



The Government's Policies on the Prevention of COVID-19 Transmission Impacting Household Food Security in Indonesia

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Abstract: Household food security is an essential issue for a country and has become a national issue in poor and developing countries worldwide during the COVID-19 pandemic. Various problems could arise if household food-nutrition needs are not met. This study aims to explore factors related to household food security during the COVID-19 pandemic in Indonesia. A systematic literature review that was used twelve articles. Three electronic databases (Google Scholar, ProQuest, and ScienceDirect) were used to find the articles between January 2020 to April 2023. The original articles were selected based on the PRISMA-P flowchart model. The results show the socio-demographic (sex of household's head, age, education, literacy) and socio-economic (occupation, income, wealth, area of living) factors influencing household food security. Households having a male head of household, good literacy, and an adequate economy have a significant effect on having nutritious food security during COVID-19 pandemic. These findings recommend that the central government of Indonesia provide financial assistance to food-insecure households, improve access to food, and promote healthy food products.

Keywords: COVID-19; Household Food Security; Nutrition

Introduction

Food security exists when people at the times that 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 (United Nations International Children's Emergency Fund, 2022). It was one the main pillar of human rights, thus an important part of the right for food and national security. The problems that related to food security and hunger are the worst forms of poverty that people have to face (Susilaningrum et al., 2019). The need for food must always be met due to related to the defense of

human life. If it is not met, it will cause food crisis conditions (Iskandar et al., 2019).

During the COVID-19 pandemic, Indonesia is one of the emerging economies, which is some areas are prone to poverty and food insecurity (Rozaki, 2020). Based on use in 2011, Indonesia is a country with a quite high level of household consumption with a contribution of 50% of the Gross Domestic Product (GDP). The consumption includes food and non-food, but the first one is considered much more important than non-food due to it must be fulfilled in order to live a healthy and productive life (Amrullah et al., 2019).

The Indonesian government has implemented a number of policies to prevent the transmission of

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COVID-19. These policies include; physical distancing, wearing masks, handwashing, quarantine, travel restrictions, and vaccination (Andriani, 2020; Susanna, 2020). In addition to these policies, the government has also provided financial assistance to businesses and individuals who have been affected by the pandemic. The government has also worked to increase public awareness of COVID-19 and how to prevent its spread. The government's policies have helped to slow the spread of COVID-19 in Indonesia. However, the pandemic is still ongoing, and it is important for people to continue to follow the government's guidelines to protect themselves and their loved ones. The government's policies on the prevention of COVID-19 transmission have had a significant impact on food security and household consumption patterns in Indonesia. These policies have led to reduce income, increased food price, changes in food consumption patterns, and increased food insecurity.

Food insecurity, which is the opposite of food security, could not be separated from poverty, employment and resources (Arnawa et al., 2019). It has been negative influence on health and nutrition, also a risk factor for malnutrition (Lantarsih & Hariadi, 2021; Umaroh & Pangaribowo, 2020). Hunger and malnutrition will occur if it is not properly addressed (Arnawa et al., 2019). Food insecurity was affected by many factors. The most studies conducted found that the gender of household heads (Andani & Adi, 2021; Ashari et al., 2022; Manyullei & Arundhana, 2021; Purnasari et al., 2020), age of household heads (Andani & Adi, 2021; Hermawati et al., 2022; Iguna et al., 2022), family size (Ashari et al., 2022; Syafiq et al., 2022), uncoupled households (Ashari et al., 2022), marital status of the head of household (Iguna et al., 2022; Sitompul et al., 2023), educational level of women handling food, educational status of household head (Manyullei & Arundhana, 2021; Primaningrum et al., 2022) and economic status were determining factors of food insecurity (Iguna et al., 2022; Syafiq et al., 2022). The Food and Agriculture Organization (FAO) has warned that the pandemic of Covid-19 would affect the food security of many countries, especially poor and developing countries. According to FAO, people with malnutrition would increase to 161 million people in 2020 (United Nations International Children's Emergency Fund, 2022).

The concept of food security including of six main dimensions, these are availability, access, utilization, stability, agency, and sustainability. The first three dimensions are interlinked and hierarchical. Meanwhile, the three other concepts have become increasingly accepted as important, as risks such as climatic fluctuations, conflict, occupation loss, and epidemic disease could disrupt any one of the first three factors

(HLPE, 2020). Based on the background, the purpose of this study was to explore household food security during the COVID-19 pandemic among people who live in some cities or regencies in Indonesia.

Method

A systematic review search was conducted in Google Scholar, ProQuest and ScienceDirect. The period of publication since January 2020 to April 2023. A search using the following descriptors "household AND food security", "household food security AND urban area" and "household food security AND Indonesia". These descriptors were also used for the respective English version. There wards, the reviewers independently scrutinized the references sections of all identified and review articles. All of the articles were filed and handled using Mendeley Reference Manager™.

Only references published in English and full text were accepted. Books, monographs, academic thesis, reports, summaries of scientific events and articles merely expressing point of view of experts were not eligible and thus off-limited from further identify. The selection of the references involved a thorough identify of the titles and abstracts, and was accomplished by the independent reviewers mentioned before. All of the articles were then classified based on whether they definitely meet the inclusion criteria; could possibly meet the inclusion criteria but required full reading for confirmation or definitely did not meet the criteria, therefore be excluded.

The search result and inclusion process of articles are described and showed based on the preferred reporting format to the Preferred Reporting Items for Systematic review and Meta-Analysis Protocols (PRISMA-P) flowchart. The schematic of systematic review could be seen in Figure 1.

Result and Discussion

Sixty-seven thousand four hundred and fifty-six articles were identified in this systematic review in the initial search. After removing duplicate, language barrier, full text only articles and screened for eligibility, a total sixty articles. Twelve articles were found after filtering the abstract. The characteristics of the articles are summarized in Table 1.

The articles were obtained from 10 provinces in Indonesia. These are East Java, North Sulawesi, Central Java, Bali, North Sumatra, West Java, Special Region of Yogyakarta, South Sulawesi, Northeast Sulawesi, Special Capital Region of Jakarta. The most methodology in these articles are cross-sectional and descriptive quantitative study involving participants

from children to adults. Nine articles described the relationship between household food security with health problems, four articles about household food security and food diversification, seven articles discussed household food expenditure in urban, peri-urban and rural communities and six articles reported the COVID 19 pandemic affected household food security. Each article would be explained in more detail according to its category.

The Relationship between Household Food Security with Health Problems

A good household food security gives a better way to stave off the disease. The lack of household food security make nutritional status becomes less and causes a decrease in health degrees. Many diseases and health problems due to the lack of household food security such as malnutrition, stunting, overweight or obesity, tuberculosis (TB) and binge eating disorder (BED). Data from cross-sectional study revealed household with double burden of malnutrition has relatively lower nutrition literacy, dietary diversity and household food security. Surabaya (East Java) is the second largest city in Indonesia but more than 15% of children under 5 years old suffering from underweight, based on the monthly child growth monitoring data from posyandu (Mahmudiono et al., 2018). In addition to being a risk factor for stunting, food insecurity is also a risk factor for the double burden of malnutrition (Gubert et al., 2017). The community in urban areas should be educated about the concept of energy balance, increasing healthy diet and physical activity through health and nutrition education as well as environmental conditioning that supports health. Nevertheless, the rate of urbanization should be decreased to improving the living conditions and employment in rural areas (Liu & Hou, 2022).

Stunting is one of the health problems in Indonesia that occurs in children under 5 years old. The government decide to decrease of stunting quickly to 14% by 2024. Home garden is one of the prevention plans to decrease of stunting. It has positive effect for food supply, community food security and give a benefit to ecosystem service (Saroinsong et al., 2021). Based on quantitative analysis, commercialization of home garden has a negative effect for food security through food availability, utility and stability (Abdoellah et al., 2020). There is direct relation between home garden and motivation of the community in realizing food security household (Lantarsih & Hariadi, 2021).

Food insecurity is related to the level of poverty and showed difficult for the poor to meet food consumption in accordance with good nutrition due to the limited income they have. This study reported sociodemographic factors such as maternal education, birth distance, and family income have an effect on the

incidence of stunting (Sitompul et al., 2023). Stunting can be also caused by malnutrition in pregnant women. Malnutrition in pregnancy has a major impact on non-optimal birth weight conditions (Sudaryati et al., 2021).

Besides stunting, overweight or obesity, and malnutrition, household food insecurity also has an impact on tuberculosis patient. The previous study gave conclusion that the household with food secure for TB patients depends on the history of the disease, the mass of the home, and the smoking habit. Moreover, food-insecure households also depend on the ventilation condition, nutritional status, and population status. The largest case in Indonesia was in East Java and Surabaya. The result showed 64% of patients were food insecure while the left was food secure (Susilaningrum et al., 2018). Another study describes the factors that affect the food security of households with TB in Surabaya, namely the work of the head of the household, monthly expenses, household density and the type of roof (Susilaningrum et al., 2019).

After children with stunting and adults with TB, teenagers have their own problem, namely binge eating disorder. Binge eating disorder (BED) is an eating disorder with characterized by consuming big amounts of food in a relatively short time accompanied by an inability to control the amount of food consumed and followed by feeling of guilt, shame and disgust. Symptoms of eating disorders that consistently limit food can trigger to binge eating and overeating as much as 17% from long-term food insecurity (Becker et al., 2017). Adolescents feel worse due to their lower self-esteem while food insecure occurs (Popkin et al., 2016). The research among adolescents in Semampir, Surabaya (East Java Province) showed the relation between household security and BED. BED is a coping mechanism for dealing with stress in the condition of household food insecurity. We need to improve household food security by increasing the productivity of economic empowerment for housewives because food insecurity was related to poverty (Andani & Adi, 2021).

Household Food Security and Food Diversification

Women in Indonesia have an important role in household food security. They have the role in the production and processing the local foods. The availability of food from local sources is an important measure in ensuring national food security amidst the increasingly relentless supply of the global food system (Lawrence, 2017). The role of women in creating food security at the household level is apparent in households with female leads. In Indonesian, diversification initiatives are a strategic necessary due to most Indonesian nowadays rely on a single staple food, namely rice, and more Indonesians have a preference for

wheat-based food products, whereas wheat is not being produced in Indonesia (Suharko & Hudayana, 2020).

Furthermore, there is a relationship between the problem of land-carrying capacity and food security. The previous study uses 4 types of food crop commodities (rice, corn, soybean, and cassava). The result of this study was the average value of the land-carrying capacity index is in class II. It means that the land-carrying capacity of all food crop commodities is optimal and sufficient to meet the need for food or self-sufficiency in the food (Iguna et al., 2022). Another study used cassava as a main ingredient for making local foods. The participants who were involved as respondents in this study were those who received Raskin and planted cassava the processed it for personal consumption. Raskin (beras miskin) in Indonesia is a bowl of subsidized rice from the government for poor households and this program greatly helped to increase household food security for the community (Saediman et al., 2019). Cassava has proven suitable with the local food system and had served as a key of household food security.

Household Food Expenditure in Urban, Peri-urban and Rural Communities

There are many types of food insecurity and nutrient deficiency, such as undernutrition, micronutrient deficiency and malnutrition with negative impact of health (Gerster-Bentaya, 2015). Food insecurity in rural areas are often caused by food scarcity or lack of food which manifests as malnutrition, whereas in urban areas are often caused by poor of food quality which causes malnutrition and micronutrient deficiency (Battersby, 2017). As a capitol of Indonesia, the most of urban food demand in Jakarta is met through rural and peri-urban sources. Over-population in Jakarta, primarily due to the migration to search occupations and better economic opportunities. Urban migrants have to face limited job vacancies due to inadequate educational background therefore, some people are involved in urban agriculture as a measure to obtain food for themselves and to earn income. The study found every household consumed eggs, dairy, fruit, meat and fish 3 meals daily. During the rainy season, respondents reported that there were occasional crop failures, therefore food sources were obtained from the market. In general, the farmers were satisfied with their condition of household's food security. They have several ways to obtain food, namely from the harvest, buy from small convenience shops and cook at home (Diehl et al., 2019). Due to low income, food expenditure in urban areas was dominated by rice, and the higher non-food expenditure was mainly for housing, transportation, water, and energy. Stagnant food composition did not provide incentives for farmers;

thus, the agricultural sector is dominated by low-income rice fields, uneducated laborers, and old farmers (Putra et al., 2020). Another study found that the condition of household food security based on the proportion of food expenditure and energy consumption is food resistance, food insecurity, food deficiency, and food insecurity (Manyullei & Arundhana, 2021).

Moreover, food expenditure of a household can include staple food (rice or others), side dishes, vegetables, spices, large chilies, cayenne pepper, mustard greens, drinks and snacks. The highest is on the side dishes and the most frequently consumed are tofu, tempeh, eggs, chicken, meat and fish. Then the large proportion is vegetables and spices. Tea, coffee and milk are usually consumed by adults, while various of milk and packaged drinks are consumed by children. The urban farming products has very small contribution for household food expenditure because the yield of the plants grown is very small (Primaningrum et al., 2022).

The Covid-19 Pandemic Affected Household Food Security

The pandemic of Covid-19 that occurred in Indonesia in 2020 affected the condition of household food security (Akbar et al., 2023). Although it was not offering an immediate solution, economic development could be the most understandable strategy in overcoming the problems. The hunger level was increased during the pandemic. It means that the financial crisis also influenced at increasing household food insecurity due to the pandemic (Purnasari et al., 2020). Employment status and household income conditions in urban (Jakarta) and semi-urban (Depok) areas have also worsened as result of the pandemic (Syafiq et al., 2022). Three sociodemographic factors affect food security, these are employment, income and the number of dependents (Ashari et al., 2022). The pandemic has also exacerbated the conditions of poverty for the community of Yogyakarta (Hermawati et al., 2022). Other study found that being a female, unemployed and living in Java are the low factors associated with food security, while have a history of stress or depression, poor dietary habits and living alone are the strong factors (Ashari et al., 2022). The efforts that could be made to increase food security during the pandemic, through household waste management. The household waste is separated into organic and inorganic. Some inorganic waste will be processed into recycled products that have economic value to increase income and save some of it in a garbage bank that could be withdrawn to cover daily needs at any time. Meanwhile, the organic waste is processed into liquid and solid fertilizer for home gardens that could increase household food security (Sartika et al., 2023).

Conclusion

Factors affecting household food security are sociodemographic and socioeconomic, while factors influenced by these conditions are health problems. The problems are getting worse due to the pandemic of Covid-19. Various efforts have been made by the government, these are the Raskin program, household waste management, food diversification, and home garden. Despite this, the problems arising from household food insecurity have not yet been resolved, thus the government still needs to develop a national strategy to prevent food insecurity when a pandemic such as COVID-19 occurs in the future.

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Author Contributions

All authors contributed to this research equally and significantly. P.E.I., and S.P.M.P., were responsible for the conceptualization and design of the study. P.E.I., D.S., P.O., and S.N, conducted the literature search and performed analysis and interpretation. P.E.I., D.S., P.O., and S.P.M.P., contributed to the critical revision of the manuscript. All authors reviewed and approved the final version of the manuscript for submission.

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Conflicts of Interest

The authors declare no conflict of interest

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Apendix

Table 1. Characteristic of articles

Author (year)	Methodology	Sampling Method	Participant	Conclusion
Umaroh (2020) (Umaroh & Pangaribowo, 2020).	Longitudinal study.	Secondary data (IFLS 2007 and 2014)	3264 observations of self-produced food households and 9887 observations of	Sociodemographic factors of the household such as household structure, the education and age of the household head have different effect of each type of

Lantarsih (2020) (Lantarsih & Hariadi, 2021).	Explanatory study	Proportional random sampling	purchased food households 100 respondents at Sumberagung village, Yogyakarta	protein-based food consumption in the household. There is direct relationship between home garden and motivation of the community in realizing household food security.
Purnasari (2020) (Purnasari et al., 2020).	Cross-sectional	Cluster sampling	122 household in yogyakarta.	Financial crisis because of Covid-19 also influenced the increase in the deterioration of household food security.
Manyullei (2021) (Manyullei & Arundhana, 2021).	Cross-sectional	Simple random sampling	304 study participants in three districts in Wajo regency.	The family income is a critical factor that determines a household to achieve food security.
Andani (2021) (Andani & Adi, 2021).	Case control	Simple random sampling	74 respondents in Surabaya.	Adolescents at risk of food insecurity were 6 times more likely to experience a binge eating disorder.
Sudaryati (2021) (Sudaryati et al., 2021).	Mix-Method	Purposive sampling	131 pregnant women in eight districts of the Central Tapanuli	There is a significant relationship between household food security with energy and protein intake of pregnant women.
Primaningrum (2021) (Primaningrum et al., 2022).	Descriptive	Purposive sampling	60 households of urban people in Yogyakarta	Vegetable urban farming affect to the increase in food security of urban people.
Ashari (2022) (Ashari et al., 2022).	Cross-sectional study	Purposive sampling	1017 participants from 34 provinces in Indonesia	Stress or depression, poor dietary habits and living alone (strong factors), female, unemployed and living in Java (low factors) associated with food security.
Hermawati (2022) (Hermawati et al., 2022).	Cross-sectional study	Purposive sampling	150 low-income household in DIY	Sociodemographic factors affect the food security of low-income household in the study area
Iguna (2022) (Iguna et al., 2022).	Quantitative descriptive	Secondary data from the Central Statistics Agency	18 districts in Gunungkidul regency	The subdistricts in Gunungkidul regency are already quite resilient in terms of food security
Syafiq (2022) (Syafiq et al., 2022).	Cross-sectional	Purposive sampling	517 respondents from urban (Jakarta) and semi urban area (Depok).	The Covid-19 pandemic affected household food security in urban and semi-urban areas through worsening employment status and income condition.
Sitompul (2023) (Sitompul et al., 2023).	Cross-sectional	Simple random sampling	266 toddlers (0-5 years)	Sociodemographic factors and household of food security have an effect on the incidence of stunting of children.

Figure 1
(PRISMA-P) Flowchart

