Socio-Demographic Factors Affecting Food Security for LowIncome Household During the COVID-19 Pandemic in the Special Region of Yogyakarta

by Apmd Lumbung Desa

Submission date: 12-Dec-2022 12:02AM (UTC-0800)
Submission ID: 1978935324
File name: ng_the_Covid_19_Pandemic_in_the_Special_Region_Of_Yogyakarta.pdf (899.28K)
Word count: 7584
Character count: 40876

Socio-Demographic Factors Affecting Food Security for Low-Income Household During the COVID-19 Pandemic in the Special Region of Yogyakarta

Socio-Demographic Factors Affecting Food Security for Low-Income Household During the COVID-19 Pandemic in the Special Region of Yogyakarta

I Hermawati[1], A Hanjarwati[2], H A Akil[3]

[1]Center for Research and Development of Social Welfare Services, Ministry of Social Affairs, Indonesia.
[2]Sociology Departement, Faculty of Social and Humaniora,UIN Sunan Kalijaga, Yogyakarta, Indonesia.
[3]Research Center for Policy and Management of Science, Technology and Innovation-Indonesian Institute of Sciences, Indonesia

Abstract. The COVID-19 pandemic has affected household food security, especially those with low incomes. This study aims to: (1) analyze the influence of socio-demographic factors (gender, age, mother's education, marital status, occupation, dependents, income, and social assistance) on food security. (2) Measuring the level of food security of low-income families in the Special Region of Yogyakarta seen from the share of food expenditure, using a cross-sectional design and a quantitative approach and involved a sample of 250 low-income households, determined randomly by purposive sampling technique. We collected data through questionnaires, and the data were analyzed using descriptive statistical methods and multiple linear regression models using SPSS software. Three socio-demographic variables affect food security: employment, income, and the number of dependents. Simultaneously, these factors significantly affect the respondents' food consumption expenditure. This study found that only 42.4% of respondents had food security. It shows that the current COVID-19 pandemic has exacerbated the poverty experienced by respondents. As for recommendations: (1) The government needs to provide social protection to help low-income households through food assistance programs. (2) Social protection programs need to be combined with household-based socio-economic empowerment programs to improve the food security of low-income households sustainably.

Keywords: Socio-Demographic Factors, Food Security, Low-income households, COVID-19

1. Introduction

The issue of food security is still a global concern and is discussed in the main points in the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) documents. This problem occurs in emerging countries and developing countries, and developed countries [1]. In developing countries, people use more than half of their household income to meet their food needs. Therefore, it creates a vulnerability in sudden price fluctuations that can push people into poverty and hinder poverty alleviation efforts [2]. Furthermore, food insecurity indicates irregular access to the quantity and quality of food, which violates human rights [3], [4].

Several problems threaten food security; in addition to socio-economic issues, reduced agricultural land also decreased production caused by climate change [4]. In addition to these problems, Coronavirus Disease 19 (COVID-19) is also a severe problem that has shaken the world and threatens global food security. The shock occurred because COVID-19, which attacked the respiratory system, spread quickly and claimed many lives, so it was necessary to anticipate its spread and handling [5]. On March 11, 2020, the World Health Organization (WHO) declared that the outbreak caused by this coronavirus was a global pandemic that spread throughout the world [6] and caused a global health crisis [7]. Both developed and developing countries have the same opportunity to be

affected by COVID-19, so WHO urges all countries to prepare anticipatory steps against the threat of COVID-19 seriously.

Government policies in several countries to implement lockdowns and social distancing to combat and control the spread of COVID-19 have proven to disrupt the economic sector [8], [9] and create widespread unemployment and an increase in poverty rates [10], [11]. The economic severity of the COVID-19 pandemic has significantly affected consumer attitudes and behaviour [12], [13] and food security [14]. The groups most affected by COVID-19 are the poor or low-income [15]. Daveroux added that COVID-19 had undermined food security, both directly and indirectly, through the impact of the lockdown on household income and physical access to food [16]. The COVID-19 pandemic has left many households in severe economic hardship and caused their food security to weaken.

The definition of food security is as a situation in which all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life for an active and healthy life. [17], [18]. Food security is a condition of fulfilling food for households reflected in the availability of sufficient food, both in quantity and quality, safe, halal, equitable, and affordable [19]. Thus, household food security is the ability of households to meet the food needs of all family members in sufficient quantities, both in quantity and nutritional quality [20]. Mulyo said that one of the food security indicators for households is the share of food expenditure, calculating from the ratio between food expenditure and total household expenditure per month [21]. Another opinion states that food security is a concept that cannot be observed through only one indicator, so a set of hands is needed to monitor it [4]. The 2002 World Food Summit declared food security with four important parts (indicators): 1) Food Availability, 2) Food Affordability, 3) Food Use, and 4) Food Stability [22]. However, there is no agreement on what is optimal for food security [23].

A theoretical framework in this study uses the basic theory of demand economics according to Engel's law. Engel's law states that when income increases, the proportion of food expenditure decreases. Poor households lack the resources to meet their basic daily needs and are vulnerable to hunger and food insecurity [24]. Poor households have a higher income elasticity of demand for food, so the largest proportion of household spending is on food. Income is one of the important components of the economy. In general, income is a sum of money received as a reward for what has been done. Income can indicate the level of welfare of a household. Consumption of goods at any time may change according to the income received. Keyness argues that the income earned by individuals affects the number of needs in the household [25]. Consumption expenditure (C) mainly depends on income (Y); the higher the income, the higher the consumption. Consumption expenditure is a (linear) function of income. The consumption function is as follows: C = a + bY to consume (MPC). Information: C = consumption, a = constant, b = change in consumption per unit change in income ($\Delta C/\Delta Y$) or commonly called marginal propensity. The income of each household varies depending on the type or variety of work. This variation is not only caused by potential regional factors but also sociodemographic factors and household characteristics.

So far, several studies have been conducted to examine the influence of socio-demographic factors and other factors on food security, both at home and abroad. Milelu's research results show that demographic and socio-economic factors are determinants of household food security availability and

access in Kenya. It concludes that gender, marital status, education level, household head occupation and livestock ownership are not determinants of household food insecurity. significant ladder ($p>0.05$) [26]. Lack of rainfall (92.2%) is a major cause of household food shortages in Kenya. This study also found that only 25.7% of households had food security. Furthermore, Elshahory's research in Jordan concluded that COVID-19 and quarantine had a real impact on the level of food security of the population, namely monthly per capita income below the poverty line, number of family members, and young people adults (18-30 years) and homelessness. Significant relationship with household food insecurity [27].

The national household survey and food security scale identify the socio-demographic factors that influence household food insecurity in Mexico [28]. Lemus concluded that households that are more vulnerable to food insecurity include those with a younger head of household, less educated, single-headed, widowed or divorced, with household members with disabilities, native language speakers, and children who live in rural areas and have low income. The results of Arlyn's research show that in the Philippines, the father's level of education, the occupation of the parents, and the type of corn planted are significant factors in the food security of children from corn farmer households [29]. Brugh shows that the impact of the cash transfer program in Malawi can increase food consumption and calorie availability for recipient households and reduce food shortages [30]. Another study stated that the direct aid program in Zimbabwe had a significant impact on food security and the diversity of food consumption [31].

Sinaga's study concludes that socio-economic factors that influence household food security in Medan are household income, housewife education, number of family members and food social assistance [32]. This study found that as many as 88% of households in Medan are food-insecure households, where spending on food consumption is much smaller than the total non-food consumption. Meanwhile, Saputro and Fidayani, in their research in Klaten, found that three variables affect the food security of farmer households: income level, rice price, and dummy knowledge of nutrition by housewives [33].

Many have researched the factors that affect food security, but no research focuses on the food security of low-income households during the COVID-19 pandemic. Therefore, it is crucial to conduct this research to analyze the influence of sociodemographic factors on the food security of low-income families in the Special Region of Yogyakarta (DIY). This study also aims to measure food security in terms of the share (percentage) of food expenditure by low-income households during the COVID-19 pandemic. This paper argues that the food security of low-income households in DIY is declining due to the COVID-19 pandemic. This decline in food security can erode the social security of households and the nation, so it is necessary to research and find solutions to solve it.

2. Research Methods

This study used a cross-sectional design because we measured the dependent and independent variables simultaneously. We chose this design because it is faster and more straightforward and can answer the research objectives. In addition, the research approach used is quantitative. This research collected data in DIY, namely in the Regencies: Sleman, Bantul, Kulon Progo, Gunungkidul, and the City of Yogyakarta, as shown in Figure 1 and a red dot. The COVID-19 pandemic exposed these five research locations, and there were low-income households, so it was possible to obtain the required research data.

Figure 1. Location of research and data collection

The population of this study is all low-income families and or affected by the COVID-19 pandemic in DIY. The research took a sample using a purposive technique, namely how to take an example by setting criteria [34]. The criteria used in this study include 1) Low-income families, 2) Having an identity (Identity Card and Family Card), or 3) being affected by the COVID-19 pandemic. For analysis, 50 respondents were taken from each location as a random sample, so that this study involved 250 respondents. We conducted this research from June to December 2020.

The data used in this study are primary and secondary. Primary data were collected directly from respondents using a structured questionnaire. At the same time, the secondary data used in this study came from data from the Central Bureau of Statistics, journals, research reports and other relevant sources.

Descriptive statistics such as percentage, count frequency, mean value, variance, and standard deviation are used in this study to describe the socio-demographic characteristics of the household and the household's food security status. In addition, the Statistical Package for Social Sciences (SPSS) was used to analyze the regression of the factors that affect household food security in DIY. Finally, we use household food expenditure data to determine the food security status of the studied households.

It performed multiple linear regression analyses to determine the effect of sociodemographic factors on household food security, namely, linear regression in which the independent variable (variable Y). It is associated with two or more dependent variables (variable X). The independent variable (Y) in this study is food security, which indicates the share of household food expenditure. At the same time, the dependent variable (X) consists of gender (X1), age (X2), mother's education (X3), marital status (X4), occupation (X5), number of household dependents (X6), household income (X7) and social assistance (X8). Formulation, the regression model in this study is Equation (1).

$$Y = \alpha 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7X7 + \beta 8X8 + \varepsilon \quad \text{--------- (1)}$$

Annotation:

Y	: Household food security/share of household food expenditure (rupiah/month)
α0	: Intersept
β1-β7	: Regression coefficient for each variable (estimated parameter)
Ɛ	: error term (residual)

X1 : Gender
X2 : Age
X3 : Mother's education
X4 : Marital status
X5 : Job
X6 : The number of dependents
X7 : Household income
X8 : Social assistance

Table 1 shows an explanation of the variables used in the multiple linear regression model in this study. First, it is necessary to create a dummy variable using selected socio-demographic determinants of the food security status variable for analysis.

Table 1. Explanation of Research Variables

Variable	Explanation
Y	Share of household food expenditure (rupiah/month)
X1	Gender of the head of the household, 1 = if male, 0 = if female (dummy)
X2	Age, last birthday (continuous)
X3	Mother's education, years of success (continuous)
X4	Marital status, 1 = if married, 0 = if not married, widower/widow (dummy)
X5	Job, 1= if working, 0= if not working (dummy)
X6	Number of family dependents (continuous)
X7	Family income (rupiah/month)
X8	Social assistance, (1 = received social assistance, 0 = did not receive social assistance)

Test Criteria:
H0: There is an influence between the dependent variable and the independent variable
Ha: There is no effect between the dependent variable and the independent variable

H0 accepted, if the significance value ≤ α

Ha accepted, if the significance value > α

F count ≤ F table, then H0 is accepted and Ha is rejected

F count > F table, then Ha is accepted and H0 is rejected

To determine the level of food security of low-income households in DIY during the COVID-19 pandemic, we conducted a quantitative analysis by looking at the share or percentage of household food expenditures to total household expenditures in the study area. The way to calculate the share of household expenditure is to divide food expenditure by total household expenditure, using the following Equation (2) [32]:

$$PPP = PP/TP \times 100\% \quad \text{---------} \quad (2)$$

Annotation:
PPP : Food Expenditure Share
PP : Household Food Expenditure (Rupiah/Year)
TP : Total Household Expenditure (Rupiah/Year)

Based on economic indicators, the percentage generated from calculating the share of expenditure is a reference in categorizing the level of household food security as follows.

a. Food Expenditure Share <60% of total expenditure are food-secure households
b. Food Expenditure Share, 60% of total spending, is a household that is not food secure (food insecure) [32], [33].

It is relevant to Engels' Law which describes the relationship between household income and specific goods or services. Engels stated that when family income increases, the proportion of expenditure on food will decrease [35]. Meanwhile, Berg classifies the percentage of food expenditure into three categories, namely: (1) Food expenditure <45% is as a wealthy family; (2) food expenditure 46-79% is as middle family, and food expenditure > 80% is as a low-income family [36].

3. Result and Discussion

3.1. Socio-Demographic Characteristics of Respondents

This study involved 250 low-income households as research respondents. A summary of the socio-demographic characteristics of the respondents can be presented in Table 2 as follows.

Table 2. Summary of Socio-Demographic Characteristics of Respondents (n=250)

Household Characteristics	Frequency	Percentage
Gender		
a. Man	14	5,2%
b. Woman	236	94,8%
Age		
a. 19-29	8	3,2%
b. 30-39	55	22%
c. 40-49	89	35,6%
d. 50-59	54	21,6%
e. >60	44	17,6%
Education		
a. Did not Finish Elementary School	31	12,4%
b. Graduated Elementary School	70	28%
c. Graduated Junior High School	57	22,8%
d. Graduated High School	86	34,4%
e. Diploma 1, 2, 3 dan 4	6	2,4%
Marital Status		
a. Single	9	3,6%
b. Marry	207	82,8%
c. Widow/Widower	33	13,2%
d. Divorce	1	4%
Job		
Before COVID-19		
a. Farmer	44	17,6%
b. Trader	28	11,2%
c. Laborer	21	8,4%
d. Bulder/Service	33	13,2%
e. Entrepreneur	19	7,6%
f. Does Not Work (Unemployment)	105	42%
During COVID-19		
a. Farmer	45	18%
b. Trader	21	8,4%
c. Laborer	19	7,6%

Household Characteristics	Frequency	Percentage
d. Builder/Service	20	8%
e. Entrepreneur	10	4%
f. Does Not Work (Unemployment)	135	54%
Number of Family Dependents		
a. 1-2 person	46	21,6%
b. 3-4 person	133	52%
c. > 4 person	71	26,4%
Household Income		
Before COVID-19		
a. ≤ Rp. 600.000	58	23,3%
b. Rp. 601.000-Rp. 1.200.000	100	40%
c. Rp. 1.201.000-Rp. 1.800.000	58	23,3%
d. Rp. 1801.000-Rp.2.400.000	17	6,8%
e. Rp. 2.401.000-Rp. 3.000.000	6	2,4%
f. ≥ Rp. 3.000.000	11	4,4%
During COVID-19		
a. ≤ Rp. 600.000	83	32,2%
b. Rp. 601.000-Rp. 1.200.000	93	37,2%
c. Rp. 1.201.000-Rp. 1.800.000	47	18,8%
d. Rp. 1801.000-Rp.2.400.000	16	6,4%
e. Rp. 2.401.000-Rp. 3.000.000	1	0,4%
f. ≥ Rp. 3.000.000	10	4%
Social Assistance		
a. Get Social Assistance	218	87,2%
b. Not Getting Social Assistance	32	12,8%

Source: Primary Data Processing, 2021

The data in Table 2 describes the demographic characteristics of households in the study area, with a sample of 250 low-income families. The study showed that 94.8% of the respondents were women, while 5.2% were men. Thus, it shows that women dominate the majority of low-income households as the head of the home. In addition, the results showed that most of the respondents (35.6%) were between 40-49 years old; 22% of respondents were aged 30-39 years, and 21.6% of respondents were aged 50-59 years. Thus, it shows that most of the heads of households in the study area are still active and productive.

Based on education level, most respondents (34.4%) have a high school diploma, while most of the second respondents (28%) have an elementary school diploma. Only 2.4% of respondents completed their education in tertiary institutions. It shows that, in general, the education level of the respondents is in the good category. Omotayo states that proper education can improve household food security [37]. The results of this study assume that household food security at the research location is in the good category because most respondents have education at the secondary level.

The marital status of the respondents is as follows, the majority of respondents (96.4%) are married, while 3.6% of the other respondents are single. For married respondents, 82.8% have the status of an intact family, 13.2% are widowed, and 4% are a widower. Most households have married a sense of responsibility and a willingness on the head of the home to support the family members, or they are responsible for the number of people.

Distribution of respondents by occupation before the COVID-19 pandemic and during the COVID-19 pandemic, regarding employment status, before the COVID-19 pandemic 42% of respondents reported that they were unemployed (as housewives and recipients of social assistance programs). In comparison, 58% of respondents got the job, distributed in the agricultural sector 17.6%,

services 13.2%, trading 11.2% and self-employed 7.6%. When the COVID-19 pandemic hit, 54% of respondents said they were unemployed due to being laid off and unable to carry out their work due to the lockdown, regional isolation and social distancing policies implemented by the government. It means an increase in unemployment by 12%. The percentage of respondents in almost all occupations decreased, except for those who worked in the agricultural sector, which increased by 0.4%. Respondents acknowledged a significant decrease in income during the COVID-19 pandemic; this had implications for household food security.

The large number of household members who do not work indicates the number of dependents in the household. It affects household poverty, consumption and per capita income of each family member [38]. Purwanto and Taftazani revealed that the number of family dependents is the number of family members who are still family dependents, both siblings and non-siblings who live in the same house but have not worked [39]. Preliminary defines the number of family dependents as the number of children and other family members whose entire living expenses are the respondent's responsibility as measured by the number of people [40]. The more people covered, the higher the number of expenses. Therefore, the number of family dependents affects the level of expenditure and household consumption patterns. The more dependents in the family, the greater the amount of consumption provided [41]. The Central Bureau of Statistics groups the number of dependents into three groups: minor family dependents 1-3 people, medium family dependents 4-6 people, and significant family dependents more than six people. Based on the research results, the majority of respondents (52%) have dependents of 3-4 people, and the rest have dependents between 1-2 people (26.4%) and more than four people (21.6%). According to the Central Bureau of Statistics criteria, family dependents in the research location are in the moderate category.

Regarding household income, the study results show that there is a correlation between respondents' income before and during the COVID-19 pandemic. For example, before the COVID-19 pandemic, the average household income of the respondents was Rp. 1,428,345 per month; during the COVID-19 pandemic, the average income of respondents was Rp. 1,073,104 per month. Figure 2 shows the distribution of respondents' income.

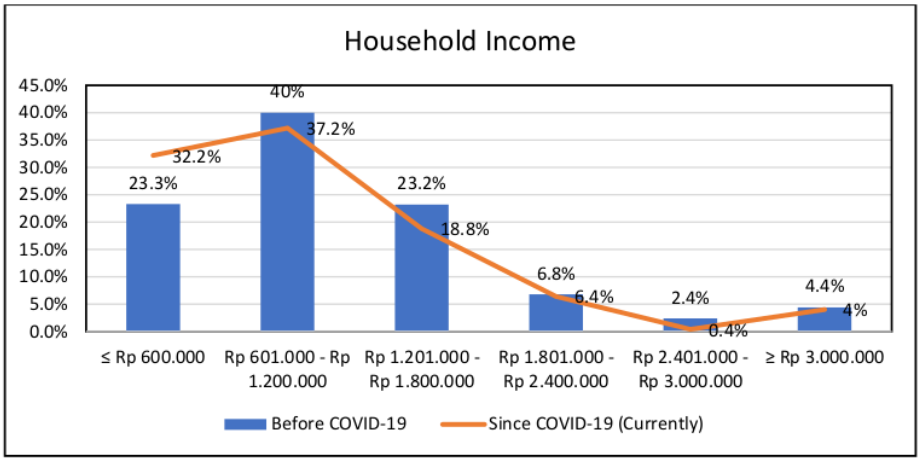

Figure 2. Distribution of Household Income of Responden Before and During COVID-19 Pandemics

Figure 1 shows a decrease in income in the respondent's household between before and during COVID-19. Based on the correlation test on the respondent's income, the correlation value is 0.819 with a significance of 0.000. It means that there is a close relationship between samples or a statistically significant correlation. The average difference in income between before and during the COVID-19 pandemic was 355,241, with a standard deviation of 464628. The results of calculating the

t statistic yielded a value of 12,089 with a significance of 0.000. It concluded that there is a significant difference in the income of respondents before and during the COVID-19 pandemic. The payment of these respondents affects the level of household food consumption and security.

The results also revealed that the majority of respondents (87.2%) were recipients of social assistance in the form of basic necessities and cash from the government and recorded in the Integrated Social Welfare Data (DTKS). Meanwhile, another 12.8% of respondents stated that they had not been recorded in the DTKS because they were low-income households (new) due to the impact of the COVID-19 pandemic, so they lost their jobs and experienced a decrease in income. The social assistance received by these respondents has a significant effect on household food consumption [32], [42].

3.2. The Influence of Socio-Demographic Factors on Expenditures of Low-Income Households in DIY

A multiple linear regression model with Enter method is used to test the determinant factors that affect household food security in the study area. The model includes eight variables that would affect household food security. Based on the results of the analysis, the multiple correlation coefficient (R) is 0.505. While the coefficient of determination obtained (R-Square) is 0.255 and the adjusted termination coefficient is 0.231. Because the regression equation uses many independent variables, it uses the adjusted termination coefficient to explain this equation. From these results, variations in the variables of gender, age, mother's education, marital status, occupation, number of dependents, income and social assistance can explain that 23.1% of changes or variations in household food expenditure. At the same time, other independent variables that exclude in the model explain about 76.9%.

Based on the F test's ANOVA test, the calculated F value is 10.324 with a significance level of 0.000. The value of the F table with v1 is 8 (eight), and v2 is 241, which is 1.94. With these results, then F count > F table (10.324> 1.94), so the conclusion is to reject H0, which means the correlation coefficient is statistically significant. The calculation of the coefficients in the regression equation obtained the equation coefficient values of -92.489,968 for the coefficient constant, 24,123,160 for the sex coefficient, 569,113 for the age coefficient, 1,127,645 for the coefficient of maternal education, -20,976.455 for the coefficient of marital status, 33,070,428 for the coefficient of employment status, 75,744,862 for the coefficient of the number of family dependents, 0.133 for the coefficient of income and 45,087 for the coefficient of social assistance. These results can formulate the regression using Equation (1).

$$Y = (-92.489{,}968 + 24.123{,}160\,X1 + 569{,}113\,X2 + 1.127{,}645\,X3 + -20.976{,}455\,X4 + 33.070{,}428\,X5 + 75.744.862\,X6 + 0{,}133X7 + 45.087\,X8)$$

Where:

Y	: Share of household food expenditure
X1	: Gender of the Head of the Household
X2	: Age
X3	: Mother's Education
X4	: Marital status
X5	: Job status
X6	: Number of Dependents (person)
X7	: Household Income Per Month
X8	: Social Assistance Receipt Status

Furthermore, to determine the effect of the independent variable on the dependent variable, a significance test can be carried out using the t-test for each coefficient of the regression equation. Table 3 presents the results.

Tabel 3. Results of Multiple Linear Regression Analysis Factors Affecting Food Security of Low-Income Households in DIY

Variable	Coefficient	t	Significance	Conclusion
Constant	-92.489,968	-0,435	0,664	Not significant
Gender (X1)	24.123,160	0,344	0,731	Not significant
Age (X2)	569,113	0,340	0,734	Not significant
Mother's Education (X3)	1.127.,45	0,062	0,950	Not significant
Marital Status (X4)	-20.976,455	-0,521	0,603	Not significant
Job Status (X5)	33.070,428	3,940	0,000	Significant
Number of Dependents (X6)	75.774,862	2,837	0,005	Significant
Income (X7)	0.133	5,173	0,000	Significant
Social Assistance Status (X8)	45.087,902	0,885	0,377	Not significant
Adjusted R^2				**0,231**
F				**10,324**
F Sign				**0,000**

Source: Primary Data Analysis, 2021

Based on Table 3, the variables of employment status (X5), number of dependents (X6), and income (X7) have a significance value less than or equal to = 5%. It means that employment status, number of household dependents, and gain significantly affect the share of food expenditure at the 95% confidence level. The data in Table 3 shows that related to the employment status variable, and it has a significant value of 0.000 (smaller than = 5%). Therefore, employment status significantly affects the share of food expenditure at the 95% confidence level. Look at the regression coefficient value of the employment status variable of 33.070. It can say that an increase in employment status by 1 unit will increase the share value of food expenditure by 33,070. Therefore, the higher the job status of the respondent, the higher the household food expenditure will be. Following research, [29] concluded that parental occupation is a significant factor in household food security.

The large number of household members who do not work indicates the number of dependents in the household, affecting household poverty. Furthermore, the number of family dependents affects the share of household food expenditure. The more lives bore by the home, the more cost to meet needs, especially food needs. This study shows the coefficient value of the variable the number of household dependents is 75,744, so it can say that the increase in the number of household dependents by 1 unit will affect the rise in the share of expenditure by 75.744 units. The results of this study are relevant to the research of Peter, Lanjouw and Ravallion and Elshahory. They asserted that the number of household dependents significantly affected the consumption and per capita income of each family member [27], [38].

Regarding the income variable, the results of this study are the following research conducted by several researchers who concluded that income affects household food security. The regression coefficient value of the income variable is 0.133, so it can say that an increase in revenue of 1 unit will increase the share of expenditure by 0.133 units [27], [33], [43]—respondents who have increased income allocate relatively increased food expenditure and improve the quality of food. In addition, respondents will also give more considerable funds to the non-food sector. Thus, it can say that there is a straight comparison between the share of food expenditure of low-income households and the level of income. Following the research of Hymans, Saul H and T Shapiro concluded that low-income families have a higher income elasticity of demand for food, so that the most significant proportion of household expenditure is to buy food [24]. This study also confirms Keynes' theory that the income earned by individuals affects the number of needs in the household. The higher the payment, the higher the consumption [25].

Based on the analysis results, several independent variables do not affect the share of food expenditure, namely: gender, age, housewife education, marital status and social assistance. It is

because the significance value of each independent variable is more than 0.05. For example, the significance value of the gender variable is 0.731, the significance value of the age variable is 0.734, and the significance value of the education variable of homemakers is 0.950. While the significance value of the marital status variable is 0.603 and the significance value of the social assistance variable is 0.377. Thus, it concludes that the variables of gender, age, mother's education, marital status and social assistance do not affect the share of food expenditure for low-income households.

3.3 Share or Percentage of Food Expenditure on Low-Income Families in DIY

The following formula calculates the share of expenditure of low-income households in the Special Region of Yogyakarta during the COVID-19 pandemic using Equation (2). The percentage of household food expenditure divided by total household expenditure is identical to the share of food expenditure. Therefore, improving household welfare can interpret the low share of food expenditure. The respondent can buy expenses other than food. In other words, the respondent's non-food spending is greater than the expenditure on food. So, there is an inverse relationship between the share of food expenditure and food security. A decrease in the percentage of food expenditure indicates an increase in food security and vice versa. Therefore, a household can be said to be food insecure if the value of its share of food expenditure (PPP) is less than 60%. Still, if the value of its share of food expenditure (PPP) is more than 60%, then the household is said to be food insecure or food insecure.

From the calculations carried out, we can see that the average share of food expenditure in the Special Region of Yogyakarta is as follows.

PPP = 126243750/254927070 x 100% = 49,52%

The results of these calculations found an average of (49.52%). It means that, in general, the food share of low-income households in the Special Region of Yogyakarta is in the food security category (below 60%). Table 4 shows the distribution of low-income families in DIY based on the average share of food expenditure.

Tabel 4. Distribution of Food Expenditure Share (PPP) of Low-Income Households in DIY in 2021 Based on Average (49.52%)

Food Expenditure Share	Number of Samples	Percentage to Number of Samples
> Average (49,52%)	162	64,8%
≤ Average (49,52%)	88	35,2%

Source: Primary Data Analysis, 2021

Based on Table 4, we can see that 35.2% of respondents in the research location have a share value of food expenditure below the average. In comparison, the remaining 64.8% have a share value of food expenditure above the norm. Comparing the share of respondents' food expenditure with the standard reference (a household is said to be food insecure if the percentage of food expenditure is less than 60%), 42.4% of respondents are in the food security category. While the other 57.6% of respondents are in the food insecurity category, as illustrated in Table 5.

Tabel 5. Distribution of Food Expenditure Share (PPP) of Low-Income Households in DIY in 2021 Based on Economic Standards

Food Expenditure Share	Number of	Percentage to Number of	Description

	Samples	Samples	
≥60%	144	57,6%	Food Insecurity
< 60%	106	42,4%	Food Resistant

Source: Primary Data Analysis, 2021

Households with large food expenditure share values are identical to low household food security values. The results of this study are in line with research [44] which states that there are still households that have a larger share of food expenditure because their expenditure on food needs is more significant than other expenditures. Engels theory states that when income increases, the proportion of food expenditure will decrease. However, low-income households lack the resources to meet their basic daily needs. In addition, they are vulnerable to hunger and food insecurity, so they still allocate a large part of their income to food consumption.

4. Conclussion

This study reveals the determinants that influence the food security of low-income households in DIY. The findings of this study confirm that sociodemographic factors such as employment status, number of dependents, and income have a statistical significance value at ($p \leq 0.05$). Therefore, these three factors affect the food security of low-income households in the study area. In short, most respondents said that the COVID-19 pandemic had affected their lives and income, so most families had to work hard to increase their food expenditure.

This study also found that most low-income households (57.6%) in DIY were food insecure, so this study recommends that the government and related parties provide social protection for low-income families uncovered through food assistance programs. In addition, the social protection programs offered also need to be combined with household-based socio-economic empowerment programs to improve the food security of low-income households sustainably.

Acknowledgement

We appreciate everyone who participated in this research, especially respondents who have assisted in the form of some data that we need to complete this research.

Referencess

[1] P. Conceição, S. Levine, M. Lipton, and A. Warren-Rodríguez, "Toward a food secure future: Ensuring food security for sustainable human development in Sub-Saharan Africa," *Food Policy*, vol. 60, pp. 1–9, 2016, doi: 10.1016/j.foodpol.2016.02.003.

[2] M. Ivanic and W. Martin, "Implications of higher global food prices for poverty in low-income countries," *Agric. Econ.*, vol. 39, no. SUPPL. 1, pp. 405–416, 2008, doi: 10.1111/j.1574-0862.2008.00347.x.

[3] U. N. H. R. and W. H. Organization, "Human Rights, Health and Poverty Reduction Strategies," 2008.

[4] N. I. Hapsari and I. Rudiarto, "Faktor-Faktor yang Mempengaruhi Kerawanan dan Ketahanan Pangan dan Implikasi Kebijakannya di Kabupaten Rembang," *J. Wil. dan Lingkung.*, vol. 5, no. 2, p. 125, 2017, doi: 10.14710/jwl.5.2.125-140.

[5] Kemenkes RI, "Pedoman Pencegahan dan Pengendalian Coronavirus Disease (COVID-19)," *Germas*, pp. 0–115, 2020.

[6] A. M. Baig, "Neurological manifestations in COVID-19 caused by SARS-CoV-2," *CNS Neurosci. Ther.*, vol. 26, no. 5, pp. 499–501, 2020, doi: 10.1111/cns.13372.

[7] M. Loey, G. Manogaran, M. Hamed, and N. Taha, "Fighting against COVID-19: A novel deep

learning model based on YOLO-v2 with ResNet-50 for medical face mask detection," *Sustain. Cities Soc.*, vol. 65, no. January, 2021.

[8] A. Peter Temitope and L. Art Wolfskill, "Food Insecurity Determinants amidst the COVID-19 Pandemic: An Insight from Huntsville, Texas," *J. Food Secur.*, vol. 9, no. 3, pp. 106–114, 2021, doi: 10.12691/jfs-9-3-3.

[9] D. R. Lugo-Morin, "Global Food Security in a Pandemic: The Case of the New Coronavirus (COVID-19)," *World*, 2020, doi: 10.3390/world1020013.

[10] P. Parolin, C. Bresch, C. Poncet, and N. Desneux, "Introducing the term 'Biocontrol Plants' for integrated pest management," *Sci. Agric.*, vol. 71, no. 1, pp. 77–80, 2014, doi: 10.1590/S0103-90162014000100011.

[11] International Monetary Fund, *World Economy Outlook*. 2021.

[12] J. Sheth, "Impact of Covid-19 on consumer behavior: Will the old habits return or die?," *J. Bus. Res.*, vol. 117, no. June 2020, pp. 280–283, 2020, doi: 10.1016/j.jbusres.2020.05.059.

[13] G. Castellini, M. Savarese, and G. Graffigna, "The Impact of COVID-19 Outbreak in Italy on the Sustainable Food Consumption Intention From a 'One Health' Perspective," *Front. Nutr.*, vol. 8, no. March, pp. 1–12, 2021, doi: 10.3389/fnut.2021.622122.

[14] V. Erokhin and T. Gao, "Impacts of COVID-19 on trade and economic aspects of food security: Evidence from 45 developing countries," *Int. J. Environ. Res. Public Health*, vol. 17, no. 16, pp. 1–28, 2020, doi: 10.3390/ijerph17165775.

[15] C. Béné, "Resilience of local food systems and links to food security – A review of some important concepts in the context of COVID-19 and other shocks," *Food Security*. 2020, doi: 10.1007/s12571-020-01076-1.

[16] S. Devereux, C. Béné, and J. Hoddinott, "Conceptualising COVID-19's impacts on household food security," *Food Secur.*, 2020, doi: 10.1007/s12571-020-01085-0.

[17] D. Palmer and P. Groppo, "Food Insecurity in the World 2002," *FAO Rep.*, 2002.

[18] FAO, "Declaration of the World Summit on Food Security," *World Food Summit*, no. November 2009, pp. 16–18, 2009.

[19] Badan Ketahanan Pangan Departemen Pertanian RI, "Laporan Badan Ketahanan Pangan 2013," no. 5, p. 26, 2013.

[20] Y. Mardisantosa, Bambang; Huri, Daman; Edmaningsih, "Faktor-faktor Kejadian Kurang Energi Protein (KEP) Pada Anak Balita," *J. Kesehat.*, vol. 6, no. 2, 2018, doi: 10.37048/kesehatan.v6i3.14.

[21] J. H. Mulyo, S. Sugiyarto, and A. W. Widada, "Ketahanan Dan Kemandirian Pangan Rumah Tangga Tani Daerah Marginal Di Kabupaten Bojonegoro," *Agro Ekon.*, vol. 26, no. 2, p. 121, 2016, doi: 10.22146/agroekonomi.17265.

[22] A. Abdal and I. Nurdin, "Indonesia Food Security Policy on Import Cattle and Meat Australia Years 2013-2017," *Sosiohumaniora*, vol. 22, no. 1, pp. 96–104, 2020, doi: 10.24198/sosiohumaniora.v22i1.23975.

[23] E. M. Berry, S. Dernini, B. Burlingame, A. Meybeck, and P. Conforti, "Food security and sustainability: Can one exist without the other?," *Public Health Nutr.*, vol. 18, no. 13, pp. 2293–2302, 2015, doi: 10.1017/S136898001500021X.

[24] H. Hymans, Saul H. & T.Shapiro, "The Allocation of Household Income to Food Consumption," *J. Econom.*, vol. 4, no. 2, pp. 167–188, 1976, doi: https://doi.org/10.1016/0304-4076(76)90011-7.

[25] J. Keynes, "Mr. Keynes's Consumption Function," *Q. J. Econ.*, vol. 53, no. 1, p. 160, 1938, doi: https://doi.org/10.2307/1884113.

[26] M. M. Milelu, D. Mbithe, D. Kigaru, and E. N. Kuria, "Demographic and socio-economic

determinants of availability and access dimensions of household food security in Kitui County, Kenya," *Researchgate.Net*, vol. 2, no. October 2020, pp. 93–101, 2017.

[27] N. Elsahoryi, H. Al-Sayyed, M. Odeh, A. McGrattan, and F. Hammad, "Effect of Covid-19 on food security: A cross-sectional survey," *Clin. Nutr. ESPEN*, vol. 40, pp. 171–178, 2020, doi: 10.1016/j.clnesp.2020.09.026.

[28] D. Magaña-Lemus, A. Ishdorj, C. P. Rosson, and J. Lara-Álvarez, "Determinants of household food insecurity in Mexico," *Agric. Food Econ.*, vol. 4, no. 1, p. 10, Dec. 2016, doi: 10.1186/s40100-016-0054-9.

[29] A. J. Yra, "Factors affecting food security of children from corn farming households in cagayan valley, phillipines," *Plant Sci. Today*, 2021, doi: 10.14719/pst.2021.8.2.1061.

[30] K. A. Brugh and S. G. Peter; Mvula, Angeles;Tsoka, Maxton;Handa, "Impacts of the Malawi social cash transfer program on household food and nutrition security," *Food Policy*, vol. 76, pp. 19–32, 2018, doi: https://doi.org/10.1016/j.foodpol.2017.11.002.

[31] G. Bhalla *et al.*, "The Effect of Cash Transfers and Household Vulnerability on Food Security in Zimbabwe," *Food Policy*, vol. 74, pp. 82–99, 2018, doi: 10.1016/j.foodpol.2017.11.007.The.

[32] R. J. R. Sinaga, S. N. Lubis, and M. B. Darus, "Kajian Faktor-faktor Sosial Ekonomi Masyarakat Terhadap Ketahanan Pangan Rumah Tangga di Medan," pp. 1–13, 2014.

[33] W. A. Saputro and Y. Fidayani, "Faktor-Faktor Yang Mempengaruhi Ketahanan Pangan Rumah Tangga Petani Di Kabupaten Klaten," *J. Agrica*, vol. 13, no. 2, pp. 115–123, 2020, doi: 10.31289/agrica.v13i2.4078.

[34] Sugiyono, *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta, 2017.

[35] E. R. Amrullah, A. Pullaila, I. Hidayah, and A. Rusyiana, "Dampak Bantuan Langsung Tunai Terhadap Ketahanan Pangan Rumah Tangga Di Indonesia (Impacts of Direct Cash Transfer on Household Food Security in Indonesia)," *J. Agro Ekon.*, vol. 38, no. 2, pp. 77–90, 2020, doi: 10.21082/jae.v38n1.2020.77-90.

[36] A. Berg, *Peranan Gizi dalam Pembangunan Nasional / Alan Berg*, Edition 1,. Jakarta: Rajawali Press, 1986.

[37] A. O. Omotayo, "Parametric assessment of household's food intake, agricultural practices and health in rural South West, Nigeria," *Heliyon*, vol. 6, no. 11, p. e05433, 2020, doi: 10.1016/j.heliyon.2020.e05433.

[38] M. Peter, Lanjouw and Ravallion, "Poverty and Household Size," *Econ. J.*, vol. 105, no. 433, pp. 1415–1434, 1995, doi: https://doi.org/10.2307/2235108.

[39] A. Purwanto and B. M. Taftazani, "Pengaruh Jumlah Tanggungan Terhadap Tingkat Kesejahteraan Ekonomi Keluarga Pekerja K3L Universitas Padjadjaran," *Focus J. Pekerj. Sos.*, vol. 1, no. 2, p. 33, 2018, doi: 10.24198/focus.v1i2.18255.

[40] A. Awal, "Pengaruh Pendapatan Dan Jumlah Tanggungan Keluarga Petani Padi Terhadap Tingkat Pendidikan Anak Di Desa Pattallassang Kecematan Pattallassang Kabupaten Gowa Skripsi," 2018.

[41] N. Hanum, "Pengaruh Pendapatan , Jumlah Tanggungan Keluarga Dan Pendidikan Terhadap Pola Konsumsi Rumah Tangga Nelayan Di Desa Seuneubok Rambong Aceh Timur," *J. Samudra Ekon.*, vol. 2, no. 1, pp. 75–84, 2018.

[42] H. Tarigan, J. H. Sinaga, and R. R. Rachmawati, "Dampak Pandemi Covid-19 terhadap Kemiskinan di Indonesia," *Pus. Sos. Ekon. dan Kebijak. Pertan.*, no. 3, pp. 457–479, 2020.

[43] J. E. Sianipar *et al.*, "Analisis Ketahanan Pangan Rumah Tangga Tani di Kabupaten Manokwari," *Sepa*, vol. 8, no. 2, pp. 68–74, 2012.

[44] E. Susanti, T. Fauzi, and Taufiqurrahman, "Analisis Ketahanan Pangan Rumah Tangga Petani di Desa Ulee Lhat Kecamatan Montasik Kabupaten Aceh Besar," *J. Bisnis Tani*, vol. 1, no. 1, pp. 11–23, 2015.

Socio-Demographic Factors Affecting Food Security for LowIncome Household During the COVID-19 Pandemic in the Special Region of Yogyakarta

ORIGINALITY REPORT

11%	8%	11%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.sciepub.com Internet Source	1%
2	ojs.uho.ac.id Internet Source	1%
3	I M Y Prasada, Masyhuri. "Food security in Java Island, Indonesia: Panel data of ordinary least square approach", IOP Conference Series: Earth and Environmental Science, 2019 Publication	1%
4	Submitted to Fakultas Ekonomi Universitas Indonesia Student Paper	1%
5	jurnal.ugm.ac.id Internet Source	1%
6	"Proceeding of the 2nd International Conference on Tropical Agriculture", Springer Science and Business Media LLC, 2018 Publication	1%

7	pertambangan.fst.uinjkt.ac.id Internet Source	1 %
8	agricultureandfoodsecurity.biomedcentral.com Internet Source	1 %
9	Kristen Brugh, Gustavo Angeles, Peter Mvula, Maxton Tsoka, Sudhanshu Handa. "Impacts of the Malawi social cash transfer program on household food and nutrition security", Food Policy, 2018 Publication	1 %
10	jurnal.stie-aas.ac.id Internet Source	1 %
11	Submitted to Tilburg University Student Paper	1 %
12	Muhammad Faisal Akbar, Izma Fahria. "Study on Identification and Projection of Food Commodity Price Cycles during the COVID-19 Pandemic Period as a Study of Supervision Aspects of Food Product Marketing in Bangka Belitung", Society, 2022 Publication	1 %
13	Abdullah, Deyi Zhou, Tariq Shah, Sajjad Ali, Waqar Ahmad, Izhar Ud Din, Aasir Ilyas. "Factors affecting household food security in rural northern hinterland of Pakistan", Journal	1 %

of the Saudi Society of Agricultural Sciences, 2017

Publication

Exclude quotes	On	Exclude matches	< 1%
Exclude bibliography	On		

Socio-Demographic Factors Affecting Food Security for LowIncome Household During the COVID-19 Pandemic in the Special Region of Yogyakarta

GRADEMARK REPORT

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15