision-making to determine the quality of the community's standard of living (Saliem, 2009). Decision-making, especially on food consumption, is influenced by personal, social, cultural, environmental, and economic factors (LaCaille, 2013). Different influencing factors will distinguish each consumer's decision-making. For example, the COVID-19 pandemic has become a contributing factor to the change in consumer consumption behavior. Before the pandemic, people were not worried about traveling to buy food and groceries. At that time, they usually obtained food from markets, shops, and supermarkets (Zainuddin et al., 2022). However, such worries and concerns arose during the COVID-19 pandemic (Ben Hassen et al., 2020).

These concerns arose not only due to the impact of COVID-19 on health but also to the disruption of the community's economic system (Toiba et al., 2022). On the other hand, social distancing or lockdown policies significantly impacted community mobility and economic business. It affected the availability, distribution, and access to goods, especially for basic needs, such as food (Ben Hassen, 2021). In addition, the implementation of mobility restriction policies to control COVID-19 transmission cases has created new circumstances, such as the closure of restaurants, hotels, and tourist attractions; limited access to shops; and increased unemployment rates with implications for decreased income (Larios-Gómez et al., 2021; Relawati et al., 2021; Toiba et al., 2022). These new circumstances would lead to consumer anxiety, which changes people's food shopping and consumption patterns during the COVID-19 pandemic (Toiba et al., 2022).

Previous studies on the effect of the COVID-19 pandemic on food shopping and consumption patterns in various countries have been conducted. For example, some studies found that COVID-19 has caused a shift in consumer behavior to consume healthier food and reduce eating out and a shift in food and grocery shopping to online services or delivery services (Ben Hassen, 2021; Bender et al., 2021; Bogevska et al., 2021a; Ellison et al., 2021; Filimonau et al., 2021; Poelman et al., 2021; Toiba et al., 2022). Most previous studies indicated that the frequency of food shopping was declining. In contrast, a study by Bogevska et al. (2021) found that 32.10% of respondents shopped more frequently than usual. Their food shopping and consumption decisions varied based on their socio-demographic conditions.

Factors influencing the change in food shopping and consumption patterns in Surakarta City become a novelty in this study. The factors used were socio-demographic factors, such as gender, age, educational background, income,

occupation, and dummy variables from a decreased income during the COVID-19 pandemic. Therefore, this study aims to (1) identify the socio-demographic characteristics of households, (2) identify food shopping and consumption patterns of households due to COVID-19 and the implementation of the Large-scale Social Restrictions (*Pembatasan Sosial Berskala Besar*/PSBB) policy, and (3) estimate the relationship between socio-demographic conditions and food shopping and consumption patterns during the COVID-19 pandemic in Surakarta City.

RESEARCH METHODS

This study was conducted in Surakarta City, Central Java. This city was selected due to its rising number of positive COVID-19 cases that characterized the problem. Based on data from the Ministry of Health of Indonesia (2021), Surakarta City was the third city in Central Java with high transmission of COVID-19 cases. This study was conducted from August 2021 to September 2021, which showed the condition of the second wave of COVID-19.

The respondents involved in this study were housewives that aware of the circumstances for shopping and preparing food at home. The population in this study included 300 people, following the sampling frame in previous research by Toiba et al. (2015). Based on the existing sampling frame, the sample was determined by the systematic random sampling method. Therefore, the total samples in this study were 120 people.

The types of data used in this research were primary and secondary data. Primary data were obtained from an online survey using a structured questionnaire. The questionnaire was written in Indonesian and delivered through the Google Forms platform. This questionnaire was adapted from Ben Hassen et al. (2021) that contained 22 questions grouped into two parts. The first part consisted of 9 questions about the respondents' socio-demographic conditions, such as gender, age, educational background, occupation, and income. The second one consisted of 13 questions on shopping and consumption patterns, such as how much they consume, the tendency of shopping behavior, and others. The survey was distributed through communication channels, social media (WhatsApp, Instagram, Twitter, and Telegram), and email. On the other hand, secondary data were obtained from literature studies from the Statistics Indonesia (Badan Pusat Statistik) of Surakarta City and other sources that supported this research.

Data for the first and second objectives were analyzed using a descriptive statistical approach. This approach was used to identify socio-demographic

characteristics and changes in shopping and consumption patterns of Surakarta City households, which were obtained from the questionnaire results. This analysis was displayed using means, percentages, and frequencies. The response percentage on changes in food shopping and consumption patterns in Surakarta was calculated using multiple response analysis. According to Lavassani et al. (2009), multiple response analysis is an analysis that shows the categorization of respondents' answers based on the list of options provided during the survey.

The analysis technique for the third objective, which was to analyze the relationship between socio-demographic characteristics on the change in shopping and consumption patterns of households, used the Chi-squared analysis (X^2). According to Syofian (2017), the basic mathematical formula of the Chi-Square is as follows.

$$X^2 = \frac{\Sigma(f_0 - f_e)^2}{f_e}$$

Chi-squared analysis (X^2) is an analysis to test whether the significant difference in the frequency of observation results (symbolized by f_o) and the frequency expected by the researcher (symbolized by f_e) from a limited sample is significant or not. If the estimated result is significant, it shows a relationship between socio-demographic characteristics and food shopping and consumption patterns of households in Surakarta City.

RESULTS AND DISCUSSION

Socio-demographic Characteristics of Respondents

The socio-demographic characteristics, as displayed in Table 1, show that shopping and food preparation activities for household consumption were dominated by women (90.83%). Decisions on food shopping and food preparation activities, such as cooking, were dominantly performed by women or housewives. It is confirmed by data from Statistics Indonesia (2021a), which state that the female population in Surakarta City is 1% higher than the male one. For the average number of family members, there were 3 to 6 people in one household. In addition, the population of Surakarta City was mainly in the age range of 25 to 34 years old. This age range is classified as a productive age to work (Tana & Ghani, 2015).

Table 1. Socio-demographic characteristics of respondents (n=120)

Variable	Answer Options	Frequency (n)	Percentage (%)
Gender	Female	109	90.83
	Male	11	9.17
Age	18 – 24	18	15.01
	25 – 34	45	37

	35 – 44	9	7.51
	45 – 54	22	17.5
	55 and above	26	22
Marital Status	Married	78	65
	Others	42	35
Education Level	None	0	0
	Elementary School	2	1.67
	Junior High School	4	3.34
	Senior High School	24	20
	Diploma	20	16.67
	Undergraduate	63	52.5
	Postgraduate (S2/S3)	7	5.84
Income Level	≤ 1,800,000.00	11	9.17
	> 1,800,000.00 – 3,000,000.00	32	26.67
	> 3,000,000.00 – 4,800,000.00	20	16.67
	> 4,800,000.00 – 7,200,000.00	31	25.84
	> 7,200,000.00	26	21.67
Occupation	• Housewives	23	19.7
	• Student	2	1.67
	• Entrepreneur	28	23.33
	• Civil Servants/Private Employees/State-Owned Enterprises	45	37.50
	• Civil Apparatus/Armed Forces/Police	3	2.50
	• Health Worker	13	10.83
	• Others	6	5
Family Members	< 3	30	25
	3 – 6	87	72.5
	> 6	3	2.49
Debt Ownership	Yes	48	40.00
	No	72	60.00
Car Ownership	Yes	61	50.83
	No	59	49.17
Loss of Income	Yes	32	26.67
	No	88	73.33
Decreased Income	Yes	79	65.83
	No	41	34.17

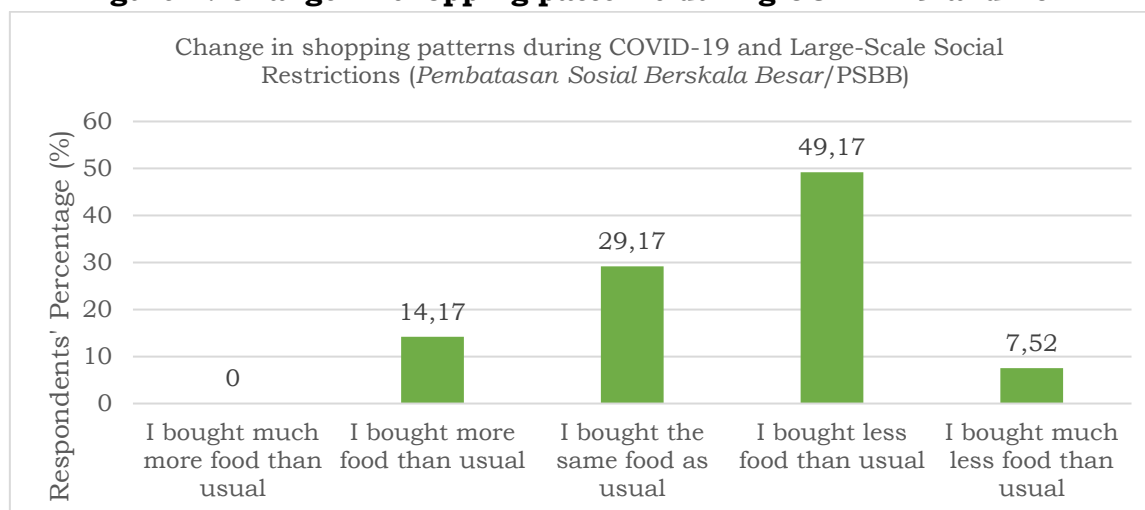Source: Primary data (processed), 2021

The economic level is inseparable from the measurement of an individual's income level. Income level determines the quality and quantity of food provided in a household. The results of this research showed that most household incomes were above the minimum wage of Surakarta City. According to the official website of Central Java Province, the minimum wage of Surakarta City in 2020 was IDR 2,013,810,- which increased by 3.68% in 2021 (jatengprov.go.id, 2021). A person's educational background strongly influences income level, implicating the quality of human resources, especially in food fulfillment (Corman et al., 2022). This study also found that undergraduate/college graduates dominated the respondents' formal educational

backgrounds. It means that the human resources of Surakarta City can be presumed to be good and have good sources of information as well. As stated by Purwanti & Nurfita (2019), a person with a higher level of education tends to have better resources and information sources than someone with low education. However, the economic shock during the COVID-19 pandemic affected the socio-demographic conditions of the community. Even though households in Surakarta City did not experience job loss, most experienced a decreased income. It is in line with data from Statistics Indonesia (2021b), stating that around 49% of Surakarta people experienced a decreased income during the COVID-19 pandemic.

Food Shopping and Consumption Patterns of Households during COVID-19 and the Implementation of PSBB Policy

COVID-19 has changed food shopping and consumption patterns in Surakarta City, as shown in Figure 1. The research results indicated that 89.16% of respondents decided not to eat outside the house. This information was obtained based on the summation of respondents' answers of "never", "rarely", and "very rarely". In addition, 42% of respondents "rarely" went shopping at the supermarket, and 14.17% "never" did so. Next, 57.5% of respondents "often" went shopping for local food and groceries. Then, 46.67% of respondents who answered "often" tended to shop more frequently at the nearest small store.

Figure 1. Change in shopping patterns during COVID-19 and PSBB

Source: Primary data (processed), 2021

Other alternatives from respondents to purchase food were through online ordering platforms and home delivery services. As many as 28.33% of respondents often used online platforms and delivery services to buy food. Online platforms are used to avoid busy stores and maintain the practicality of shopping (Alaimo et al., 2020). On the other hand, Figure 1 shows that 53.69% of respondents bought "less"

and "much less" food than usual during the COVID-19 pandemic. It is in line with Zainuddin et al. (2022), which stated that people's daily income did not support food hoarding during the COVID-19 pandemic. In addition, this study also found that the COVID-19 pandemic also triggered several changes in food-related activities. For example, 79.17% of respondents often ate with the family; 72.51% of respondents cooked and spent much time preparing food. In line with Ellison et al. (2021b), the implementation of mobility restriction policies encourages people to carry out activities from home.

Relationship between Socio-demographic Conditions and Food Shopping and Consumption Patterns during the COVID-19 Pandemic

This study examines the relationship between socio-demographic characteristics and changes in shopping and consumption patterns experienced by households in Surakarta City during the COVID-19 pandemic. The analysis results showed that the socio-demographic characteristics of respondents had a significant relationship with changes in shopping and consumption patterns during COVID-19, as shown in Table 2. Some socio-demographic characteristics that had a significant relationship with changes in food shopping and consumption patterns of households in Surakarta City are described as follows.

First, the shopping habit of Surakarta people in buying local food was found to have a significant relationship ($p < 0.01$) with age. It is because a person's age will affect their anxiety about the safety of the food they consume. This statement is also confirmed by Poelman et al. (2021), which stated that the older a person is, the more they will maintain the nutrition and safety of the food they eat. Thus, the older households in Surakarta City will be more careful about buying food. According to Low et al. (2015), local food is not only based on distance but also on local ownership of agriculture, such as fruits, vegetables, and other types of food.

Second, the shopping pattern of ordering food via online platforms was found to have a significant relationship ($p < 0.01$) with age and education level. This research showed that the respondents' age was dominated by the age range of 25 to 34 years old. This age range tends to be familiar with technology, such as online platforms. It is in accordance with Zuo et al. (2022), which stated that the age group included in gen z, those born from 1995 to 2012, has a high response to technological advancement. This technological advancement has led to increased shopping habits via online platforms as it is more practical and can avoid busy stores (Alaimo et al., 2020). In addition, this study also found that education level had a significant relationship with the shopping pattern of ordering food via online platforms. It is in line with a study by

Purwanti & Nurfita (2019), which found that people with high education levels tend to have higher sources of information than those with low education. Thus, people with a college education level have a higher source of information than those with a lower education level.

Third, consumers were found to often shop directly at small stores. This change in the shopping pattern was found to have a significant relationship ($p < 0.05$) with the income level of households in Surakarta City. Based on the survey results, it was found that Surakarta City households often went to small stores and rarely shopped at supermarkets because of their income level per month. It is in line with the statement of Ellison et al. (2021) that consumers with low incomes or households who experience a shock due to a decreased income will reduce their targeted consumption spending. Furthermore, the cost of getting high-quality food in supermarkets becomes a barrier for consumers (Laraian, 2016).

Fourth, the consumption pattern of Surakarta City households for eating at home had a significant relationship ($p < 0.01$) with age, income level, and occupation. Poelman et al. (2021) found the same results as this study: the change in eating at-home behavior had a significant relationship with age. This change has a significant relationship with age because older individuals will pay more attention to the food they consume. In this case, healthy food consumption tends to be obtained by eating alone and minimizing eating outside the house (Flanagan et al., 2021). It can encourage consumers who have higher incomes to maintain the nutritional needs and safety of the food they want to consume (Ellison et al., 2021a). In this case, food safety can be obtained by reducing the habit of eating out (Flanagan et al., 2021).

Fifth, related to the habit of eating at home, there was a decreased habit of eating outside the home, for example, eating at restaurants, cafes, and stalls. This change was found to have a significant relationship with age ($p < 0.1$) and income level ($p < 0.01$). As discussed in the previous paragraph, age is a factor that influences eating habits outside the house. The individuals' productive age also affects their responses to changes in food consumption patterns. A study by Tana & Ghani (2015) found that the age range of 35-44 years old is a productive working age range that spends more time at work and has limited time to do eating activities outside the house. It is in line with the findings of Ellison et al. (2021) that consumers who have low incomes or households experiencing shock due to a decreased income will reduce their targeted consumption spending so that they tend to reduce the portion of meals outside the house.

Sixth, the habit of eating at friends' or relatives' houses had a significant relationship (p<0.05) with gender. Suggs et al. (2018) found that housewives in charge of preparing food for the family prefer eating together with the nuclear family rather than eating at a relative's house. Based on a study by Flanagan et al. (2021), individuals with high incomes tended to rarely have the habit of eating out in their relatives' houses during the COVID-19 pandemic.

Table 2. The influence of socio-demography on the change in food shopping and consumption patterns during the COVID-19 pandemic (n=120)

Variable	Gender x^2	Age x^2	Education x^2	Income x^2	Occupation x^2
Buying food behavior	2.1	115.6	17.5	75.9	184.9*
Buying local food	3.8	195.3***	21.2	96.4	181.9
Ordering through online platforms	4.1	297.9***	47.2***	133.9	252.2
Buying food directly at the supermarket	2.4	185.9	84.5***	149.5	334.6***
Buying food directly at a nearby small store	3.6	118.4	8.49	111.4**	160.7
Buying food for home delivery	2.7	303.5***	32.7*	125.3	249.5
Eating at home	0.9	315.6***	13.0	205.4***	337.1***
Eating with family	0.9	112.9	5.6	91.1	129.7
Eating out (restaurants/cafes, stalls, etc.)	1.9	182.7*	23.9	160.9***	207.8
Eating at a friend's or relative's house	10.7**	193.7	16.9	239.3***	326.6***
Buying takeaway food to be eaten at home	3.4	137.4	9.1	77.8	150.7
Cooking by oneself	0.9	141.4	23.2	208.6***	158.8
Sparing a lot of time to cook at home	1.0*	169.1	12.3	94.1	235.7

Note : *,**,*** show significance levels on 10%, 5%, and 1%
Source: Primary data (processed), 2021

Seventh, the habit of eating at home was confirmed by the analysis results that showed an increase in the habit of cooking by oneself. This habit was found to have a significant relationship (p<0.01) with the amount of income owned by individuals, followed by an increase in spending time cooking by oneself during the COVID-19 pandemic. This change had a significant relationship (p<0.1) with gender. A study by Martinez-Vargas et al. (2022) found that women prepare food more often and spend more time cooking than men. It is also confirmed by Suggs et al. (2018) stating that housewives are very concerned about the types of food that their children will consume to create a healthy diet. This habit increased due to the implementation of lockdowns that required doing activities from home, making households more productive in spending time cooking themselves (Filimonau et al., 2021). The same findings

conducted by Sarda et al. (2022) showed that the habit of spending a lot of time cooking is made to improve cooking skills and to try new recipes.

CONCLUSION

The COVID-19 pandemic in 2021 has changed households' shopping and consumption patterns in Surakarta City. Respondents reduced their frequency of food shopping due to mobility restrictions. They preferred to avoid virus transmission by reducing activities outside the house, such as frequently eating alone or with family or frequently cooking at home. The findings also indicated a shift in shopping locations from supermarkets to small stores/stalls and a shift in ordering groceries and food to online services. Socio-demographic characteristics, such as age, gender, education, income, and occupation, also influenced the changes in their food shopping and consumption patterns.

RECOMMENDATION

Due to the unpredictable circumstance in the COVID-19 pandemic, it is recommended to improve online services and food delivery services to fulfill food needs in Surakarta City. Second, it is recommended to ensure the availability of local food supplies, which can be easily accessed by people in Surakarta City, to avoid food shortages during the COVID-19 pandemic. Therefore, further studies on the impact of the COVID-19 pandemic on food access and its availability in Surakarta City are needed to determine the level of food safety during the COVID-19 pandemic.

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