Analysis of Food Expenditure, Nutrition Intake, and Consumption Patterns in DKI Jakarta Before and During the Covid-19 Pandemic

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Abstract

As a result of the spread of Covid-19, Indonesia has adopted a policy, one of which is Large-Scale Social Restrictions (LSSR). The effect of the implementation of the LSSR, the economy in DKI Jakarta has decreased and the unemployment rate has increased drastically. The decline in the level of the economy can cause purchasing power of community to decline and a decrease in household consumption patterns can have an impact on poor nutritional intake. The purpose of this study was to examine changes in food expenditure patterns, consumption patterns and nutrition intake in DKI Jakarta province before and during the Covid-19 pandemic. The research design used a descriptive study, using Susenas data for 2019, 2020 and 2021 from DKI Jakarta Province. The number of subjects analyzed was 4.443 households with a total sampling. The results of the study show that food expenditure in 2020 has increased compared to before the Covid-19 pandemic in 2019, but in 2021 food expenditure has decreased. Non-food expenditure decreased in 2020, but increased in 2021. The level of energy and protein adequacy of some household groups has decreased and some has increased. The Desirable Dietary Pattern score decreased in 2019 reaching 83.4 and decreased every year from 2020 to 2021.

Keywords: Covid-19 Pandemic; Food Expenditure; Nutrition Intake; Consumption Pattern.

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1. Introduction

The pattern of expenditure is one of the variables in measuring the level of welfare of a population. The higher the household income, the portion of the expenditure will shift to non-food expenditure from the initial expenditure on food. Consumption activities are carried out in order to meet needs, the most basic physiological need of humans in order to survive is food. However, human needs are not only limited to food commodities but also non-food commodities [1].

Nutrients have a function as a source of energy, tissue growth and maintenance, regulate metabolism and body balance, and play a role in the immune system. A person's nutritional needs are influenced by gender, age, body size (weight and height), physiological conditions, physical activity and body metabolism. Balanced nutrition during the Covid-19 pandemic is very important for the pattern of human life because consuming balanced nutrition the community can maintain their health so that the virus is difficult to enter the human body and with that it can break the chain of spreading the corona virus [2]. Nutrition is also an important concern for the community in maintaining their immune system. The immune system is where a person conditions to be able to resist certain diseases mainly through preventing the development of pathogenic microorganisms [3].

Consumption pattern is a way or effort in regulating the amount and type of food with a specific purpose, such as maintaining health, nutritional status, preventing or helping cure diseases. The community food consumption patterns are generally influenced by social-cultural factor, demographic, and lifestyle factor, and are associated with the risk of several degenerative diseases [4]. Consumption of adequate or balanced and safe foods can increase the immune system and reduce chronic diseases and infectious diseases. In making the food menu, it is recommended to make variations in the food menu so that we and our families do not feel bored with the same food menu [5].

2. Material and Methods

2.1. Study Design, Time and research place

The research design uses a descriptive study. This study uses data for 2019, 2020 and 2021 from DKI Jakarta Province. Research data processing was carried out from December 2021 to March 2022 at the IPB University.

2.2. Data Collection

The research data uses secondary data from Central Agency of Statistics in the form of Susenas data for 2019, 2020 and 2021. The selection of DKI Jakarta Province as the research area coverage is based on the high number of Covid-19 pandemic cases in Indonesia. This study uses data 2019 as data before the Covid-19 pandemic and data 2020-2021 as data during the Covid-19 pandemic.

Table 1: Data collection

Variable	Data type	Year	Source
Food and non-food expenditure pattern	Susenas	2019, 2020 and 2021	CAS
Calorie and protein intake	Susenas	2019, 2020 and 2021	CAS
Food diversity	Susenas	2019, 2020 and 2021	CAS
Demographic	DKI Jakarta in numbers	2019, 2020 and 2021	CAS
Geography	DKI Jakarta in numbers	2019, 2020 and 2021	CAS

The number of subjects analyzed was 4.443 households by means of total sampling. The data collection method carried out by CAS is collecting data in each selected household through direct interviews between the enumerators and the respondents.

2.3. Processing and Data Analysis

Processing and analyzing the research data using Microsoft Office Excel 2019 software. The data processing is carried out first by grouping (quintiles) by dividing the community into five equal groups based on the average household income/capita, sorted from the lowest to the highest. Quintile 1 is the lowest income 20% of the population and quintile 5 is the highest income 20% of the population.

3. Result and Discussion

3.1 Overview of the DKI Jakarta

DKI Jakarta Province has an area that is not so wide when compared to other provinces, namely a land area of 661.52 km^2 and an ocean area of 6,977.5 km^2 and has ±110 islands spread across the Thousand Islands. DKI Jakarta has food crops which include rice and secondary crops consisting of corn, peanuts and cassava trees, as well as horticultural crops such as vegetables, fruits, and medicinal plants. Based on the results of an agricultural survey in 2019, the largest production of vegetables was kangkong (43,808 kw), fruits, namely manga (47,214 kw), and medicinal plants, namely aloe vera (23,060 kg).

DKI Jakarta is the State Capital, therefore DKI Jakarta as the center of government and economy in Indonesia whose land is mostly used for tall buildings, but DKI Jakarta province still has land that is used for agriculture. Rice fields in Jakarta are only found in three areas, namely East Jakarta, West Jakarta and North Jakarta. The rice fields are getting smaller every year because the DKI Jakarta province is the goal of the Indonesian people to migrate to bigger and more developed cities, therefore population growth is increasing and the impact on land will be smaller. The DKI Jakarta government is looking for ways and efforts to maximize rice production by providing assistance and guidance so that farmers work optimally and can produce rice with good results and can meet the food of the population of DKI Jakarta [6].

3.2 Food and Non-food Expenditure Pattern

The expenditure pattern for population consumption in Indonesia is the most basic data in calculating the poverty rate. In meeting needs, the most basic physiological need that human meet in order to survive is food. However, human needs are not only in the form of food commodities, but also non-food commodities must be fulfilled [1].

Table 2: Data collection

Expenditure of DKI Jakarta Province	Expenditure capita/month (%)		
	2019	2020	2021
Food	40,70	41,84	39,54
Non-food	59,30	58,16	60,45

Table 2 shows that the average food expenditure increased in 2020, namely 41.84% compared to 2019, but decreased in 2021 to 39.54%. The average result of non-food expenditures experienced an increase of up to 60.45%. it can be seen from the results of the research that in the DKI Jakarta Province in 2020 food expenditure has increased while non-food expenditure has decreased, and in 2021 the opposite will occur, namely food expenditure has decreased while non-food expenditure has increased. This can be interpreted that food and non-food expenditure will not be the same in experiencing changes every year.

The decreased in food expenditure in 2021 was influenced by the increase in non-food expenditure because people used their income more for their non-food needs, in this 2021 is the year the Covid-19 pandemic occurred, so they use their money more to survive such as buying masks, medicines, oxygen, and others. Higher levels of household income are able to meet their needs not only from food but also from non-food needs. This is in accordance with Engel's Law which states that the proportion of income spent on food will decrease when income increases [7]. According to previous research which states that out of 76.8% of respondents said non-consumption expenditures such as paying for house installments, car, medical equipment and goods that can help them avoid being exposed to the virus and other items are also very influential to meet the food needs of the family [8].

3.3 Nutrition Intake

Table 3 shows that the level of nutritional adequacy is the ratio of the nutrients they consume to the recommended nutritional adequacy rate. The level of energy adequacy in quintile 1 in 2019 was 81.29% which can be categorized into a mild deficit. The level of energy adequacy is said to be normal if it is in the range of 90-119%, while in quintile 5 it is 122.08% which is more than normal. The level of energy adequacy is said to be higher, it will have an impact on public health, such as the occurrence of overweight, obesity and other non-communicable diseases. Energy deficiency and excess can be balanced by fulfilling the consumption of food sources of carbohydrates, protein, fat, if energy adequacy is met then the benefits of other nutrients will work optimally [9].

Table 3: The level of nutrient intake per capita/month

Income class	2019		2020		2021	
	Intake (kcal/cap/day)	Adequacy level (%)	Intake (kcal/cap/day)	Adequacy level (%)	Intake (kcal/cap/day)	Adequacy level (%)
The level of energy adequacy						
Quintil 1	1707	81.29	1721	81.94	1736	82.68
Quintil 2	2073	98.69	2054	97.79	2023	96.33
Quintil 3	2223	105.84	2218	105.59	2236	106.47
Quintil 4	2389	113.78	2417	115.07	2458	117.05
Quintil 5	2564	122.08	2585	123.08	2663	126.82
The level of protein adequacy						
Quintil 1	52	91.24	52	90.49	51	89.57
Quintil 2	65	113.32	64	112.19	62	108.72
Quintil 3	72	125.55	71	123.96	70	122.49
Quintil 4	78	136.73	78	137.59	81	141.34
Quintil 5	88	153.76	88	154.33	89	156.34

The results of the 2020 study shows that there was no significant increase, which means that community food consumption pattern did not change so that the level of energy intake did not improve. Almost all income quintiles have increased by 1-3%, where this year all countries have been impacted by the Covid-19 pandemic, especially in Indonesia. This pandemic has a major impact, both in the health, food and non-food sectors. Due to the Covid-19 pandemic in Indonesia, the government provided of Social Affairs to provide direct cash assistance or food assistance in order to balance the economic situation of the community and their nutritional intake so they are not vulnerable through government programs.

At the level of protein adequacy there is no deficit, whether it is a mild, moderate or severe deficit so that there will be no protein energy deficiency disease. Quintiles 1 and 2 can be categorized as normal because they have numbers of 91.24% and 113.32%, respectively. The level of protein adequacy is said to be normal if it is in the range of 90-119%. In 2020, some of the revenues experienced a less significant decrease, still falling into the same category in 2019. However, in quintiles 3, 4 and 5, either before the pandemic or during the pandemic crime scenes were categorized into more. The purchasing power of a household with a high income for food sources of animal protein such as fish, meat and milk are quite high. Changes in an income can affect changes in the allocation of expenditure for food needs and type of food. This can also be shown in the decline in the quality of food consumed by the public [10].

The DKI Jakarta Provincial government provides assistance through the Social Agency of DKI Jakarta Province, namely cash social assistance given to the community in the amount of Rp300,000/family/month to vulnerable households and those affected by the Covid-19 pandemic. Therefore, the consumption of calorie and protein has not decreased from before the pandemic or at least they can maintain their intake of calorie and protein [11].

3.4 Food Diversity

Assessment of the quality of food consumption based on the diversity and balance of energy consumption can be done using the Desirable Dietary Pattern (DDP) approach. DDP is a collection of various types and amounts of the main food groups that are recommended to meet energy and nutritional needs in order to be balanced [12]. Desirable Dietary Pattern (DDP) score as an indicator of nutritional quality and diversity of food consumption so that it can be used to plan food consumption needs. The value of 100 is the highest DDP score that shows the value of all consumption needs.

Table 4: DDP scores per capita/month

Income class	Desirable dietary pattern score		
	2019	2020	2021
Quintil 1	69,7	69,7	68,3
Quintil 2	80,9	77,9	77,1
Quintil 3	86,2	81,8	81,6
Quintil 4	86,8	86,2	86,1
Quintil 5	93,6	91,0	93,3
Average	83,4	81,3	81,2

Table 4 shows that the DDP score has decreased until 2021 from the lowest to the highest income class. The decrease in the DDP score indicates that there is less variety and balance in the consumption of food consumed by the community. The average DDP score is still in the sufficient category because it is still in the 70-84 range, to say that the DDP scope must reach ≥85. This can be caused by the high cost of food raw materials in the market and the declining availability of food. During the Covid-19 pandemic, food access and distribution were hampered so that food raw materials were difficult to obtain, as a result their food diversity decreased. The achievement of food diversity can be measured through the achievement of assessment, composition, food patterns and balanced nutrition with indicators, namely Desirable Dietary Pattern (DDP) [13]. 2020 is the first year of the Covid-19 pandemic, so food availability, food production, food access is disrupted due to this pandemic. Food access through transportation is hampered, due to the Large-Scale Social Restrictions. In 2021, although still in a pandemic, food availability, food production and food access can be resolved, so that the community can meet their food needs to be diverse and balanced.

4. Conclusion

This study concludes that food expenditure in 2020 has increased compared to before the Covid-19 pandemic in 2019, but in 2021 during the Covid-19 pandemic, community food expenditure has decreased. Non-food expenditure decreased in 2020, but increased in 2021. The intake of calorie and protein during the Covid-19 pandemic has changed, either increasing or decreasing. The Desirable Dietary Pattern (DDP) score for the people of DKI Jakarta during the Covid-19 pandemic has decreased.

Acknowledgments

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