BUKTI KORESPONDENSI
ARTIKEL JURNAL INTERNASIONAL BEREPUTASI

Judul Artikel   : Houshold Characteristic , Comsumption Pattern and Houshold Food
                                    Security Before and During Covid-19 In Banten Province
Jurnal   : Malaysian Journal Of Public Health Medicine
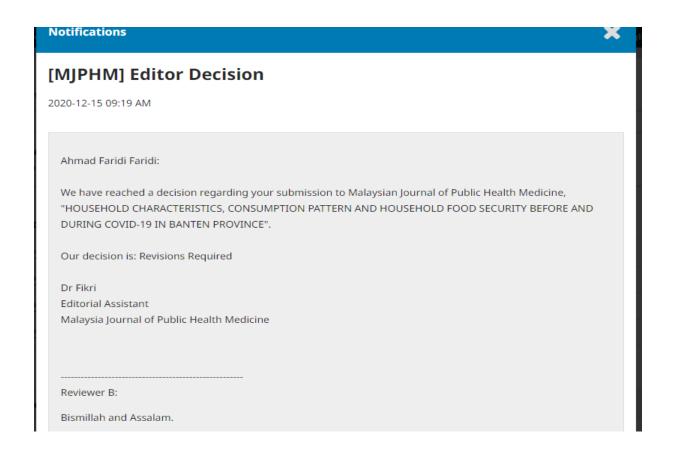   Vol. 21 No. 3 (2021): Volume 21 No.3
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No	Perihal	Tanggal
1.	Submit Artikel ke OJS MJPHM	03 September 2020
2.	Artikel di Peer Review Blind A	19 September 2020
3.	Perbaikan Hasil Review	15 Desember 2020
4.	Artikel di Peer Review Blind B	30 Mei 2021
5.	Perbaikan Hasil Review	17 Juli 2021
6.	Artikel Accepted	21 Agustus 2021
7.	Gallery Proof	03 September 2021
8.	Publish	31 Desember 2021

LAMPIRAN BUKTI SUBMIT DAN DISKUSI PERBAIKAN HASIL REVIEW

BUKTI
SUBMIT ARTIKEL (3 SEPTEMBER 2020)

Masukan dari editor MJPHM terkait artikel yang dikirimkan

HOUSEHOLD CHARACTERISTICS, CONSUMPTION PATTERN AND HOUSEHOLD FOOD SECURITY BEFORE AND DURING COVID-19 IN BANTEN PROVINCE

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ABSTRACT

Households that are accustomed to food insecurity will find a more difficult situation at this time, exacerbated by Covid- 19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. The research method used was a cross sectional study design with 218 households as respondents. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts. The purpose of this study was to describe the characteristics of the family, consumption patterns and food security before and during Covid-19 occurred in the province of Banten. The results showed that there were differences in family consumption patterns before and during Covid-19 with values (p = 0.000) and there were differences in the average score of family food security before and during Covid-19 with values (p = 0.000). The covid-19 pandemic conditions affect the consumption pattern and food security of the family, therefore it is necessary to modify various diets so that the family can survive.

METHODS

The research design used was a cross-sectional study (based on online data) with a quantitative approach. Purposive sampling is used as a sampling technique, with a questionnaire in the form of google form as a way of collecting data to be easily accessible either by cellular telephone or computer. This study wants to see the initial effect of Covid-19 on households in 4 districts (Pandeglang, Tangerang, Serang and Lebak) in Banten province in May-June 2020[17]. The number of respondents involved in this study were 218 households who were willing to fill out questionnaires online.

The data collected is related to household characteristics (age, education, occupation, income, number of household members, access to the market and travel time to the market), for consumption patterns the data collected (frequency of eating, consumption of staple foods, consumption of protein foods and vegetable consumption, consumption of fruits and vegetables) before and during Covid-19, while data for household food security uses HFIAS which is a sustainable measure of the degree of food insecurity which is mostly related to access within the household in the last 30 days. We used a standard HFIAS questionnaire consisting of nine specific questions divided into three food insecurity themes: (1) experiencing anxiety and uncertainty about household food supply; (2) insufficient food quality including variety and preference of food types; and (3) insufficient food intake or a reduction in the quantity of food consumed.[18] The questions address the situation of all household members and do not distinguish adults from children or boys from girls or youth.

Nine questions represented the generally increased severity of food insecurity and nine Households were scored between 0 and 27 at the end of the nine questions based on their answers to nine questions (yes or no) and the frequency of events (rare, occasional, and frequent). Households were classified into various levels of food insecurity based on their answers to nine questions: 0 is given if the household answered "no" to all event questions and a maximum score of 27 is given as the sum for households that answered all questions. The nine questions of occurrence frequency were "frequent".[18] A high HFIAS score indicates poor household access to food and significant household food insecurity. Households were classified into food safe classes (HFIAS = 0-1), light food insecurity (HFIAS = 2-7), moderate food insecurity (HFIAS = 8-11), and severe food insecurity (HFIAS>11)[18] A high HFIAS score indicates poor household access to food and significant household food insecurity.

All data were analyzed to describe household characteristics, consumption patterns and household food security by cross tabulation. To see the differences in food consumption patterns before and during covid-19 using the McNemar test (p<0.001) and household food security using the paired t test (p<0.001).

RESULTS

The number of households in the study was 218 households spread over 4 districts (Pandeglang, Serang, Tangerang and Lebak). The data from the research results show that the majority of head of household were between the ages of 26-35 years (64.2%) with the distribution from the largest to the smallest, namely the Tangerang district

Table 1. Characteristic, Food Pattern and Food Security

Characteristic		Overall (n=218)	Pandeglang (n=53)		Lebak (n=53)		Serang (n=58)		Tangerang (n=54)	
		$\bar{x}\pm s$ / n(%)	$\bar{x}\pm s$	n(%)	$\bar{x}\pm s$	n(%)	$\bar{x}\pm s$	n(%)	$\bar{x}\pm s$	n(%)
Father age (y)		34.6±4.6	34.7±4.4		34.98±3.7		34.78±5.0		33.85±5.1	
	26-35	140 (64.2)		31 (22.1)		35(25)		35 (25)		39(27.9)
	36-45	74 (33.9)		21 (28.4)		17 (23)		22 (29.7)		14 (18.9)
	46-55	4 (1.8)		1 (25)		1 (25)		1 (25)		1 (25)
Mother age (y)		30.2±2.8	30.9±3.0		29.75±2.6		30.45±2.5		29.7±2.9	
	≤ 25	7 (3.2)		1 (14.3)		3 (42.3)		1 (14.3)		2 (28.6)
	26-35	204 (93.6)		50 (24.5)		49 (24)		55 (27)		50 (24.5)
	36-45	7 (3.2)		2 (28.6)		1 (14.3)		2 (28.6)		2 (28.6)
Father's Education	Elementary	28 (12.8)		5 (17.9)		9 (32.1)		8 (28.6)		6 (21.4)
	Junior High	58 (26.6)		16 (27.6)		14 (24.1)		15 (25.9)		13 (22.4)
	Senior High	103 (47.2)		26 (25.2)		23 (22.3)		26 (25.2)		28 (27.2)
	University	29 (13.3)		6 (20.7)		7 (24.1)		9 (31)		7 (24.1)
Mother's Education	Elementary	25 (11.5)		7 (28)		4 (16)		8 (32)		6 (24)
	Junior High	83 (38.1)		17 (20.5)		25 (30.1)		24 (28.9)		17 (20.5)
	Senior High	100 (45.9)		26 (26)		23 (23)		23 (23)		28 (28)
	University	10 (4.6)		3 (30)		1 (10)		3 (30)		3 (30)
Occupation of Father	Labor	37 (17)		7 (18.9)		9 (24.3)		9 (24.3)		12 (32.4)
	Public employees (PNS/TNI/POLRI)	12 (5.5)		3 (25)		4 (33.3)		3 (25)		2 (16.7)
	Farmer/fisherman	26 (11.9)		4 (15.4)		9 (34.6)		8 (30.8)		5 (19.2)
	Private employees	78 (35.8)		20 (25.6)		19 (24.4)		19 (24.4)		20 (25.6)
	Driver motorcycle	32 (14.7)		8 (25)		4 (12.5)		10 (31.2)		10 (31.2)
	Driver	33 (15.1)		11 (33.3)		8 (24.4)		9 (27.3)		5 (15.2)
Salary (million)		3.58±1.6	3.65±1.6		3.71±1.9		3.63±1.5		3.37±1.4	
	< regional wages	72 (33)		17 (23.6)		20 (27.8)		18 (25)		17 (23.6)
	≥ regional wages	146 (67)		36 (24.7)		33 (22.6)		40 (27.4)		37 (25.3)
Number of family member (person)	<5	199 (91.3)		52 (26.1)		49 (24.6)		49 (24.6)		49 (24.6)
	5-6	19 (8.7)		1 (5.3)		4 (21.2)		9 (47.4)		5 (26.3)

that were not with severe food resistance. This is in line with research conducted by Niles (2020) that the majority of households that are always food insecure and nearly a third of new food insecure households are classified as having very low food security, characterized by eating disorders and cutting food or hunger.[9] Two-thirds of respondent households with food insecurity during COVID-19 have eaten less to prolong the food consumed. The results suggest that challenges for all dimensions of food security, including economic and physical access, availability, utilization, and stability, may have profound potential health impacts.

This rise in food insecurity presents many potential health impacts. Food insecurity is negatively associated with health outcomes[29,30] and some evidence indicates it is positively associated with poor diet quality. Further, higher rates of anxiety and mental health disorders among children and adults have been documented in food insecure households.[30,9] Indeed, survey respondents in this study experiencing household food insecurity demonstrated significantly higher rates of concern and worry about food.

If the proportion of food insecure households is added up, it is found that 68.4% of households are classified as food insecure. This result is almost the same as the results of Kirkpatrick and Tarasuk's (2010) study which measured food insecurity in low-income households, which found that the proportion of households with food insecurity was 65.3%.[31] Similarly, the research results of Huet et al. (2012) in the Inuit community in Arctic Canada, it shows that the prevalence of food insecurity is almost the same, namely 62.6%.[32] Furthermore, when compared with the results of research by Sari and Andrias (2013) which measured the food security of urban fishermen households in Surabaya, the results of this study were lower, namely the proportion of fishermen households who were food insecure was 88%.[33]Likewise, the research of Sukiyono et al. (2008) in fishermen households in MukoMuko Regency that get the proportion of food insecure households of 81.1%.[34]

CONCLUSION

Characteristics of family heads ranging in age from 26-35 years, with a high school education level work in the private employee sector with an income more than regional wages. The number of family members <5 people with access to the house to the market is mostly <2 km with vehicles used by motorbikes with an average travel time of <11.8 minutes. There are significant differences before and during Covid-19 in consumption patterns seen from the frequency of eating, consumption of staple foods, protein (animal and vegetable) and fruits and vegetables. As for household food security, there

Masukan dari reviewer A terkait dengan substansi tulisan artikel untuk diperbaiki

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ABSTRACT

Households that are accustomed to food insecurity will find a more difficult situation at this time, exacerbated by Covid-19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. Design of this study is a crosssectional study using purposive sampling, where 218 households were obtained as respondents. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts. The characteristics of the head of the family in this study as a whole were between the ages of 26-35 years with a high school education level, working as private employees with an income level of more than regional wages. The purpose of this study was to describe the characteristics of the family, consumption patterns and food security before and during Covid-19 occurred in the province of Banten. The results showed that there were differences in family consumption patterns before and during Covid-19 with values (p=0.001) and there were differences in the average score of family food security before and during Covid-19 with values (p=0.001). The covid-19 pandemic conditions affect the consumption pattern and food security of the family, therefore it is necessary to modify various diets so that the family can survive.

Keywords: household characteristics, consumption pattern, household food security, Covid-19

INTRODUCTION

Based on the reality that has occurred in the last 20 years, it can be seen that there is a periodic trend every 5 years of outbreaks of disease outbreaks such as, SARS in the 2000s, bird flu in 2004/5, swine flu in 2009/10, Ebola in 2014/15, and when this is Corona Virus Disease 2019/20 Covid-19.[1] The outbreak of the Covid-19 pandemic also has implications for a surge in demand for basic necessities. The government's suggestion that people carry out work, study and worship activities from home encourages people to purchase groceries. From 1990 to 2014, there was an increase in the proportion of the hungry population (calorie intake <1400 kcal/capita/day) from 17% to 17.39%.[2] This is a massive proportion in order to meet supplies until some time to come.In Indonesia, the food security situation remain

big problems and challenges. From the year the population consuming very less energy Recommended Dietary Allowances (RDA) (<70% RDA) is still high, namely 45.7% while the proportion of the population with very low protein consumption (<80% RDA) is 36.1%.[3] The condition of the community's nutritional status as a proxy for food security, such as the national prevalence of stunting in children under five also increased, namely 36.8% in 2007 to 37.2% in 2013.[3,4]

Food insecurity is a condition that is determined by limited or uncertain access, nutritious food for the active, healthy, disproportionate people, and a group of people who are slow to anticipate conditions.[5] Food is the main social determinant in terms of health[6] and food insecurity is associated with many adverse health outcomes in both the short and long term.[7] The unprecedented Covid-19

pandemic, and associated social and economic responses[8] (eg school closings, stay-at-home orders business closures, and job loss) has the potential to increase food insecurity and related health disparities among populations already at risk. Preliminary evidence suggests that food insecurity is indeed increasing rapidly above pre-epidemic levels.[9]

Based on the National Strategic Food Price Information Center (PIHPS) as of March 23, 2020, several staple commodities experienced significant price increases (national average prices) in the last month and increases since the beginning of the year (year to date/ytd), including granulated sugar local 18.71% (ytd 31.2%), premium quality granulated sugar 10.68% (ytd 15.54%), garlic increased 36% (ytd), red onion 5.56% (ytd 4.57%), red bird's eye chilies 18.11% (2.74% ytd). Meanwhile, the prices of other basic necessities such as rice, chicken, beef, eggs and cooking oil were relatively stable.

Household food insecurity has increased from 11% in 2018 to 38% in March 2020; as of April 2020, 35% of households with children aged 18 years and under are food insecure.[10,11] Households accustomed to food insecurity will find the situation more difficult at present, exacerbated by Covid-19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts.

Conceptually, food security is a very broad and complex issue covering 4 main domains, namely availability, accessibility and utilization and stability and has a hierarchical level at macro level (global, regional, national), community (province, district), and micro level (household and individual).[12,13,14] Food availability at the macro level does not necessarily guarantee access to household food[15] and the achievement of good individual nutritional status.[16] Food can be available in sufficient quantities in an area but it is not necessarily accessible for every household. Therefore, the household is a crucial unit to ensure access to food. In addition to the health and economic effects of the Covid-19 outbreak, it is also important to understand the direct impact of the community as a result of Covid-19 on vulnerable populations and as workers in low-income groups. Therefore this study aims to determine the impact of covid-19 on diet and household food security in 4 districts in Banten Province, which was conducted in May - June 2020.

METHODS

The research design used was a cross-sectional study (based on online data) with a quantitative approach. Purposive sampling used in sampling, those who ever willing to answer the questionnaires via phone or computer is enrolled. This research was made online to see the initial effect of Covid-19 on households in 4 districts of Banten province which was conducted in May-June 2020, where Banten province is an area affected by Covid-19 which enforces an lockdown/area restriction system. This research was designed to be accessible either through cellphones or computers/laptops, a questionnaire in the form of google form (GF) designed for use in academic research.[17]The number of respondents involved in this study were 218 households who were willing to fill out questionnaires online. This research has get ethical permission from the Health Research Ethics Commission of Muhammadiyah University Prof. Dr. Hamka number: 03/02.06/0432, dated 11 May 2020.

Data collected related to household characteristics (age, education, occupation, income, number of household members, market access and travel time to the market) were obtained by answering questions on the questionnaire, for consumption patterns the data collected (frequency of eating, consumption of staple foods, consumption of protein foods and vegetable consumption, consumption of fruits and vegetables) before and during Covid-19, while data for household food security uses HFIAS (Household Food Insecurity Access Scale) which is a sustainable measure of the degree of food insecurity which is mostly related to access within the household in the last 30 days. We used a standard HFIAS questionnaire consisting of nine specific questions divided into three food insecurity themes: (1) experiencing anxiety and uncertainty about household food supply; (2)

insufficient food quality including variety and preference of food types; and (3) insufficient food intake or a reduction in the quantity of food consumed.[18] The questions address the situation of all household members and do not distinguish adults from children or boys from girls or youth. Nine questions represented the generally increased severity of food insecurity and nine "occurrence frequency" questions were asked as a follow-up to each event question to determine how often the condition occurred. A household was asked to describe how often a condition had occurred in the past 30 days if response to the conditions described in the incident-related question is yes. For each question frequency of appearance, a score was given for each household: 1 if response was infrequent (condition occurred once or twice in the last 30 days); 2 if it happened occasionally (3–10 times in the last 30 days) or 3 if the answer was frequent (more than 10 times in the last 30 days). Households were scored between 0 and 27 at the end of the nine questions based on their answers to nine questions (yes or no) and the frequency of events (rare, occasional, and frequent). Households were classified into various levels of food insecurity based on their answers to nine questions: 0 is given if the household answered "no" to all event questions and a maximum score of 27 is given as the sum for households that answered all questions. the nine questions of occurrence frequency were "frequent".[18] A high HFIAS score indicates poor household access to food and significant household food insecurity. Households were classified into food safe classes (HFIAS=0–1), light food insecurity (HFIAS=2–7), moderate food insecurity (HFIAS=8–11), and severe food insecurity (HFIAS>11).[18] A high HFIAS score indicates poor household access to food and significant household food insecurity. All data were analyzed to describe household characteristics, consumption patterns and household food security by cross tabulation. To see differences in food consumption patterns before and during covid-19 using the McNemar test (α=5%) and household food security using the paired t test (α = 5%), using SPSS version 16.

RESULTS

The number of households in this study was 218 households spread over 4 sub-districts (Pandeglang, Serang, Tangerang and Lebak). The data from the research results show that the majority of household heads are between 26-35 years old (64.3%) with the distribution per district from the largest to the smallest, namely in Tangerang (72.2%), Lebak and Serang (60.3 % and 66%) as well as Pandeglang (58.5%), for high school education level (47.3%) with the distribution Tangerang (51.8%), Pandeglang and Serang (49.1% and 44.8%) and Lebak (43.4%), while working as private employees (35.8%) with the distribution of Pandeglang and Tangerang districts respectively (37%), Lebak and Serang districts (35.7% and 32.7%), for income level more than regional wages (UMR) (67%) divided into Serang (69%), Tangerang (68.5%), Pandeglang (67.9%) and Lebak (62.3%). Most of the respondent mothers were 26-35 years old (93.6%) with the distribution of Serang (94.8%), Pandeglang (94.3%), Tangerang (92.6%) and Lebak (92.4%). For high school education (45.9%) with the distribution of Tangerang (51.8%), Pandeglang (49.1%), in Serang and Lebak, respectively (43.4% and 39.5%). The number of household members is mostly <5 people (91.3%) with the distribution of Pandeglang (98.1%) and Lebak, Serang and Tangerang (92.5%, 90.7% and 84.5%). For the distance from home access to the market is mostly <2 km (76.6%) with the distribution of Pandeglang and Lebak (79.2%), Tangerang (75.9%) and Serang (72.4%), the means of transportation used for access the market is motorbikes (65.1%) with the distribution of Tangerang (83.3%), Pandeglang (71.6%), Serang (55.2%) and Lebak (51%), the required travel time for market access <11.8 minutes (65.1%)) with the distribution of Tangerang (81.5%), Serang (72.4%), Pandeglang (69.8%) and Lebak (62.3 %). (Table 1a dan 1b)

The frequency of eating before Covid-19 was mostly >3 times (89.4%) but there was a decrease in the frequency of household meals when Covid-19 was <3 times (81.2%). Consumption of staple food (rice or bread or noodles) before Covid-19 >3 times (86.7%) but there is a change in the pattern of consumption of staple foods (rice or bread or noodles) if <3 times (89%). For protein consumption (animals and plants) before Covid-19, >3 times (71.1% and 70.2%), but there was a change in protein consumption patterns (animals and plants) when Covid-19, <3 times (84.4% and 78%). The pattern of consumption of vegetables and fruit before Covid-19, >3 times (86.7% and 78.4%)

but there was a change in the pattern of consumption of vegetables and fruit <3 times (81.2% and 77.1%), shown in table 2. Distribution of household food security before Covid-19, was food resistant (49.5%) but when Covid-19 household food security changed to severe food insecurity (100%). (table 3)

Table 1a: Characteristic, Food Pattern and Food Security

Characteristic		Overall (N=218)		Pandeglang (n=53)		Lebak (n=53)		Serang (n=58)		Tangerang (n=54)	
		N	%	n	%	n	%	n	%	n	%
Father age (y)	26-35	140	64.3	31	58.5	35	66	35	60.3	39	72.2
	36-45	74	33.9	21	39.6	17	32.1	22	37.9	14	25.9
	46-55	4	1.8	1	1,9	1	1.9	1 8	1.8	1	1.9
Mother age (y)	≤25	7	1.9	1	1.9	3	5.7	1	1.8	2	3.7
	26-35	204	94.3	50	94.3	49	92,4	55	94.8	50	92.6
	36-45	7	3.8	2	3.8	1	1.9	2	3.4	2	3.7
Father's Education	Elementary	28	9.4	5	9.4	9	17	8	13.8	6	11.1
	Junior High	58	30.2	16	30.2	14	26.4	15	25.9	13	24.1
	Senior High	103	49.1	26	49.1	23	43.4	26	44.8	28	51.8
	University	29	11.3	6	11.3	7	13.2	9	15.5	7	13
Mother's Education	Elementary	25	13.2	7	13.2	4	7.5	8	13.8	6	11.1
	Junior High	83	32.1	17	32.1	25	47.2	24	41.4	17	31.5
	Senior High	100	49.1	26	49.1	23	43.4	23	39.6	28	51.8
	University	10	5.6	3	5.6	1	1.9	3	5.2	3	5.6
Occupation of Father	Labor	37	13.2	7	13.2	9	17	9	15.5	12	22.2
	Public employees (PNS/TNI/POLRI)*	12	5.7	3	5.7	4	7.5	3	5.2	2	3.7
	Farmer/fisherman	26	7.5	4)	7.5	9	17	8	13.8	5	9.2
	Private employees	78	37.7	20	37.7	19	35.8	19	32.7	20	37
	Driver motorcycle	32	15.2	8	15.2	4	7.5	10	17.2	10	18.6
	Driver	33	20.7	11	20.7	8	15.1	9	15.5	5	9.3
Salary (million rupiah)	< regional wages**	72	33	17	32.1	20	37.7	18	31	17	31.5
	≥ regional wages	146	67	36	67.9	33	62.3	40	69	37	68.5
Number of family member (person)	<5	199	91.3	52	98.1	49	92.5	49	84.5	49	90.7
	5-6	19	8.7	1	1.9	4	7.5	9	15.5	5	9.3
Distance between house to market (km)	<2	167	76.6	42	79.2	42	79.2	42	72.4	41	75.9
	2-5	38	17.4	11	20.8	11	20.8	10	17.2	6	11.1
	>5	13	6	0	0	0	0	6	10.3	7	13
Transportation to market	Bicycle	20	9.2	3	5.7	4	7.5	10	17.2	3	5.6
	Motorcycle	142	65.1	38	71.6	27	51	32	55.2	45	83.3
	Car	12	5.5	4	7.5	3	5.7	3	5.2	2	3.7
	Public transportion	44	20.2	8	15.2	19	35.8	13	22.4	4	7.4
Time to market (minute)	≤11.8	156	71.6	37	69.8	33	62.3	42	72.4	44	81.5
	>11.8	62	28.4	16	30.2	20	37.7	16	27.6	10	18.5

* PNS (Government Employees), TNI (Indonesian state army), POLRI (Republic of Indonesia Police), ** regional wages (Upah Minimum Regional)

Table 1b: Characteristic,Food Pattern and Food Security

Characteristic		Overall (N=218)		Pandeglang (n=53)		Lebak (n=53)		Serang (n=58)		Tangerang (n=54)	
		N	%	n	%	n	%	n	%	n	%
Food Pattern											
Meal Frequency											
Before Covid-19	<3 times	23	10.6	2	3.8	6	11.3	6	10.3	9	16.7
	≥3 times	195	89.4	51	96.2	47	88.7	52	89.7	45	83.3
During Covid-19	<3 times	177	81.2	45	84.5	34	64.2	49	84.5	49	90.7
	≥3 times	41	18.8	8	15.5	19	35.8	9	15.5	5	9.3
Carbohydarte											
Before Covid-19	<3 times	29	13.3	6	11.3	6	11.3	9	15.5	8	20.7
	≥3 times	189	86.7	47	88.7	47	88.7	49	84.5	46	79.3
During Covid-19	<3 times	194	89	45	84.5	52	98.1	51	87.9	46	79.3
	≥3 times	24	11	8	15.5	1	1.9	7	12.1	8	20.3
Animal Protein											
Before Covid-19	<3 times	63	28.9	12	22.6	17	32.1	22	37.9	13	24.1
	≥3 times	155	71.1	41	77.4	36	67.9	36	62.1	41	75.9
During Covid-19	<3 times	184	84.4	45	87.5	41	77.4	49	84.5	45	83.3
	≥3 times	34	15.6	8	15.5	12	22.1	9	15.5	9	16.7
Plant Protein											
Before Covid-19	<3 times	65	29.8	12	19	18	34	22	37.9	13	24.1
	≥3 times	153	70.2	41	81	35	66	36	62.1	41	75.9
During Covid-19	<3 times	170	78	41	81	38	71.7	46	79.3	45	83.3
	≥3 times	48	22	12	19	15	28.3	12	20.7	9	16.7
Vegetables											
Before Covid-19	<3 times	29	13.3	6	11.3	6	11.3	9	15.5	8	14.8
	≥3 times	189	86.7	47	88.7	47	88.7	49	84.5	46	85.2
During Covid-19	<3 times	177	81.2	44	83	38	71.3	47	81	48	88.9
	≥3 times	41	18.8	9	17	15	28.7	11	19	6	11.1
Fruits											
Before Covid-19	<3 times	47	21.6	9	17	15	28.7	11	19	12	22.2
	≥3 times	171	78.4	44	83	38	71.3	47	8)	42	77.8
During Covid-19	<3 times	168	77.1	41	81	37	70	46	79.3	44	81.5
	≥3 times	50	22.9	12	19	16	30	12	20.7	10	18.5
Food Security											
Before Covid-19	Food Secure	108	49.5	29	54.7	25	37.2	27	46.6	27	50
	Mild Food Insecure	21	9.6	7	13.2	4	7.5	6	10.3	4	7.4
	Moderate Food insecure	60	27.5	13	24.5	16	30.2	16	27.6	15	27.8
During Covid-19		29	13.3	4	7.5	8	15.1	9	15.5	8	14.8
	Severe Food Insecure	218	100	53	53	53	100	58	100	54	100
	Severe Food Insecure										

Table 2 : Consumption Pattern before and during Covid-19

Before Covid-19		During Covid-19		p*
		<3 times	≥3 times	
Food Frequency	<3 times	23 (100)	0 (0)	0.001
	≥3 times	154 (79)	41 (21)	
Staple Food	<3 times	27 (93.1)	2 (6.9)	0.001
	≥3 times	167 (88.4)	22 (11.6)	
Animal Protein	<3 times	61 (96.8)	2 (3.2)	0.001
	≥3 times	123 (79.4)	32 (20.6)	
Plant Protein	<3 times	63 (96.9)	2 (3.1)	0.001
	≥3 times	107 (69.9)	46 (30.1)	
Vegetables	<3 times	28 (96.6)	1 (3.4)	0.001
	≥3 times	149 (78.8)	40 (21.2)	
Fruits	<3 times	46 (97.9)	1 (2.1)	0.001
	≥3 times	122 (71.3)	49 (28.7)	

*McNemar test (α=5%)

The consumption pattern in this study was seen from the frequency of eating before and during Covid-19, based on the McNemar test there was a difference (p= 0.001) when Covid-19 there was a change in the frequency of eating <3 times (79%), for the staple food consumed there was a difference (p=0.001) when Covid-19 there was a change in staple food (rice or bread or noodles) which was >3 times previously but when Covid-19 there was a change to <3 times (88.4%), there was a difference in protein consumption (animal and vegetable) (p=0.001) when Covid-19, there was a change from >3 times to <3 times (79.4% and 69.9%), and there was a difference in consumption of vegetables and fruit (p=0.001), namely a change in pattern consumption of vegetables and fruit during covid-19 is <3 times (78.8% and 71.3%).

Table 3: Food Security before and during Covid-19

Food Security score	$\bar{x}$±s	CI 95%	p*
Before Covid-19	4.819 ± 5.3	-15.495, -14.431	0.001
During Covid-19	19.775 ± 4.3		

*Paired T test (α=5%)

There is a difference in the average score of family food security before and during covid-19 (p=0.001), this can be seen before Covid-19, food-resistant families (49.5%) changed when Covid-19 families were not resistant to severe food (100%).

DISCUSSION

The characteristics of the head of the family in this study as a whole were between the ages of 26-35 years (64.2%) with a high school education level, working as private employees with an income level of more than regional wages. Awan et al. (2011) stated that education can increase income and ultimately reduce poverty. The higher the level of education completed, the lower the poverty rate).[19] According to Putri and Setiawina (2013) the education factor and type of work have a significant effect on the income of poor households.[20] While for mothers aged between 26-35 years ((93.6%) with high school education level with the number of household members <5 people. For the distance from the house to market access is mostly <2 km (76.6%), for transportation means. those used to market

access mostly use motorbikes (65.1%) with the time required to access the market is <11.8 minutes (65.1%).

The market is a means of economic transactions as well as a means of accessing food and non-food needs for the community. According to R Adiguno and L Sihombing, (2014) if the distance between the house to the nearest market is 1-2 km by using a motorbike, the household's physical access to food is classified as moderate, whereas if the travel time is less than 30 minutes, the household's physical access to food is classified as high.[21] According to Subiyanto (2015) indicators for assessing physical access to food include food availability, village roads that can be traversed by four-wheeled vehicles and the absence of a market and a market distance of more than 3 km, the existence of supermarkets or markets with closer distances related to shopping choices.[22] As an International Public Health Emergency, Covid-19 has spread rapidly from Wuhan, Hubei to other parts of China and countries around the world including Indonesia. This pandemic imposes severe challenges on the health system, economy, and food supply globally and locally.[23]

The research was carried out looked at the condition of diet and food security before and during Covid-19, this is slightly different from research studies conducted on the Chinese population during the Covid-19 pandemic period. Our study shows overall good dietary diversity in the study sample, although there is decreased diversity in the places where more Covid-19 cases are confirmed. To our knowledge, this is also the first study to explore the potential factors associated with dietary diversity in a pandemic. We found dietary diversity did not vary across approaches to acquiring or buying food, which provides supporting evidence that online food ordering and delivery services can achieve the same food diversity that grocery and home storage do. In addition, certain dietary behaviors were identified during the Covid-19 outbreak and they contributed to a higher chance of high dietary diversity.[24] Based on the results of research related to the diet experienced by households before and during Covid-19 in the Banten region, this has changed from eating ≥3 times a day to <3 times a day and some even eating only 2 times a day, this is it is in agreement with other studies that a disrupted diet, found in two-thirds of household respondents with food insecurity, is associated with decreased immune function and can have a negative impact on mental and emotional health.[25] While the immediate impact of the pandemic is the closure of restaurants and restrictions on sellers, which represent a small fraction of the total urban food economy, the impact on rural markets could be much larger. industrial workers with a reduction in the number of employees due to layoffs.[26] Exacerbating this condition is the problem of food prices. Restrictions on mechanisms for production and delivery can raise costs, while fear of shortages can drive speculative hoarding[27] Loss of household income exposes families to price increases and food shortages and reduces their consumption of food, while low agricultural productivity and lags in export systems. Food imports disrupt local food markets and small businesses.[28]

The condition of household food security before and during Covid-19 in this study experienced a significant difference from families that were food-resistant to families that were not with severe food resistance. This is in line with research conducted by Niles (2020) that the majority of households that are always food insecure and nearly a third of new food insecure households are classified as having very low food security, characterized by eating disorders and cutting food or hunger.[9] Two-thirds of respondent households with food insecurity during Covid-19 have eaten less to prolong the food consumed. The results suggest that challenges for all dimensions of food security, including economic and physical access, availability, utilization, and stability, may have profound potential health impacts.

This rise in food insecurity presents many potential health impacts. Food insecurity is negatively associated with health outcomes[29,30] and some evidence indicates it is positively associated with poor diet quality. Further, higher rates of anxiety and mental health disorders among children and adults have been documented in food insecure households.[30,9] Indeed, survey respondents in this study experiencing household food insecurity demonstrated significantly higher rates of concern and worry about food.

If the proportion of food insecure households is added up, it is found that 68.4% of households are classified as food insecure. This result is almost the same as the results of Kirkpatrick and Tarasuk's (2010) study which measured food

insecurity in low-income households, which found that the proportion of households with food insecurity was 65.3%.[31] Similarly, the research results of Huet et al. (2012) in the Inuit community in Arctic, Canada, it shows that the prevalence of food insecurity is almost the same, namely 62.6%.[32] Furthermore, when compared with the results of research by Sari and Andrias (2013) which measured the food security of urban fishermen households in Surabaya, the results of this study were lower, namely the proportion of fishermen households who were food insecure was 88%.[33]Likewise, the research of Sukiyono et al. (2008) in fishermen households in MukoMuko Regency that get the proportion of food insecure households of 81.1%.[34] limitations of this study were taken when the pandemic conditions Covid-19, so the researchers did not take the data directly to the respondents so that the data collected through questionnaires can not be filled in accordance with the expected.

CONCLUSION

Characteristics of family heads ranging in age from 26-35 years, with a high school education level work in the private employee sector with an income> UMR. The number of family members <5 people with access to the house to the market is mostly <2 km with vehicles used by motorbikes with an average travel time of <11.8 minutes. There are significant differences before and during Covid-19 in consumption patterns seen from the frequency of eating, consumption of staple foods, protein (animal and vegetable) and fruits and vegetables. As for household food security, there are differences in the average score of household food security before and during Covid-19, which was initially food resistant to severe food insecurity. Further research is needed to see the nutritional status of toddlers in the family during the Covid-19 condition.

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BUKTI REVIEW ARTIKEL (30 Mei 2021)

Reviewer B:

Bismillah and Assalam.

Such a good paper, just right on time to discuss about food security during this time around. Congratulation.

1. Firstly, structural and flow are good and up to the standard.
2. From the manuscript the most glaring to my eyes is too many punctuation marks mistakes (full stop, commas, small letter for town's name etc).
3. I may suggest if p value can be written as p=0.001 or p=.001 instead of p=0.000
4. Objectives are well stated and all answered towards the end.
5. In Methodology, for me the sampling method is not well mention, I may consider it is universal sampling or purposive sampling because those who ever willing to answer the questionnaires via phone is enrolled.
6. May consider to make some correction on table 1. Under variable Mother age. <25, 26-35, 36-45 age group were selected which those who are at 25 years old is not included.
7. In table 3 under CI95%, result can be written as -15.495, -14.431 instead of -15.495 – (-)14.431.
8. Some abbreviation is not mention anywhere in the study, example UMR, PSBB...
9. Statistical and analysis are also appropriate and interpreted well in the study.
10. Discussion is adequate and conclusion is clearly made according to study objective.

Other than that, I find it is okay.

Thank you very much.

Recommendation: Revisions Required

Masukan terkait isi substansi artikel untuk diperbaiki lagi

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ABSTRACT

Households that are accustomed to food insecurity will find a more difficult situation at this time, exacerbated by Covid-19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. Design of this study is a crosssectional study using purposive sampling, where 218 households were obtained as respondents. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts. The purpose of this study was to describe the characteristics of the family, consumption patterns and food security before and during Covid-19 occurred in the Province of Banten. The results showed that there were differences in family consumption patterns before and during Covid-19 with values (p=0.001) and there were differences in the average score of family food security before and during Covid-19 with values (p=0.001). The covid-19 pandemic conditions affect the consumption pattern and food security of the family, therefore it is necessary to modify various diets so that the family can survive.

Keywords: household characteristics, consumption pattern, household food security

Conceptually, food security is a very broad and complex issue covering 4 main domains, namely availability, accessibility and utilization and stability and has a hierarchical level at macro level (global, regional, national), community (province, district), and micro level (household and individual).[12,13,14] Food availability at the macro level does not necessarily guarantee access to household food[15] and the achievement of good individual nutritional status.[16] Food can be available in sufficient quantities in an area but it is not necessarily accessible for every household. Therefore, the household is a crucial unit to ensure access to food.

In addition to the health and economic effects of the Covid-19 outbreak, it is also important to understand the direct impact of the community as a result of Covid-19 on vulnerable populations and as workers in low-income groups. Therefore this study aims to determine the impact of covid-19 on diet and household food security in 4 districts in Banten Province, which was conducted in May - June 2020.

METHODS

The research design used was a cross-sectional study (based on online data) with a quantitative approach. Purposive sampling used in sampling, those who ever willing to answer the questionnaires via phone or computer is enrolled. This research was made

All data were analyzed to describe household characteristics, consumption patterns and household food security by cross tabulation. To see differences in food consumption patterns before and during Covid-19 using the McNemar test (α=5%) and household food security using the paired t test (α = 5%), using SPSS version 16.

RESULTS

The number of households in this study was 218 households spread over 4 sub-districts (Pandeglang, Serang, Tangerang and Lebak). The data from the research results show that the majority of household heads are between 26-35 years old (64.3%) with the distribution per district from the largest to the smallest, namely in Tangerang (72.2%), Lebak and Serang (60.3 % and 66%) as well as Pandeglang (58.5%), for high school education level (47.3%) with the distribution Tangerang (51.8%), Pandeglang and Serang (49.1% and 44.8%) and Lebak (43.4%), while working as private employees (35.8%) with the distribution of Pandeglang and Tangerang districts respectively (37%), Lebak and Serang districts (35.7% and 32.7%), for income level more than regional wages (67%) divided into Serang (69%), Tangerang (68.5%), Pandeglang (67.9%) and Lebak (62.3%). Most of the respondent mothers were 26-35 years old (93.6%) with the distribution of Serang (94.8%), Pandeglang (94.3%), Tangerang (92.6%) and Lebak (92.4%). For high school education (45.9%) with the distribution of Tangerang (51.8%), Pandeglang (49.1%), in Serang and Lebak, respectively (43.4% and 39.5%). The number of household members is mostly <5 people (91.3%) with the distribution of Pandeglang (98.1%) and Lebak, Serang and Tangerang (92.5%, 90.7% and 84.5%). For the distance from home access to the market is mostly <2 km (76.6%) with the distribution of Pandeglang and Lebak (79.2%), Tangerang (75.9%) and Serang

Table 1. Characteristic, Food Pattern and Food Security

Characteristic		Overall (n=218)	Pandeglang (n=53)		Lebak (n=53)		Serang (n=58)		Tangerang (n=54)	
		$\bar{x}\pm s$ / n(%)	$\bar{x}\pm s$	n(%)	$\bar{x}\pm s$	n(%)	$\bar{x}\pm s$	n(%)	$\bar{x}\pm s$	n(%)
Father age (y)		34.6±4.6	34.7±4.4		34.98±3.7		34.78±5.0		33.85±5.1	
	26-35	140 (64.3)		31 (58.5)		35 (66)		35 (60.3)		39 (72.2)
	36-45	74 (33.9)		21 (39.6)		17 (32.1)		22 (37.9)		14 (25.9)
	46-55	4 (1.8)		1 (1,9)		1 (1.9)		1 (1.8)		1 (1.9)
Mother age (y)		30.2±2.8	30.9±3.0		29.75±2.6		30.45±2.5		29.7±2.9	
	≤25	7 (3.2)		1 (1.9)		3 (5.7)		1 (1.8)		2 (3.7)
	26-35	204 (93.6)		50 (94.3)		49 (92,4)		55 (94.8)		50 (92.6)
	36-45	7 (3.2)		2 (3.8)		1 (1.9)		2 (3.4)		2 (3.7)
Father's Education	Elementary	28 (12.8)		5 (9.4)		9 (17)		8 (13.8)		6 (11.1)
	Junior High	58 (26.6)		16 (30.2)		14 (26.4)		15 (25.9)		13 (24.1)
	Senior High	103 (47.3)		26 (49.1)		23 (43.4)		26 (44.8)		28 (51.8)
	University	29 (13.3)		6 (11.3)		7 (13.2)		9 (15.5)		7 (13)
Mother's Education	Elementary	25 (11.5)		7 (13.2)		4 (7.5)		8 (13.8)		6 (11.1)
	Junior High	83 (38.1)		17 (32.1)		25 (47.2)		24 (41.4)		17 (31.5)
	Senior High	100 (45.9)		26 (49.1)		23 (43.4)		23 (39.6)		28 (51.8)
	University	10 (4.6)		3 (5.6)		1 (1.9)		3 (5.2)		3 (5.6)
Occupation of Father	Labor	37 (17)		7 (13.2)		9 (17)		9 (15.5)		12 (22.2)
	Public employees (PNS/TNI/POLRI)*	12 (5.5)		3 (5.7)		4 (7.5)		3 (5.2)		2 (3.7)
	Farmer/fisherman	26 (11.9)		4 (7.5)		9 (17)		8 (13.8)		5 (9.2)
	Private employees	78 (35.8)		20 (37.7)		19 (35.8)		19 (32.7)		20 (37)
	Driver motorcycle	32 (14.7)		8 (15.2)		4 (7.5)		10 (17.2)		10 (18.6)
	Driver	33 (15.1)		11 (20.7)		8 (15.1)		9 (15.5)		5 (9.3)

ASUS
Improvements according to review no. 6 about Under variable Mother age. <25, 26-35, 36-45 age group were selected which those who are at 25 years old is not included.

Table 2. Consumption Pattern before and during Covid-19

BeforeCovid-19		DuringCovid-19		p*
		<3 times	≥3 times	
Food Frequency	<3 times	23 (100)	0 (0)	0.001
	≥3 times	154 (79)	41 (21)	
Staple Food	<3 times	27 (93.1)	2 (6.9)	0.001
	≥3 times	167 (88.4)	22 (11.6)	
Animal Protein	<3 times	61 (96.8)	2 (3.2)	0.001
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Plant Protein	<3 times	63 (96.9)	2 (3.1)	0.001
	≥3 times	107 (69.9)	46 (30.1)	
Vegetables	<3 times	28 (96.6)	1 (3.4)	0.001
	≥3 times	149 (78.8)	40 (21.2)	
Fruits	<3 times	46 (97.9)	1 (2.1)	0.001
	≥3 times	122 (71.3)	49 (28.7)	

*McNemar test (α=5%)

ASUS
Improvements according to review no 3 about writing statistical test results p=0.001

Table 3. Food Security before and during Covid-19

Food Security score	$\bar{x}\pm s$	CI 95%	p*
Before Covid-19	4.819 ± 5.3	-15.495, -14.431	0.001
During Covid-19	19.775 ± 4.3		

*Paired T test (α=5%)

ASUS
Improvements according to review no 7 regarding result can be written as -15,495, -14,431 instead of -15,495 - (-)14,431.

There is a difference in the average score of family food security before and during covid-19 (p=0.001), this can be seen before Covid-19, food-resistant families (49.5%) changed when Covid-19 families were not resistant to severe food (100%).

DISCUSSION

The characteristics of the head of the family in this study as a whole were between the ages of 26-35 years (64.2%) with a high school education level, working as private employees with an income level of more than regional wages. Cloud et al. (2011) stated that education can increase income and ultimately reduce poverty. The higher the level of education completed, the lower the poverty rate).[19] According to Putri and Setiawina (2013) the education factor and type of work have a significant effect

HOUSEHOLD CHARACTERISTICS, CONSUMPTION PATTERN AND HOUSEHOLD FOOD SECURITY BEFORE AND DURING COVID-19 IN BANTEN PROVINCE

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ABSTRACT

Households that are accustomed to food insecurity will find a more difficult situation at this time, exacerbated by Covid-19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. Design of this study is a crosssectional study using purposive sampling, where 218 households were obtained as respondents. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts. The characteristics of the head of the family in this study as a whole were between the ages of 26-35 years with a high school education level, working as private employees with an income level of more than regional wages. The purpose of this study was to describe the characteristics of the family, consumption patterns and food security before and during Covid-19 occurred in the province of Banten. The results showed that there were differences in family consumption patterns before and during Covid-19 with values (p=0.001) and there were differences in the average score of family food security before and during Covid-19 with values (p=0.001). The covid-19 pandemic conditions affect the consumption pattern and food security of the family, therefore it is necessary to modify various diets so that the family can survive.

Keywords: household characteristics, consumption pattern, household food security, Covid-19

INTRODUCTION

Based on the reality that has occurred in the last 20 years, it can be seen that there is a periodic trend every 5 years of outbreaks of disease outbreaks such as, SARS in the 2000s, bird flu in 2004/5, swine flu in 2009/10, Ebola in 2014/15, and when this is Corona Virus Disease 2019/20 Covid-19.[1] The outbreak of the Covid-19 pandemic also has implications for a surge in demand for basic necessities. The government's suggestion that people carry out work, study and worship activities from home encourages people to purchase groceries. From 1990 to 2014, there was an increase in the proportion of the hungry population (calorie intake <1400 kcal/capita/day) from 17% to 17.39%.[2] This is a massive proportion in order to meet supplies until some time to come.In

Indonesia, the food security situation remain big problems and challenges. From the year the population consuming very less energy Recommended Dietary Allowances (RDA) (<70% RDA) is still high, namely 45.7% while the proportion of the population with very low protein consumption (<80% RDA) is 36.1%.[3] The condition of the community's nutritional status as a proxy for food security, such as the national prevalence of stunting in children under five also increased, namely 36.8% in 2007 to 37.2% in 2013.[3,4]

Food insecurity is a condition that is determined by limited or uncertain access, nutritious food for the active, healthy, disproportionate people, and a group of people who are slow to anticipate conditions.[5] Food is the main social determinant in terms of health[6] and food insecurity is associated with many

adverse health outcomes in both the short and long term.[7] The unprecedented Covid-19 pandemic, and associated social and economic responses[8] (eg school closings, stay-at-home orders business closures, and job loss) has the potential to increase food insecurity and related health disparities among populations already at risk. Preliminary evidence suggests that food insecurity is indeed increasing rapidly above pre-epidemic levels.[9]

Based on the National Strategic Food Price Information Center (PIHPS) as of March 23, 2020, several staple commodities experienced significant price increases (national average prices) in the last month and increases since the beginning of the year (year to date/ytd), including granulated sugar local 18.71% (ytd 31.2%), premium quality granulated sugar 10.68% (ytd 15.54%), garlic increased 36% (ytd), red onion 5.56% (ytd 4.57%), red bird's eye chilies 18.11% (2.74% ytd). Meanwhile, the prices of other basic necessities such as rice, chicken, beef, eggs and cooking oil were relatively stable.

Household food insecurity has increased from 11% in 2018 to 38% in March 2020; as of April 2020, 35% of households with children aged 18 years and under are food insecure.[10,11] Households accustomed to food insecurity will find the situation more difficult at present, exacerbated by Covid-19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts.

Conceptually, food security is a very broad and complex issue covering 4 main domains, namely availability, accessibility and utilization and stability and has a hierarchical level at macro level (global, regional, national), community (province, district), and micro level (household and individual).[12,13,14] Food availability at the macro level does not necessarily guarantee access to household food[15] and the achievement of good individual nutritional status.[16] Food can be available in sufficient quantities in an area but it is not necessarily accessible for every household. Therefore, the household is a crucial unit to ensure access to food. In addition to the health and economic effects of the Covid-19 outbreak, it is also important to understand the direct impact of the community as a result of Covid-19 on vulnerable populations and as workers in low-income groups. Therefore this study aims to determine the impact of covid-19 on diet and household food security in 4 districts in Banten Province, which was conducted in May - June 2020.

METHODS

The research design used was a cross-sectional study (based on online data) with a quantitative approach. Purposive sampling used in sampling, those who ever willing to answer the questionnaires via phone or computer is enrolled. This research was made online to see the initial effect of Covid-19 on households in 4 districts of Banten province which was conducted in May-June 2020, where Banten province is an area affected by Covid-19 which enforces an lockdown/area restriction system. This research was designed to be accessible either through cellphones or computers/laptops, a questionnaire in the form of google form (GF) designed for use in academic research.[17]The number of respondents involved in this study were 218 households who were willing to fill out questionnaires online. This research has get ethical permission from the Health Research Ethics Commission of Muhammadiyah University Prof. Dr. Hamka number: 03/02.06/0432, dated 11 May 2020.

Data collected related to household characteristics (age, education, occupation, income, number of household members, market access and travel time to the market) were obtained by answering questions on the questionnaire, for consumption patterns the data collected (frequency of eating, consumption of staple foods, consumption of protein foods and vegetable consumption, consumption of fruits and vegetables) before and during Covid-19, while data for household food security uses HFIAS (Household Food Insecurity Access Scale) which is a sustainable measure of the degree of food insecurity which is mostly related to access within the household in the last 30 days. We used a standard HFIAS questionnaire consisting of nine specific questions divided into three food

insecurity themes: (1) experiencing anxiety and uncertainty about household food supply; (2) insufficient food quality including variety and preference of food types; and (3) insufficient food intake or a reduction in the quantity of food consumed.[18] The questions address the situation of all household members and do not distinguish adults from children or boys from girls or youth. Nine questions represented the generally increased severity of food insecurity and nine "occurrence frequency" questions were asked as a follow-up to each event question to determine how often the condition occurred. A household was asked to describe how often a condition had occurred in the past 30 days if response to the conditions described in the incident-related question is yes. For each question frequency of appearance, a score was given for each household: 1 if response was infrequent (condition occurred once or twice in the last 30 days); 2 if it happened occasionally (3–10 times in the last 30 days) or 3 if the answer was frequent (more than 10 times in the last 30 days). Households were scored between 0 and 27 at the end of the nine questions based on their answers to nine questions (yes or no) and the frequency of events (rare, occasional, and frequent). Households were classified into various levels of food insecurity based on their answers to nine questions: 0 is given if the household answered "no" to all event questions and a maximum score of 27 is given as the sum for households that answered all questions. the nine questions of occurrence frequency were "frequent".[18] A high HFIAS score indicates poor household access to food and significant household food insecurity. Households were classified into food safe classes (HFIAS=0-1), light food insecurity (HFIAS=2–7), moderate food insecurity (HFIAS=8–11), and severe food insecurity (HFIAS>11).[18] A high HFIAS score indicates poor household access to food and significant household food insecurity. All data were analyzed to describe household characteristics, consumption patterns and household food security by cross tabulation. To see differences in food consumption patterns before and during covid-19 using the McNemar test (α=5%) and household food security using the paired t test (α = 5%), using SPSS version 16.

RESULTS

The number of households in this study was 218 households spread over 4 sub-districts (Pandeglang, Serang, Tangerang and Lebak). The data from the research results show that the majority of household heads are between 26-35 years old (64.3%) with the distribution per district from the largest to the smallest, namely in Tangerang (72.2%), Lebak and Serang (60.3 % and 66%) as well as Pandeglang (58.5%), for high school education level (47.3%) with the distribution Tangerang (51.8%), Pandeglang and Serang (49.1% and 44.8%) and Lebak (43.4%), while working as private employees (35.8%) with the distribution of Pandeglang and Tangerang districts respectively (37%), Lebak and Serang districts (35.7% and 32.7%), for income level more than regional wages (UMR) (67%) divided into Serang (69%), Tangerang (68.5%), Pandeglang (67.9%) and Lebak (62.3%). Most of the respondent mothers were 26-35 years old (93.6%) with the distribution of Serang (94.8%), Pandeglang (94.3%), Tangerang (92.6%) and Lebak (92.4%). For high school education (45.9%) with the distribution of Tangerang (51.8%), Pandeglang (49.1%), in Serang and Lebak, respectively (43.4% and 39.5%). The number of household members is mostly <5 people (91.3%) with the distribution of Pandeglang (98.1%) and Lebak, Serang and Tangerang (92.5%, 90.7% and 84.5%). For the distance from home access to the market is mostly <2 km (76.6%) with the distribution of Pandeglang and Lebak (79.2%), Tangerang (75.9%) and Serang (72.4%), the means of transportation used for access the market is motorbikes (65.1%) with the distribution of Tangerang (83.3%), Pandeglang (71.6%), Serang (55.2%) and Lebak (51%), the required travel time for market access <11.8 minutes (65.1%)) with the distribution of Tangerang (81.5%), Serang (72.4%), Pandeglang (69.8%) and Lebak (62.3 %). (Table 1a dan 1b)

The frequency of eating before Covid-19 was mostly >3 times (89.4%) but there was a decrease in the frequency of household meals when Covid-19 was <3 times (81.2%). Consumption of staple food (rice or bread or noodles) before Covid-19 >3 times (86.7%) but there is a change in the pattern of consumption of staple foods (rice or bread or noodles) if <3 times (89%). For protein consumption (animals and plants) before Covid-19, >3 times (71.1% and 70.2%), but there was a change in protein consumption patterns (animals and plants) when Covid-19, <3 times (84.4% and 78%). The

pattern of consumption of vegetables and fruit before Covid-19, >3 times (86.7% and 78.4%) but there was a change in the pattern of consumption of vegetables and fruit <3 times (81.2% and 77.1%), shown in table 2.

Distribution of household food security before Covid-19, was food resistant (49.5%) but when Covid-19 household food security changed to severe food insecurity (100%). (table 3)

Table 1a: Characteristic, Food Pattern and Food Security

Characteristic		Overall (N=218)		Pandeglang (n=53)		Lebak (n=53)		Serang (n=58)		Tangerang (n=54)	
		N	%	n	%	n	%	n	%	n	%
Father age (y)	26-35	140	64.3	31	58.5	35	66	35	60.3	39	72.2
	36-45	74	33.9	21	39.6	17	32.1	22	37.9	14	25.9
	46-55	4	1.8	1	1,9	1	1.9	1 8	1.8	1	1.9
Mother age (y)	≤25	7	1.9	1	1.9	3	5.7	1	1.8	2	3.7
	26-35	204	94.3	50	94.3	49	92,4	55	94.8	50	92.6
	36-45	7	3.8	2	3.8	1	1.9	2	3.4	2	3.7
Father's Education	Elementary	28	9.4	5	9.4	9	17	8	13.8	6	11.1
	Junior High	58	30.2	16	30.2	14	26.4	15	25.9	13	24.1
	Senior High	103	49.1	26	49.1	23	43.4	26	44.8	28	51.8
	University	29	11.3	6	11.3	7	13.2	9	15.5	7	13
Mother's Education	Elementary	25	13.2	7	13.2	4	7.5	8	13.8	6	11.1
	Junior High	83	32.1	17	32.1	25	47.2	24	41.4	17	31.5
	Senior High	100	49.1	26	49.1	23	43.4	23	39.6	28	51.8
	University	10	5.6	3	5.6	1	1.9	3	5.2	3	5.6
Occupation of Father	Labor	37	13.2	7	13.2	9	17	9	15.5	12	22.2
	Public employees (PNS/TNI/POLRI)*	12	5.7	3	5.7	4	7.5	3	5.2	2	3.7
	Farmer/fisherman	26	7.5	4)	7.5	9	17	8	13.8	5	9.2
	Private employees	78	37.7	20	37.7	19	35.8	19	32.7	20	37
	Driver motorcycle	32	15.2	8	15.2	4	7.5	10	17.2	10	18.6
	Driver	33	20.7	11	20.7	8	15.1	9	15.5	5	9.3
Salary (million rupiah)	< regional wages**	72	33	17	32.1	20	37.7	18	31	17	31.5
	≥ regional wages	146	67	36	67.9	33	62.3	40	69	37	68.5
Number of family member (person)	<5	199	91.3	52	98.1	49	92.5	49	84.5	49	90.7
	5-6	19	8.7	1	1.9	4	7.5	9	15.5	5	9.3
Distance between house to market (km)	<2	167	76.6	42	79.2	42	79.2	42	72.4	41	75.9
	2-5	38	17.4	11	20.8	11	20.8	10	17.2	6	11.1
	>5	13	6	0	0	0	0	6	10.3	7	13
Transportation to market	Bicycle	20	9.2	3	5.7	4	7.5	10	17.2	3	5.6
	Motorcycle	142	65.1	38	71.6	27	51	32	55.2	45	83.3
	Car	12	5.5	4	7.5	3	5.7	3	5.2	2	3.7
	Public transportion	44	20.2	8	15.2	19	35.8	13	22.4	4	7.4
Time to market (minute)	≤11.8	156	71.6	37	69.8	33	62.3	42	72.4	44	81.5
	>11.8	62	28.4	16	30.2	20	37.7	16	27.6	10	18.5

* PNS (Government Employees), TNI (Indonesian state army), POLRI (Republic of Indonesia Police), ** regional wages (Upah Minimum Regional)

Table 1b: Characteristic,Food Pattern and Food Security

Characteristic		Overall (N=218)		Pandeglang (n=53)		Lebak (n=53)		Serang (n=58)		Tangerang (n=54)	
		N	%	n	%	n	%	n	%	n	%
Food Pattern											
Meal Frequency											
Before Covid-19	<3 times	23	10.6	2	3.8	6	11.3	6	10.3	9	16.7
	≥3 times	195	89.4	51	96.2	47	88.7	52	89.7	45	83.3
During Covid-19	<3 times	177	81.2	45	84.5	34	64.2	49	84.5	49	90.7
	≥3 times	41	18.8	8	15.5	19	35.8	9	15.5	5	9.3
Carbohydarte											
Before Covid-19	<3 times	29	13.3	6	11.3	6	11.3	9	15.5	8	20.7
	≥3 times	189	86.7	47	88.7	47	88.7	49	84.5	46	79.3
During Covid-19	<3 times	194	89	45	84.5	52	98.1	51	87.9	46	79.3
	≥3 times	24	11	8	15.5	1	1.9	7	12.1	8	20.3
Animal Protein											
Before Covid-19	<3 times	63	28.9	12	22.6	17	32.1	22	37.9	13	24.1
	≥3 times	155	71.1	41	77.4	36	67.9	36	62.1	41	75.9
During Covid-19	<3 times	184	84.4	45	87.5	41	77.4	49	84.5	45	83.3
	≥3 times	34	15.6	8	15.5	12	22.1	9	15.5	9	16.7
Plant Protein											
Before Covid-19	<3 times	65	29.8	12	19	18	34	22	37.9	13	24.1
	≥3 times	153	70.2	41	81	35	66	36	62.1	41	75.9
During Covid-19	<3 times	170	78	41	81	38	71.7	46	79.3	45	83.3
	≥3 times	48	22	12	19	15	28.3	12	20.7	9	16.7
Vegetables											
Before Covid-19	<3 times	29	13.3	6	11.3	6	11.3	9	15.5	8	14.8
	≥3 times	189	86.7	47	88.7	47	88.7	49	84.5	46	85.2
During Covid-19	<3 times	177	81.2	44	83	38	71.3	47	81	48	88.9
	≥3 times	41	18.8	9	17	15	28.7	11	19	6	11.1
Fruits											
Before Covid-19	<3 times	47	21.6	9	17	15	28.7	11	19	12	22.2
	≥3 times	171	78.4	44	83	38	71.3	47	8)	42	77.8
During Covid-19	<3 times	168	77.1	41	81	37	70	46	79.3	44	81.5
	≥3 times	50	22.9	12	19	16	30	12	20.7	10	18.5
Food Security											
Before Covid-19	Food Secure	108	49.5	29	54.7	25	37.2	27	46.6	27	50
	Mild Food Insecure	21	9.6	7	13.2	4	7.5	6	10.3	4	7.4
	Moderate Food insecure	60	27.5	13	24.5	16	30.2	16	27.6	15	27.8
During Covid-19		29	13.3	4	7.5	8	15.1	9	15.5	8	14.8
	Severe Food Insecure	218	100	53	53	53	100	58	100	54	100
	Severe Food Insecure										

Table 2 : Consumption Pattern before and during Covid-19

Before Covid-19		During Covid-19		p*
		<3 times	≥3 times	
Food Frequency	<3 times	23 (100)	0 (0)	0.001
	≥3 times	154 (79)	41 (21)	
Staple Food	<3 times	27 (93.1)	2 (6.9)	0.001
	≥3 times	167 (88.4)	22 (11.6)	
Animal Protein	<3 times	61 (96.8)	2 (3.2)	0.001
	≥3 times	123 (79.4)	32 (20.6)	
Plant Protein	<3 times	63 (96.9)	2 (3.1)	0.001
	≥3 times	107 (69.9)	46 (30.1)	
Vegetables	<3 times	28 (96.6)	1 (3.4)	0.001
	≥3 times	149 (78.8)	40 (21.2)	
Fruits	<3 times	46 (97.9)	1 (2.1)	0.001
	≥3 times	122 (71.3)	49 (28.7)	

*McNemar test (α=5%)

The consumption pattern in this study was seen from the frequency of eating before and during Covid-19, based on the McNemar test there was a difference (p= 0.001) when Covid-19 there was a change in the frequency of eating <3 times (79%), for the staple food consumed there was a difference (p=0.001) when Covid-19 there was a change in staple food (rice or bread or noodles) which was >3 times previously but when Covid-19 there was a change to <3 times (88.4%), there was a difference in protein consumption (animal and vegetable) (p=0.001) when Covid-19, there was a change from >3 times to <3 times (79.4% and 69.9%), and there was a difference in consumption of vegetables and fruit (p=0.001), namely a change in pattern consumption of vegetables and fruit during covid-19 is <3 times (78.8% and 71.3%).

Table 3: Food Security before and during Covid-19

Food Security score	$\bar{x}±s$	CI 95%	p*
Before Covid-19	4.819 ± 5.3	-15.495, -14.431	0.001
During Covid-19	19.775 ± 4.3		

*Paired T test (α=5%)

There is a difference in the average score of family food security before and during covid-19 (p=0.001), this can be seen before Covid-19, food-resistant families (49.5%) changed when Covid-19 families were not resistant to severe food (100%).

DISCUSSION

The characteristics of the head of the family in this study as a whole were between the ages of 26-35 years (64.2%) with a high school education level, working as private employees with an income level of more than regional wages. Awan et al. (2011) stated that education can increase income and ultimately reduce poverty. The higher the level of education completed, the lower the poverty rate).[19] According to Putri and Setiawina (2013) the education factor and type of work have a significant effect on the income of poor households.[20] While for mothers aged between 26-35 years ((93.6%) with high school education level with the number of household members <5 people. For the distance from the house to

market access is mostly <2 km (76.6%), for transportation means. those used to market access mostly use motorbikes (65.1%) with the time required to access the market is <11.8 minutes (65.1%).

The market is a means of economic transactions as well as a means of accessing food and non-food needs for the community. According to R Adiguno and L Sihombing, (2014) if the distance between the house to the nearest market is 1-2 km by using a motorbike, the household's physical access to food is classified as moderate, whereas if the travel time is less than 30 minutes, the household's physical access to food is classified as high.[21] According to Subiyanto (2015) indicators for assessing physical access to food include food availability, village roads that can be traversed by four-wheeled vehicles and the absence of a market and a market distance of more than 3 km, the existence of supermarkets or markets with closer distances related to shopping choices.[22] As an International Public Health Emergency, Covid-19 has spread rapidly from Wuhan, Hubei to other parts of China and countries around the world including Indonesia. This pandemic imposes severe challenges on the health system, economy, and food supply globally and locally.[23]

The research was carried out looked at the condition of diet and food security before and during Covid-19, this is slightly different from research studies conducted on the Chinese population during the Covid-19 pandemic period. Our study shows overall good dietary diversity in the study sample, although there is decreased diversity in the places where more Covid-19 cases are confirmed. To our knowledge, this is also the first study to explore the potential factors associated with dietary diversity in a pandemic. We found dietary diversity did not vary across approaches to acquiring or buying food, which provides supporting evidence that online food ordering and delivery services can achieve the same food diversity that grocery and home storage do. In addition, certain dietary behaviors were identified during the Covid-19 outbreak and they contributed to a higher chance of high dietary diversity.[24] Based on the results of research related to the diet experienced by households before and during Covid-19 in the Banten region, this has changed from eating ≥3 times a day to <3 times a day and some even eating only 2 times a day, this is it is in

agreement with other studies that a disrupted diet, found in two-thirds of household respondents with food insecurity, is associated with decreased immune function and can have a negative impact on mental and emotional health.[25] While the immediate impact of the pandemic is the closure of restaurants and restrictions on sellers, which represent a small fraction of the total urban food economy, the impact on rural markets could be much larger. industrial workers with a reduction in the number of employees due to layoffs.[26] Exacerbating this condition is the problem of food prices. Restrictions on mechanisms for production and delivery can raise costs, while fear of shortages can drive speculative hoarding[27] Loss of household income exposes families to price increases and food shortages and reduces their consumption of food, while low agricultural productivity and lags in export systems. Food imports disrupt local food markets and small businesses.[28]

The condition of household food security before and during Covid-19 in this study experienced a significant difference from families that were food-resistant to families that were not with severe food resistance. This is in line with research conducted by Niles (2020) that the majority of households that are always food insecure and nearly a third of new food insecure households are classified as having very low food security, characterized by eating disorders and cutting food or hunger.[9] Two-thirds of respondent households with food insecurity during Covid-19 have eaten less to prolong the food consumed. The results suggest that challenges for all dimensions of food security, including economic and physical access, availability, utilization, and stability, may have profound potential health impacts.

This rise in food insecurity presents many potential health impacts. Food insecurity is negatively associated with health outcomes[29,30] and some evidence indicates it is positively associated with poor diet quality. Further, higher rates of anxiety and mental health disorders among children and adults have been documented in food insecure households.[30,9] Indeed, survey respondents in this study experiencing household food insecurity demonstrated significantly higher rates of concern and worry about food.

If the proportion of food insecure households is added up, it is found that 68.4% of households are classified as food insecure. This result is

almost the same as the results of Kirkpatrick and Tarasuk's (2010) study which measured food insecurity in low-income households, which found that the proportion of households with food insecurity was 65.3%.[31] Similarly, the research results of Huet et al. (2012) in the Inuit community in Arctic, Canada, it shows that the prevalence of food insecurity is almost the same, namely 62.6%.[32] Furthermore, when compared with the results of research by Sari and Andrias (2013) which measured the food security of urban fishermen households in Surabaya, the results of this study were lower, namely the proportion of fishermen households who were food insecure was 88%.[33]Likewise, the research of Sukiyono et al. (2008) in fishermen households in MukoMuko Regency that get the proportion of food insecure households of 81.1%.[34] limitations of this study were taken when the pandemic conditions Covid-19, so the researchers did not take the data directly to the respondents so that the data collected through questionnaires can not be filled in accordance with the expected.

CONCLUSION

Characteristics of family heads ranging in age from 26-35 years, with a high school education level work in the private employee sector with an income> UMR. The number of family members <5 people with access to the house to the market is mostly <2 km with vehicles used by motorbikes with an average travel time of <11.8 minutes. There are significant differences before and during Covid-19 in consumption patterns seen from the frequency of eating, consumption of staple foods, protein (animal and vegetable) and fruits and vegetables. As for household food security, there are differences in the average score of household food security before and during Covid-19, which was initially food resistant to severe food insecurity. Further research is needed to see the nutritional status of toddlers in the family during the Covid-19 condition.

ACKNOWLEDGEMENT

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BUKTI ARTIKEL ACCEPTED (21 AGUSTUS 2021)

ORIGINAL ARTICLE

HOUSEHOLD CHARACTERISTICS, CONSUMPTION PATTERN AND HOUSEHOLD FOOD SECURITY BEFORE AND DURING COVID-19 IN BANTEN PROVINCE

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ABSTRACT

Households that are accustomed to food insecurity will find a more difficult situation at this time, exacerbated by Covid-19 as fewer resources to comply with social distancing recommendations. Food insecure individuals may also be less flexible in their jobs to enable them to earn income while staying at home, or may be at higher risk of losing their jobs altogether, thereby reducing (or eliminating) their incomes. Design of this study is a crosssectional study using purposive sampling, where 218 households were obtained as respondents. These factors can put food insecure households at a higher risk of contracting Covid-19 and greater food insecurity due to the economic effects of Covid-19 mitigation efforts. The characteristics of the head of the family in this study as a whole were between the ages of 26-35 years with a high school education level, working as private employees with an income level of more than regional wages.The purpose of this study was to describe the characteristics of the family, consumption patterns and food security before and during Covid-19 occurred in the province of Banten. The results showed that there were differences in family consumption patterns before and during Covid-19 with values (p=0.001) and there were differences in the average score of family food security before and during Covid-19 with values (p=0.001). The covid-19 pandemic conditions affect the

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Vol. 21 No. 3 (2021): Volume 21 No.3