

Family characteristics, consumption patterns, food security and nutritional status of under-fives, before and during COVID-19 pandemic in Banten Province, Indonesia

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Abstract

Food security during the COVID-19 pandemic is vital for every family, especially regarding under-five consumption patterns and nutritional status. This study aimed to analyze the dietary pattern, food security, and nutritional status of under-fives before and during the implementation of Large-Scale Social Restrictions during the COVID-19 pandemic in Banten Province. A total of 178 respondents from four regions in Banten Province (e.g., Pandeglang, Lebak, Tangerang, and Serang) participated in this cross-sectional study. The data was collected through interviews using the Food Frequency Questionnaire (FFQ) and Household Food Insecurity Access Scale (HFIAS). The under-five nutritional status was assessed using WAZ, WHZ, and BAZ. The paired t-test was performed to analyze the differences in food security and the under-five nutritional status. There was a significant difference ($p = 0.000$) in food security scores before and during the Large-Scale Social Restrictions. Significant differences were also found in the WAZ ($p = 0.000$), WHZ ($p = 0.000$), and BAZ ($p = 0.000$) of under-fives before and during the Large-Scale Social Restrictions. It is suggested that families should strive for adequate nutrition for the under-fives during the COVID-19 pandemic to avoid malnutrition problems that may result in health problems in the next life.

1. Introduction

Food crises have occurred in various world parts (Vaughan, 2020). It is marked by the increase in world food prices, such as wheat, soybeans, rice and corn (Golay, 2010). The decrease in supply impacts the increased food prices on the world market, making the poor pay more than the rich people in developed countries. This condition is exacerbated by the COVID-19 pandemic, where it is increasingly difficult for people to find work, making it difficult for them to meet their daily needs. They also have no income to meet their needs.

The coronavirus disease 2019 (COVID-19) continues to damage health and economic growth globally, including mothers' and children's nutritional health (FAO, UNICEF, WFP, WHO, 2020). The COVID-19 pandemic has increased the incidence of childhood wasting in the short term, and the malnutrition rate among mothers and children also tends to increase. Its impact on poverty, intervention coverage, and access to nutritious food is constrained (Akseer *et al.*, 2020).

Based on the reality that has occurred in the last 20 years, it can be seen that there is a periodic trend every five years, where there is an explosion of disease outbreaks. SARS occurred in the 2000s, avian influenza

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in 2004/2005, swine influenza in 2009/2010, Ebola in 2014/2015, and COVID-19 in 2019/2020 (Lončarek, 2009; Ching and Ching, 2018; Martinez, 2018). The outbreak of the COVID-19 pandemic also has implications for the soaring demand for basic necessities. The government's recommendations for people to work, study, and worship at home encourage people to make massive purchases of basic foodstuffs to meet future supplies. Based on the Indonesian National Strategic Food Price Information Center (Pusat Informasi Harga Pangan Strategis Nasional (PIHPS)), as of March 23, 2020, the prices of several basic commodities had a significant increase (national average prices) in the past month, and the prices had increased since the beginning of the year (year to date/YTD). The price of local granulated sugar increased by 18.71% (31.2% YTD), the price of premium quality granulated sugar increased by 10.68% (15.54% YTD), the garlic price increased by 36% (YTD), the shallot price increased by 5.56% (4.57% YTD), and the price of red bird's eye chillies increased by 18.11% (2.74% YTD). Meanwhile, the prices for other necessities (e.g., rice, chicken, beef, chicken eggs, and cooking oil) were relatively stable.

Food insecurity conditions are often associated with the emergence of various problems. Failure to access nutritious food will cause nutritional problems, such as malnutrition among under-fives (Hackett, Melgar-Quinonez and Álvarez, 2009; Motbainor *et al.*, 2015). Food insecurity is associated with obesity in women (Franklin *et al.*, 2012; Pan *et al.*, 2012) and the incidence of chronic diseases (Seligman *et al.*, 2010; Gowda *et al.*, 2012). Food insecurity is also associated with risky sexual behaviour (Vogenthaler *et al.*, 2013), anxiety, depression, risk coping strategies, and poor pregnancy outcomes in women (Ivers and Cullen, 2011). Food insecurity may even have broader social impacts, such as impaired mental development in children (Rose-Jacobs *et al.*, 2008; Slopen *et al.*, 2010).

The food security situation in Indonesia still leaves big problems and challenges. The proportion of the hungry population (calorie intake <1400 kcal/capita/day) increased from 17% to 17.39% from 1990 to 2014 (BAPPENAS, 2015). The population with inadequate energy intake (<70% Energy Adequacy Rate) was still high (e.g., 45.7%). In comparison, the proportion of the population with inadequate protein intake (<80% Protein Adequacy Rate) was 36.1% (Kemenkes, 2014). The condition of the community's nutritional status (e.g., the national prevalence of stunting) as one of the proxies for food security was still high in the under-fives (i.e., 37.2% in 2013). The prevalence decreased to 30.2% in 2018, but this rate was still considered high (Kemenkes RI, 2014; Kemenkes RI, 2018).

Conceptually, food security is an extensive and complex issue covering four main domains, namely availability, accessibility, utilization, and stability. It has a hierarchical level, i.e., macro-level (global, regional, and national), community-level (province and district), and micro-level (household and individual) (Jones *et al.*, 2013; Cafiero *et al.*, 2018). Food availability at the macro level does not necessarily guarantee household access to food (Burchi and De Muro, 2016) and the achievement of good individual nutritional status (Pangaribowo *et al.*, 2013). Food can be available in sufficient quantities in an area, but it is not necessarily accessible to every household. Therefore, the household is a crucial unit to ensure the availability of food in sufficient quantity and quality for each household member.

Banten Province was a COVID-19 red zone area that carried out Large-Scale Social Restrictions (Pembatasan Sosial Berskala Besar (PSBB)), resulting in a low level of community interaction. PSBB is a restriction on specific activities of residents in the areas suspected of being infected with COVID-19. It includes the closure of schools and workplaces, restrictions on religious activities, activities in public places or facilities, socio-cultural activities, means of transportation, and other activities, especially those related to defence and security aspects. PSBB has resulted in an increasing number of unemployed household heads. Therefore, it will decrease household consumption power, especially for daily workers (labourers), public transport drivers, online drivers, and other workers. This study aimed to analyze household food security in the Banten regions affected by COVID-19.

2. Methodology

This quantitative analytical study used a cross-sectional design. It was conducted in four regions of Banten Province from June to August 2020. The population in this study were all households in Banten Province affected by COVID-19. The samples were simultaneously taken from Pandeglang, Lebak, Tangerang, and Serang. A total of 178 respondents participated in this study, which consisted of 46 respondents in Pandeglang, 40 respondents in Lebak, 47 respondents in Tangerang, and 45 respondents in Serang. The inclusion criteria in this study were families with under-fives registered at the Posyandu in their areas, the under-fives who were not in a sick condition, and the willingness to be respondents. Families with under-fives were chosen as research subjects because the under-fives were more at risk of having malnutrition or poor nutritional status due to the pandemic. The data regarding nutritional status before the pandemic were

collected using Posyandu's data. The nutritional status data were also collected using direct measurements at the Posyandu with health protocols. Food security was compared before and after filling out the questionnaires. The data concerning consumption patterns were collected through interviews using the food frequency questionnaire (FFQ). Food security scores were measured using the Household Food Insecurity Access Scale (HFIAS). The nutritional status of under-fives was assessed based on weight-for-age Z-scores (WAZ), weight-for-height Z-scores (WHZ), and BMI-for-age Z-scores (BAZ). The paired t-test was performed to analyze the differences in food security scores and the nutritional status of under-fives before and during PSBB.

3. Results

Based on the respondents' characteristics, most fathers were 33-35 years old, while most mothers were 29-30 years old. In general, the education of most fathers and mothers was mostly senior high school. Most fathers worked as private employees with an income above the regional minimum wage. Most respondents had less than five family members and generally had one under-five. The under-fives were mostly girls aged 25-59 months. The respondent's house's average distance to the market was about two km. Almost all respondents used motorbikes to the market in less than 11 minutes (Table 1).

Table 2 shows the nutritional status of under-fives based on WAZ, WHZ, and BAZ before and after PSBB. The decrease in the mean WAZ was found in the three regions (i.e., Pandeglang, Lebak, and Serang). However, the decrease in the mean WAZ was not found in Tangerang. Based on the WHZ, the decrease in mean WHZ was found in all regions before and after the pandemic. A similar decline was found in the mean BAZ in all regions.

Table 3 shows the differences in food consumption before and during the COVID-19 pandemic. The consumption patterns of under-fives changed based on eating frequency, consumption of staple foods, animal protein, vegetable protein, vegetables, and fruits. Sources of animal food consumed by the under-fives in this study were eggs and processed products, meat (chicken and beef) and its processed products, and fish and processed products. Most under-fives rarely ate (<3 times/day) during the COVID-19 pandemic. These results were in line with food security scores in general in all regions. Most of the households in all regions were food-secure before the pandemic but became food-insecure during the pandemic.

The paired t-test showed a significant difference in

the family's food security scores before and during the COVID-19 pandemic ($p = 0.000$). The significant differences in WAZ, WHZ and BAZ were also found before and during the COVID-19 pandemic ($p = 0.000$). In general, the nutritional status of under-fives had a significant decline, which was affected by the level of family food security. The lower the family's food security score, the lower the nutritional status of under-fives (Table 4).

4. Discussion

COVID-19 has become a global pandemic in all countries, affecting the agricultural sector, especially food (Rozaki, 2020). This pandemic has caused severe adverse impacts on the global economy, especially on the food supply (Galanakis, 2020). Besides that, it results in restrictions on human movement, changes in consumer demand, and the closure of food production facilities (Sidharta, 2020). The COVID-19 pandemic has also caused food trade restrictions and financial pressure on the food supply chain, impacting family food security (Aday and Aday, 2020). In Indonesia, these restrictions are better known as PSBB (Large-Scale Social Restrictions).

PSBB was a large-scale social restriction, a regulation issued by the Ministry of Health (MoH) in the context of the Acceleration of Handling COVID-19 to be immediately implemented in various regions. The PSBB rules were listed in the Minister of Health Regulation Number 9 of 2020. PSBB included restrictions on a certain number of activities for residents in the areas suspected of being infected with COVID-19, especially in areas with the highest cases. These restrictions included the limitation of activities in schools and workplaces and restrictions on religious activities, activities in public places or facilities, socio-cultural activities, means of transportation, and other activities specifically related to defence and security aspects.

The nutritional status of under-fives was generally normal, as indicated by WAZ, WHZ, and BAZ. Based on WAZ, the nutritional status improvement was found in three out of four regions (i.e., Pandeglang, Lebak, and Serang). However, the nutritional status of under-fives has decreased in Tangerang. Increased WHZ and BAZ were found in all regions. PSBB could affect food needs and disrupt the health system by limiting human activities. It would affect several food distribution aspects, which would affect household food security (Headey et al., 2020). Household food insecurity would lead to children's inadequate nutrient intake. PSBB in the community resulted in changes in socio-economic patterns, especially restrictions on access to consumption and health services, thereby affecting children's

Table 1. Characteristics of families and children under five.

Characteristics of Families and Children Under Five		Total (n = 178)	Regions			
			Pandeglang (n = 46)	Lebak (n = 40)	Serang (n = 47)	Tangerang (n = 45)
			$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$
Father's age (years)	26-35	34.2±4.3 121 (68)	34.0±4.2 30 (24.8)	35.1±5.3 27 (22.3)	33.9±4.5 32 (26.4)	33.9±4.8 32 (26.4)
	36-45	54 (30.3)	15 (27.8)	12 (22.2)	14 (25.9)	13 (24.1)
	46-55	3 (1.7)	1 (33.3)	1 (33.3)	1 (33.3)	0 (0)
Mother's age (years)		30.1±2.7	30.6±2.9	29.9±2.6	29.9±2.3	29.8±2.8
	≤25	5 (2.8)	1 (20)	1 (20)	1 (20)	2 (40)
	26-35	169 (94.9)	44 (26)	38 (22.5)	45 (26.6)	42 (24.9)
	36-45	4 (2.2)	1 (25)	1 (25)	1 (25)	1 (25)
Father's Education	Primary school	17 (9.6)	4 (23.5)	7 (41.2)	2 (11.8)	4 (23.5)
	Junior high school	45 (25.3)	11 (24.4)	11 (24.4)	12 (26.7)	11 (24.4)
	Senior High School	93 (52.2)	25 (26.9)	18 (19.4)	25 (26.9)	25 (26.9)
	University	23 (12.9)	6 (26.1)	4 (17.4)	8 (34.8)	5 (21.7)
Mother's Education	Primary school	15 (8.4)	4 (26.7)	3 (20)	4 (26.7)	4 (26.7)
	Junior high school	63 (35.4)	13 (20.6)	17 (27)	18 (28.6)	15 (23.8)
	Senior High School	92 (51.7)	26 (28.3)	20 (21.7)	23 (25)	23 (25)
	Universty	8 (4.5)	3 (37.5)	0 (0)	2 (25)	3 (37.5)
Work of the Head of the Family	Labor	31 (17.4)	5 (16.1)	8 (25.8)	7 (22.6)	11 (35.5)
	Civil servants/Army/Police	10 (5.6)	3 (30)	3 (30)	2 (20)	2 (20)
	Farmers/fishermen	18 (10.1)	2 (11.1)	7 (38.9)	6 (33.3)	3 (16.7)
	Private employees	64 (36)	19 (29.7)	14 (21.9)	16 (25)	15 (23.4)
	Taxi bike (online / base)	29 (16.3)	8 (27.6)	2 (6.9)	9 (31)	10 (34.5)
	Driver	26 (14.6)	9 (34.6)	6 (23.1)	7 (26.9)	4 (15.4)
Income (Million Rupiah)		3.5±1.6	3.8±1.6	3.7±2	3.6±1.4	3.3±1.4
	< Regional minimum wage (Rp 2.460)	60 (33.7)	14 (23.3)	16 (26.7)	15(25)	15 (25)
	≥ Regional minimum wage (Rp 2.460)	118 (66.3)	32 (27.1)	24 (20.3)	32 (27.1)	30 (25.4)
Number of Family Members (people)	<5	164 (92.1)	45 (27.40)	38 (23.3)	40 (24.4)	41 (25)
	5-6	14 (7.9)	1 (7.1)	2 (14.3)	7 (50)	4 (28.6)
Number of children under five	1	174 (97.8)	46 (26.4)	38 (21.8)	46 (26.4)	44 (25.3)
	>1	4 (2.2)	0 (0)	2 (50)	1 (25)	1 (25)
Gender of children under five	Male	47 (26.4)	10 (21.3)	5 (20.6)	19 (40.4)	13 (27.7)
	Female	131 (73.6)	36 (27.5)	35 (26.7)	28 (21.4)	32 (24.4)
Age of children under five (months)		31.5±7.9	30.5±7.8	31.3±7.6	32.3±8.6	31.8±7.9
	≤24	28 (15.7)	8 (28.6)	6 (21.4)	7 (25)	7 (25)
	25-59	150 (84.3)	38 (25.3)	34 (22.7)	40 (26.7)	38 (25.3)
Distance of House to market (km)	<2	137 (77)	36 (26.3)	33 (24.1)	34 (24.8)	34 (24.8)
	2-5	30 (16.9)	10 (33.3)	7 (23.3)	7 (23.3)	6 (20)
	>5	11 (6.2)	0 (0)	0 (0)	6 (54.5)	5 (45.5)
Transportation to the market	Bike	17 (9.6)	3 (17.6)	3 (17.6)	8 (47.1)	3 (17.6)
	Motorcycle	117 (65.7)	33 (28.2)	18 (15.4)	29 (24.8)	37 (31.6)
	Car	8 (4.5)	4 (50)	2 (25)	1 (12.5)	1 (12.5)
	Public transportation (online / regular)	36 (20.2)	6 (16.7)	17 (47.2)	9 (25)	4 (11.1)
Travel time to market (minutes)		11.8±3.4	11.9±3.4	12.9±3.9	11.3±2.7	11.3±3.4
	≤11.8	130 (73)	32 (24.6)	24 (18.5)	37 (28.5)	37 (28.5)
	>11.8	48 (27)	14 (29.2)	16 (33.3)	10 (20.8)	8 (16.7)

Table 2. Nutritional status of children under five before and during large-scale social restrictions (PSBB).

Nutritional Status of Children Under Five	Regions																
	Total (n = 178)				Pandeglang (n = 46)			Lebak (n = 40)			Serang (n = 47)			Tangerang (n = 45)			
	Before	During	Before	During	Before	During	Before	During	Before	During	Before	During	Before	During	Before	During	
	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	$\bar{x} \pm s / n(\%)$	
	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	
Very low BW (<-3 SD)	-0.1±0.7	0 (0)	0 (0)	0 (0)	-0.1±0.7	0 (0)	0 (0)	0 (0)	-0.1±0.7	0 (0)	0 (0)	0 (0)	-0.04±0.7	0 (0)	0 (0)	-0.2±0.7	-1.0±0.7
Less BW (-3 to <-2 SD)	1 (0.6)	11 (6.2)	1 (100)	2 (6.2)	0 (0)	3 (27.3)	0 (0)	3 (27.3)	0 (0)	0 (0)	3 (27.3)	0 (0)	0 (0)	3 (27.3)	0 (0)	3 (27.3)	3 (27.3)
Normal BW (-2 to 1 SD)	163 (91.6)	167 (93.8)	43 (26.4)	44 (26.3)	37 (22.7)	37 (22.2)	41 (25.2)	44 (26.3)	42 (25.8)	42 (25.1)	42 (25.1)	42 (25.1)	41 (25.2)	44 (26.3)	42 (25.8)	42 (25.1)	42 (25.1)
Risk of overweight (> 1 SD)	14 (7.9)	0 (0)	2 (14.3)	0 (0)	3 (21.4)	0 (0)	6 (42.9)	0 (0)	3 (21.4)	0 (0)	3 (21.4)	0 (0)	6 (42.9)	0 (0)	3 (21.4)	3 (21.4)	0 (0)
	-2.1±1.1	-2.6±1.1	-2.0±1.0	-2.4±1.1	-1.9±1.1	-2.5±1.2	-2.2±1.2	-2.8±1.2	-2.3±1.1	-2.8±1.1	-2.8±1.1	-2.8±1.1	-2.2±1.2	-2.8±1.2	-2.3±1.1	-2.8±1.1	-2.8±1.1
Malnutrition (<-3 SD)	38 (21.3)	73 (41)	6 (15.8)	16 (21.9)	7 (18.4)	13 (17.8)	12 (31.6)	21 (28.8)	13 (34.2)	23 (31.5)	23 (31.5)	23 (31.5)	12 (31.6)	21 (28.8)	13 (34.2)	23 (31.5)	23 (31.5)
Underweight (-3 to <-2 SD)	60 (33.7)	54 (30.3)	18 (30)	15 (27.8)	12 (20)	13 (24.1)	14 (23.3)	15 (27.8)	16 (26.7)	11 (20.4)	11 (20.4)	11 (20.4)	14 (23.3)	15 (27.8)	16 (26.7)	11 (20.4)	11 (20.4)
Normal weight (-2 to 1SD)	80 (44.9)	51 (28.7)	22 (27.5)	15 (29.4)	21 (26.2)	14 (27.5)	21 (26.2)	11 (21.6)	16 (20)	11 (21.6)	11 (21.6)	11 (21.6)	21 (26.2)	11 (21.6)	16 (20)	11 (21.6)	11 (21.6)
	-2.4±1.4	-2.8±1.4	-2.4±1.2	-2.7±1.2	-2.1±1.5	-2.6±1.6	-2.5±1.5	-2.9±1.6	-2.7±1.3	-3.1±1.3	-3.1±1.3	-3.1±1.3	-2.5±1.5	-2.9±1.6	-2.7±1.3	-3.1±1.3	-3.1±1.3
Malnutrition (<-3 SD)	58 (32.6)	88 (49.4)	14 (24.1)	21 (23.9)	7 (12.1)	15 (17)	18 (31)	25 (28.4)	19 (32.8)	27 (30.7)	27 (30.7)	27 (30.7)	18 (31)	25 (28.4)	19 (32.8)	27 (30.7)	27 (30.7)
Underweight (-3 to <-2 SD)	56 (31.5)	45 (25.3)	15 (26.8)	11 (24.4)	15 (26.8)	11 (24.4)	14 (25)	14 (31.1)	12 (21.4)	9 (20)	9 (20)	9 (20)	14 (25)	14 (31.1)	12 (21.4)	9 (20)	9 (20)
Normal weight (-2 to 1 SD)	62 (34.8)	43 (24.2)	17 (27.4)	14 (32.6)	17 (27.4)	13 (30.2)	14 (22.6)	7 (16.3)	14 (22.6)	9 (20.9)	9 (20.9)	9 (20.9)	14 (22.6)	7 (16.3)	14 (22.6)	9 (20.9)	9 (20.9)
Risk of Over nutrition (> 1 to 2 SD)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Overweight (> 2 to 3 SD)	1 (0.6)	1 (0.6)	0 (0)	0 (0)	1 (100)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Obese (> 3SD)	1 (0.6)	1 (0.6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (100)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	1 (100)	1 (100)	0 (0)	0 (0)	0 (0)

BW: body weight, BH: body height, BMI: Body mass index, A: age, PSBB: Large-Scale Social Restrictions

Table 3. Food patterns and food security of family before and during large-scale social restrictions (PSBB).

Variable	Regions														
	Total (n = 178)			Pandeglang (n = 46)			Lebak (n = 40)			Serang (n = 47)			Tangerang (n = 45)		
	$\bar{x} \pm s / n(\%)$	Before	During	$\bar{x} \pm s / n(\%)$	Before	During	$\bar{x} \pm s / n(\%)$	Before	During	$\bar{x} \pm s / n(\%)$	Before	During	$\bar{x} \pm s / n(\%)$	Before	During
		PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB	PSBB
Eating frequency		19 (10.7)	141 (79.2)	2 (10.5)	38 (27)	5 (26.3)	24 (17)	5 (26.3)	39 (27.7)	7 (36.8)	40 (28.4)				
≥3 times		159 (89.3)	37 (20.8)	44 (27.7)	8 (21.6)	35 (22)	16 (43.2)	42 (26.4)	8 (21.6)	38 (23.9)	5 (13.5)				
Staple foods		23 (12.9)	157 (88.2)	6 (26.1)	39 (24.8)	4 (17.4)	39 (24.8)	8 (34.8)	40 (25.5)	5 (21.7)	39 (24.8)				
Consumption		155 (87.1)	21 (11.8)	40 (25.8)	7 (33.3)	36 (23.2)	1 (4.8)	39 (25.2)	7 (33.3)	40 (25.8)	6 (28.6)				
Animal protein		54 (30.3)	154 (86.5)	12 (22.2)	39 (25.3)	14 (25.9)	33 (21.4)	19 (35.2)	40 (26)	9 (16.7)	42 (27.3)				
consumption		124 (69.7)	24 (13.5)	34 (27.4)	7 (29.2)	26 (21)	7 (29.2)	28 (22.6)	7 (29.2)	36 (29)	3 (12.5)				
Plant protein		55 (30.9)	142 (79.8)	12 (21.8)	36 (25.4)	14 (25.5)	30 (21.1)	19 (34.5)	38 (26.8)	10 (18.2)	38 (26.8)				
consumption		123 (69.1)	36 (20.2)	34 (27.6)	10 (27.8)	26 (21.1)	10 (27.8)	28 (22.8)	9 (25)	35 (28.5)	7 (19.4)				
Vegetables		23 (12.9)	148 (83.1)	6 (26.1)	38 (25.7)	4 (17.4)	30 (20.3)	8 (34.8)	39 (26.4)	5 (21.7)	41 (27.7)				
consumption		155 (87.1)	30 (16.9)	40 (25.8)	8 (26.7)	36 (23.2)	10 (33.3)	39 (25.2)	8 (26.7)	40 (25.8)	4 (13.3)				
Fruit consumption		38 (21.3)	141 (79.2)	8 (21.1)	35 (24.8)	11 (28.9)	30 (21.3)	10 (26.3)	38 (27)	9 (23.7)	38 (27)				
≥3 times		140 (78.7)	37 (20.8)	38 (27.1)	11 (29.7)	29 (20.7)	10 (27)	37 (26.4)	9 (24.3)	36 (25.7)	7 (18.9)				
		4.8±5.4	19.8±4.3	3.9±4.9	19.7±4.5	4.8±5.6	19.6±4.1	5.9±5.6	20.9±4.4	4.8±5.4	19.1±4.1				
Food security		89 (50)	0 (0)	25 (28.1)	0 (0)	21 (23.6)	0 (0)	20 (22.5)	0 (0)	23 (25.8)	0 (0)				
Light - Food insecurity		15 (8.4)	0 (0)	6 (40)	0 (0)	2 (13.3)	0 (0)	4 (26.7)	0 (0)	3 (20)	0 (0)				
Medium – Food insecurity		49 (27.5)	0 (0)	11 (22.4)	0 (0)	11 (22.4)	0 (0)	14 (28.6)	0 (0)	13 (26.5)	0 (0)				
Heavy – Food insecurity		25 (14)	178 (100)	4 (16)	46 (25.8)	6 (24)	40 (22.5)	9 (36)	47 (26.4)	6 (24)	45 (25.3)				

PSBB: Large-Scale Social Restrictions

Table 1. Characteristics of families and children under five.

Family food security score	$\bar{x} \pm s$	CI 95%	p*
Before PSBB	4.86± 5.4		
During PSBB	19.85 ± 4.3	-15.585 – -14.391	0.000
Nutritional status			
BW/A			
Before PSBB	-0.12±0.7	0.70 –0.79	0.000
During PSBB	-0.87±0.7		
BW/BH			
Before PSBB	-2.11±1.1	0.46 –0.57	0.000
During PSBB	-2.63±1.1		
BMI/A			
Before PSBB	-2,42±1.4	0.32 –0.52	0.000
During PSBB	-2.84±1.4		

nutritional status (Efrizal, 2020).

The COVID-19 pandemic has affected people's movement, led to rising food prices, and affected the community's food system. During the pandemic, especially when the PSBB was enforced, people's movements in crowded places (e.g., markets) were restricted. Therefore, most people stockpiled food at home. Based on food consumption patterns and family food security, the family's meal frequency was less than three times a day. Similar results were also found in the consumption of staple foods, plant protein, and animal protein. However, during PSBB, fruit and vegetable consumption decreased (<3 times/day). Most of the respondents had a good level of food security before the PSBB. Simultaneously, the respondents had severe food insecurity after PSBB. This study's results agreed with the previous study, which showed that the reduction in people's meal portions occurred due to financial problems (Maryani and Putri, 2020). This condition made people's consumption patterns lower. Based on the previous study (Hassen, Bilali and Allahyari, 2020), most people had inadequate food intake during the pandemic, resulting in nutritional problems, especially severe malnutrition. Many people stockpiled food at home during the pandemic. Food scarcity and rising selling prices had prevented low-income people from buying food because the price was too high.

The COVID-19 pandemic has caused high rates of unemployment and food insecurity, impacting family nutrition problems, especially for under-fives. One of the community welfare indicators can be influenced by the food system related to family food security (Pérez-Escamilla *et al.*, 2020). The family food security scores had a significant relationship with the nutritional status of under-fives before the implementation of PSBB in Banten Province. It indicated that family food security was a pillar that supported the family's nutritional status. Good family food security affected family food

insecurity (Elsahoryi *et al.*, 2020). The family's food insecurity was associated with low nutritional intake, resulting in malnutrition (Mello *et al.*, 2010). Malnutrition may affect under-five mortality and morbidity rates (Mkhize and Sibanda, 2020).

The limitation of this study was the time of the study. This study was conducted during the COVID-19 pandemic, and thereby the researchers did not collect data directly from the respondents. Therefore, the data collected through the questionnaires could not be filled out as expected.

5. Conclusion

The COVID-19 pandemic affected food consumption patterns, food security, and nutritional status of under-fives before and after the PSBB implementation in Banten Province. There were significant differences in food security scores and nutritional status of under-fives before and during PSBB. The author suggests that families should strive for adequate nutrient intake for under-fives during the pandemic to prevent malnutrition, leading to health problems in the next life. This study implied that the COVID-19 pandemic affected people's consumption in four districts of Banten Province, resulting in a decrease in the nutritional status of under-fives. Therefore, the attention of the local government is needed to provide social assistance to the impact of the COVID-19 pandemic, and thereby the community could avoid the downturn (i.e., the increasing number of under-fives with poor nutritional status due to low food intake).

Conflict of interest

The authors hereby declare that there is no conflict of interest.

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