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# FOOD SANITATION AND HYGIENE PRACTICE IN FOODS PURCHASING DURING THE EARLY PERIOD OF COVID19 PANDEMIC IN GREATER JAKARTA, INDONESIA: AN ONLINE STUDY

Prisca Petty Arfines<sup>1\*</sup>, Nikson Sitorus<sup>1</sup>, Ika Saptarini<sup>1</sup>, Bunga Christita Rosha<sup>2</sup>, Nurillah Amaliah<sup>2</sup>

<sup>1</sup>Health Research Organization, National Research and Innovation Agency Republic of Indonesia, Jakarta 10560, Indonesia

<sup>2</sup>Agency for Health Policy Development, Ministry of Health of Indonesia, Jakarta 10560, Indonesia

#### Corresponding Author:

\*) prisca.petty.arfines@brin.go.id

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#### Abstract

Introduction: The Covid19 pandemic has greatly impacted all aspects of life, including the behavior of food purchasing. This study aims to identify the description of food hygiene and sanitation practices as part of the food safety aspect in the practice of food purchasing in Greater Jakarta, Indonesia. Methods: Data collection was conducted online in May 2020 from 411 respondents including data on sociodemographic, the proxy of knowledge level, perceptions, sources of information related to food handling, and the practice of food sanitation, and hygiene during the pandemic. Food sanitation and hygiene practices were assessed using a composite index of variables based on the Five Keys to Safer Food and preventive measures during the pandemic. Logistic regression analysis was conducted to assess factors associated with food sanitation and hygiene practices. Results and Discussion: Sufficient practice on food sanitation and hygiene is still relatively low (41.6%). An increased risk of poor food sanitation and hygiene practices was observed in people with less attention on the virus transmission while doing direct shopping, had a non-permanent job, single source of information on food handling during a pandemic, and were currently not married. Changes in the frequency of direct food purchasing and method of online food purchasing were shown as protective factors to better food and sanitation hygiene practice. Conclusion: The food sanitation hygiene practices of consumers during the pandemic in Indonesia are classified as unfavorable. Educational interventions using multi-source of media information are recommended to promote good hygiene food sanitation practices during the pandemic.

#### INTRODUCTION

Coronavirus Disease 2019 (Covid19) is an infectious disease caused by SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). Covid19 is mainly transmitted from symptomatic people to other people who are nearby through droplets. Transmission can also occur through objects and surfaces contaminated with droplets around infected people (1-2).

To date, there has been no published evidence of contact with the coronavirus through touching a food surface or packaging (3). However, based on recent publications, this virus may survive on the surface of objects for a limited time. This study evaluates the stability of the Covid19 virus on various types of surfaces such as metal or plastic which can last up to 3 days, while on softer surfaces such as cardboard it can last up to 1 day (4).

The Covid19 pandemic has a profound impact on all aspects of life, including the behavior of food purchasing. Several studies have found online food purchases tend to increase (5–8). The Covid19 pandemic has increased online food purchases/delivery due to regulations regarding restrictions on dine-in customers in restaurants or cafés (9). A study in America shows that while Covid transmission is still high, there is a declining tendency for consumers to shop for food directly (10). A study in the UK explained that the effect of the pandemic on the encouragement of healthy food purchases differs based on age and work background. Young age and having full-time and part-time jobs are factors that

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encourage buying healthy food during this pandemic compared to old age and retirees (11).

A consumer behavior survey in Southeast Asian countries shows that the level of awareness of the Indonesian public about Covid19 is lower than that of people in other countries in Southeast Asia (23% vs 40%). Activities related to food fulfillment are still the same either before or during the Covid19 pandemic, namely ordering food online (50%) and purchasing food (53%). One of the activities that experienced an increase in frequency is cooking at home (49%) (12).

During this pandemic, changes in food need fulfillment behavior are linked to another important problem, specifically food safety. All foods must be safe for consumption. In the food chain and community food fulfillment behavior, it involves a large number of people who need to anticipate hygiene sanitation practices and, health measures to maintain food safety and prevent the spread of Covid19 (13).

To ensure food safety, all personnel in the food chain are responsible for safeguarding food threats, whether they come from food raw materials, machinery, means, manufacturing processes, or individuals (14). The World Health Organization has released a guideline of five keys to safer food which includes five steps: proper cleaning, separating raw food, cooking properly, keeping food at a safe temperature, and using safe water and raw materials (15). During the Covid19 pandemic, WHO guidelines have been a crucial reference for food safety standards, just like stringent health protocol practices.

A previous study conducted in middle eastern countries found that there was still a lack of practices related to hand washing and improper food handling during the Covid19 pandemic (16). Meanwhile, studies in China and Qatar revealed that the Covid19 pandemic affected public knowledge and practices related to food safety (6,17). Therefore, this study aims to identify the description of food hygiene and sanitation practices as part of the food safety aspect in the practice of food purchasing in Greater Jakarta, Indonesia.

#### METHODS

This study was an observational study with a cross-sectional study design in Greater Jakarta, Indonesia. DKI Jakarta Province and its satellite cities or regencies make up Greater Jakarta (Bogor Regency and City, Depok City, Tangerang Regency and City, South Tangerang City, and Bekasi Regency and City). In this region, the number of Covid19 deaths and probable Covid19 deaths was higher than in other parts of Indonesia (18). In this study, the questionnaire was tested to assess its validity and reliability on a total of 30 respondents in April 2020. In the first week of May 2020, data was collected using a Google form distributed through social media (WhatsApp, Facebook, Instagram). The number of samples in this study was 411 respondents with sample selection using nonprobability sampling. The inclusion criteria included in the sample were with a history of purchasing food/food items in the past 2-weeks.

The questionnaire was delivered in Bahasa Indonesia which consisted of 37 questions and was divided into 4 sections. The first section collects demographic information containing questions related to residence, age, gender, marital status, education, type of work, and family income during the past month. Then the second part is knowledge proxy related to Covid19 which, consists of 8 questions. These eight questions are related to general knowledge of Covid19 (transmission mode, symptoms, factors that aggravate and prevent COVID-19). The assessment was based on the number of correct and incorrect questions answered, with a score of one for each correct answer. Categorization was carried out using the 70th percentile cut-off score. The third section, which consists of 20 questions, is all about hygiene and sanitation practices. This section dealt with three sub-themes: food purchase descriptions, food sanitation hygiene practices, and Covid19-related information sources. Food purchases include shopping directly to the market/food store, shopping online, or a combination of both. Assessment of food hygiene and sanitation practices was carried out using a composite index based on a combination of 9 main variables. Those variables include handwashing behavior, use of PPE when shopping, special treatment of food, frequent payment methods in the past months, physical contact when receiving food, treatment and storage of ready-toeat and fresh foods, consumption of raw vegetables, and consumption of undercooked animal protein sources. Then the composite index categorization was carried out using the 70th percentile cut-off (P70) to assess whether food sanitation hygiene practices were sufficient or not. The last part is about perceptions of distribution which consists of 2 questions related to public attention to the distribution of Covid19 due to food purchasing activities. The research instrument had previously been tested and reached the Cronbach alpha's value of 0.667 which indicates an acceptable on its internal consistency. Data were analyzed univariately, bivariately, and multivariately using statistical software. Multivariate analysis was performed using a logistic regression test.

Ethical approval was obtained by the Ethics Committee of the National Institute of Health Research and Development, Ministry of Health, Republic of Indonesia (LB.02.01/2/KE.319/2020). Data filling was carried out only with the full consent of the respondent. Each respondent had received information about the guarantee of data confidentiality.

#### RESULTS

### **Demographic Characteristics**

The total respondents in this study were 411 people with an average age of 33 ( $\pm$  9.3) years. The majority of respondents were female (79.1%), resided in Bogor Regency and City (35%), married (62.5%), with a background of tertiary education (67.2%), currently having a permanent type of job (43.8%) with a family income in the past month ranging between Rp. 1,000,000, - up to Rp. 4,999,999, - (35.5%).

#### **Proxy of Knowledge and Perception**

The proportion of respondents with a good proxy level of knowledge was around 63.3%. Some items with a low percentage of correct answers were listed as follows: 1) The initial symptoms of Covid19, 2) Duration of handwashing using soap that effectively kills the Covid19 virus, and 3) The effective alcohol content of hand sanitizer to prevent the Covid19 transmission.

Meanwhile, the majority of respondents (81.8%) were worried about the risks due to direct shopping during the Pandemic. Besides, most of the respondents (78.1%) were worried that the transmission of Covid19 might happen due to the purchase of ready-to-eat meals.

## Food Sanitation Hygiene Practices during the Covid19 Pandemic

During the pandemic, the majority of the 411 respondents (62%) prepared their food. Meanwhile, the methods of food purchasing were done mainly by direct shopping to the market/food store (48.7%) or by both direct and online food purchasing (44.3%). Regarding the PPE wearing, almost all of the respondents claimed to have worn at least a mask (74.2%) or a combination of masks and others PPE (25.5%) when shopping. Also, after shopping, the majority of respondents always washed their hands using soap (97.7%). However, there were still respondents who washed their hands without using soap even though the percentage is very small (0.5%).

Regarding the method of payment, most respondents still made cash payments (70.8%). In receiving foods during food delivery, there were still 5.4% who received them directly without implementing distance. After purchasing ready-to-eat meals, most of the respondents claimed to have disinfected food wrappers

and then moved them to a clean food container (64.3%). In storage, there were still 18.7% of respondents who store raw foodstuffs on the same shelf and 1.2% who did not separate them at all. Based on this study, in the past month, there were still 30.4% of respondents who consumed raw vegetables or 19.5% who consumed raw/ undercooked animal protein sources. The details are summarized in table 1.

### Table 1. Consumer Food Sanitation Hygiene Practicesduring the Covid19 Pandemic

Food Sanitation Hygiene Practices during the Covid19 Pandemic	n	%
Types of Personal Protective Equipment (PPE) used		
when shopping:		
Only facial mask	305	74.2
Masks and other PPE (gloves/face shield/headcover)	105	25.5
Not wearing PPE	1	0.2
There is a special treatment that you do after shopping		
outside the home during this pandemic		
Yes, there is	398	96.8
Nothing	13	3.2
The special treatment that is often carried out after shopping (n = 398)		
Washing hands using soap	389	97.7
Washing hands without soap	2	0.5
Changing clothes	-	0.3
Taking shower immediately	6	1.5
The payment method that is often used during this	~	
pandemic		
Cashless	120	29.2
Cash	291	70.8
The most common way of receiving food		
Not directly / placed according to the agreement	52	12.0
with the food courier	53	12.9
Directly but with a distance	336	81.8
Directly without any distance	22	5.4
Treatment while purchasing ready-to-eat meals		
(n = 314)		
Disinfect/wash the wrap then move it to a clean	202	64.3
place		
Reheating	102	32.5
There is no special treatment	9	2.9
Others	1	0.3
Treatment of raw foodstuffs shortly after purchase or receive at home (n = 410)		
Disinfect/wash the wrap then move it to a clean place	17	4.1
Wash under running water	238	58.0
Wash under running water with a special soap for	230	
fruits and vegetables	105	25.6
There is no special treatment/stored/processed directly	49	12.0
Put it under the sun for a while	1	0.2
Separation of cooked and raw food during storage		
Yes, the container is separated but still on one shelf	77	18.7
Yes, separated by different shelves but still in one food cupboard/fridge	236	57.4
Yes, separated in different food cupboard/fridge	93	22.6
Not separated	5	1.2
Still consuming raw vegetables in the last month	5	1.2
Yes	125	30.4
Not consuming	286	69.6
Still consuming raw/undercooked animal protein	200	07.0
sources in the past month		
Yes	80	19.5
Not consuming	331	80.5

Food Sanitation Hygiene Practices during	n	%
the Covid19 Pandemic		70
Washing your hands with soap and running water for at least 20 seconds or using a hand sanitizer after doing		
groceries from markets/stalls/shops (n = 410)		
Always	389	94.9
Sometimes	21	5.1
Washing your hands with soap and running water for at least 20 seconds or use a hand sanitizer after taking food orders from a food delivery courier (n = 349)		
Always	303	86.8
Sometimes	41	11.7
Not/rarely	5	1.4
least 20 seconds or use a hand sanitizer before having a (n=411)		
Always	377	91.7
Sometimes	29	7.1
Not/rarely	5	1.2
Washing your hands with soap and running water for at least 20 seconds or use a hand sanitizer after travelling outside (n=411)		
Always	401	97.6
Sometimes	9	2.2
Not/rarely	1	0.2
Washing your hands with soap and running water for at least 20 seconds or use a hand sanitizer after		
urinating/defecating (n=411)	2.52	
Always	373	90.8
Sometimes	35	8.5
Not/rarely	3	0.7

After calculating the food hygiene and sanitation practice score, a mean food safety score of 12.0 ( $\pm$  1.7) was obtained. The percentage of respondents with sufficient food sanitation and hygiene practices is still relatively low (41.6%).

# Associate Factors to Food Sanitation and Hygiene Practices

Bivariate analysis was carried out to see the relationship between the dependent variable and the independent variables. The analysis showed variables associated with food sanitation and hygiene practices (p<0.05) were marital status, perception about Covid19 transmission due to direct shopping in the market/food store and due to ready-to-eat meal buying, and also change in the frequency of direct food purchasing (Table 2).

Table 2. The Results of Bivariate Analysis between theIndependent Variables and the Hygiene and SanitationPractices during the Pandemic

Variables	Consumer Sanitation Hygiene Practices				Total		p-value
	Suf	icient	Insut	ficient			
	n	%	n	%	n	%	
Living location							0.952
Jakarta	37	38.1	60	61.9	97	100	
Bogor	62	43.1	82	56.9	144	100	
Depok	21	41.2	30	58.8	51	100	
Tangerang/South Tangerang	19	42.2	26	57.8	45	100	
Bekasi	32	43.2	42	56.8	74	100	

	<b>Consumer Sanitation</b>						
	Hygiene Practices				Total		
Variables				Insufficient			p-value
	<u>n</u>	%	n	%	n	%	
Sex		, ,		, .			0.494
Man	33	38.4	53	61.6	86	100	
Woman	138	42.5	187	57.5	325	100	
Age group	2.1	27.2	50	(2.7	0.2	100	0.230
15-24 years old	31 60	37.3	52	62.7 62.3	83	100 100	
25-34 years old 35-44 years old	57	37.7 49.6	99 58	62.5 50.4	159 115	100	
45-54 years old	17	38.6	27	61.4	44	100	
55-64 years old	5	55.6	4	44.4	9	100	
65+ years old	1	100	0	0	1	100	
Marital status							0.014*
Married	120	46.7	137	53.3	257	100	
Not married	44	31.7	95	68.3	139	100	
Widowed	7	46.7	8	53.3	15	100	
Type of work	00	15.0	0.0	5 4 A	100	100	0.068
Permanent	82	45.6	98 67	54.4 68.4	180	100	
Non-Permanent Not working	31 58	31.6 43.6	67 75	68.4 56.4	98 133	100 100	
Level of education	50	+3.0	13	50.4	133	100	0.676
High school graduate				<b>F</b> O -	• • •		0.070
and above	157	41.3	223	58.7	380	100	
Junior high school	14	45.2	17	54.8	31	100	
graduate and below	14	43.2	17	54.0	51	100	
Family Income in the							
past month More than Rp							
5.000.000	71	45.8	84	54.2	155	100	0.179
Less than Rp	100	20.1	150	(0.0	250	100	
5.000.000	100	39.1	156	60.9	256	100	
Attention about Covid19							
transmission							0.002*
due to direct shopping in the market/food store							
Attentive	152	45.2	184	54.8	336	100	
Less attentive	19	25.3	56	74.7	75	100	
Attention about Covid19							
transmission							0.022*
due to ready-to-eat							01022
meals buying Attentive	143	44.5	178	55.5	321	100	
Less attentive	28	31.1	62	68.9	90	100	
Proxy of level knowledge	_	51.1	02	00.9		100	
on COVID-19							0.283
Good	103	39.6	157	60.4	260	100	
Poor	68	45	83	55	151	100	
Food preparation							0.064
during the pandemic	11.4	A	120	<b>5</b> 4 <b>5</b>	255	100	
Home cooking	116	45.5	139	54.5	255	100	
Buying ready-to-eat meals	1	14.3	6	85.7	7	100	
Both	54	36.2	95	63.8	149	100	
Type of food purchasing				,			0.066
Direct shopping to the							
market/	79	43.6	121	60.5	200	100	
food store							
Online buying	18	62.1	11	37.9	29	100	
Both	74	40.7	108	59.3	182	100	
Change in the frequency of direct							
food purchasing/ direct							0.001*
shopping to the market/							-
food store							
Same as before	27	26.7	74	73.3	101		
Yes, there are changes	142	46.9	161	53.1	303	100	
Not doing direct	2	28.6	5	71.4	7	100	
shopping							

V	Consumer Sanitation Hygiene Practices					tal	p-value
Variables	<b>Sufficient Insufficient</b>						
	n	%	n	%	n	%	-
Change in the frequency of food purchasing online							0.209
Same as before	21	31.8	45	68.2	66	100	
Yes, there are changes	106	43.8	136	56.2	242	100	
Not doing online shopping	44	42.7	59	57.3	103	100	
Have received/followed special directions regarding food handling during a pandemic							0.497
Yes	140	42.4	190	57.6	330	100	
Never	31	38.3	50	61.7	81	100	
Source of information on food handling during a pandemic							0.144
Multisource	87	46.8	99	53.2	186	100	
Single-source	60	36.6	104	63.4	164	100	
No information received	24	39.3	37	60.7	61	100	
Source of information on Covid19 prevention							0.377
Multisource	126	41.7	176	58.3	302	100	
Single-source	42	40.0	63	60.0	105	100	
No information received	3	75.0	1	25.0	4	100	

\* Significant at p < 0.05

Then a multivariate analysis was performed involving variables with p<0.25. The associate factors to consumer food sanitation and hygiene practices were found and they can be seen in Figure 1.



Figure 1. Associate Factors on Food Sanitation and Hygiene Practice in Food Purchasing during the Covid19 Pandemic

The results of the multivariate analysis showed the associated factors of food sanitation and hygiene practices in food purchasing during the pandemic, including less attention to Covid19 transmission due to direct shopping (OR=2.465 95% CI 1.139, 5.336), having a non-permanent job (OR=2.022 95% CI 1.116, 3.662), only got information from a single source regarding food handling during the pandemic (OR=1.696 95% CI 1.063, 2.706), and currently not married (OR=1.640 95% Cl 1.009, 2.706). Meanwhile, consumers who experienced any changes in the frequency of direct food purchasing/ direct shopping tended to have better practice (OR=0.454 95% Cl 0.255, 0.808). Besides, people who practised online food purchasing had reduced odds of insufficient food sanitation and hygiene practices (OR=0.241 95% Cl 0.091, 0.643).

#### DISCUSSION

Several studies from across the world have shown that people's eating habits changed during the pandemic (6,17). Home cooking is one of the positive consequences of a pandemic due to the lockdown policy or large-scale social restrictions that limit activities outside the home. The results of this study are also in line with several previous studies. A study found that 41% of Americans have cooked more often since the start of the pandemic (19). The survey at the beginning of the pandemic in Indonesia also obtained similar results where 49% of respondents reported cook at home more often, while consumption outside the home and in cafes decreased (12).

Purchasing food online or through food delivery services is a trend besides cooking food at home. A study in China found that the behavior of using meal ordering apps is predicted to continue during the pandemic (7). However, there are new challenges in online purchases related to the Covid19 outbreak. In particular, related to food safety or whether food couriers are not infected with the virus. This study also found that the tendency to buy food online is more likely among young people who have a lower risk perception of buying online and live in big cities (5). A study in Indonesia during the pandemic revealed that online food purchases are not only influenced by the quality of the food sold but several influencing factors, including subjective norms, evaluation of the quality of e-services and the level of health awareness (20).

The results of the descriptive analysis showed that the percentage of respondents with sufficient food sanitation and hygiene practice during the pandemic was quite low. Regarding the behavior of washing hands with soap, although most of the respondents' answers to always practice it was quite high (> 90%) at different times related to food purchasing, however, not all of them practised it. In addition, this was only based on the respondent's acknowledgment without an evaluation of whether or not the practice of washing hands using soap was sufficient, despite the fact that washing hands using soap is the main preventable behavior of Covid19 transmission. To date, there has been no published evidence of contact with the coronavirus through touching food surfaces or food wrappers. However, the study found the stability of this virus can survive on the surface of objects in a limited time (4). As an effort to prevent the spread of the virus, the handling of food packages/packages must be followed by hand washing or extensive sanitation (21).

The Indonesian Ministry of Health promotes the practice of washing hands using soap at five critical times, namely before eating, after defecating, before preparing food, before breastfeeding babies, after cleaning baby's feces, and after contact with animals. This study found that the habit of washing hands after urinating/defecating using soap was classified as low. A study on the determinants of handwashing in Indonesia emphasized that handwashing with soap is more common after eating than at other critical times. The relatively common practice of open defecation is linked to the low practice of washing hands with soap after defecating (22).

From the results of this study, it was found that in general the majority of payment methods were made by cash. Money as a transaction tool in buying and selling activities has the potential as an indirect way of transmitting the Coronavirus. Socialization of the use of non-cash payments supported by the provision of handwashing facilities at food outlets is considered a good way to reduce the risk of indirect transmission.

Regarding practices related to food safety, most respondents had practised special treatment for purchasing ready-to-eat meals such as food wrappers disinfection, or reheating. Meanwhile, for raw food ingredients, respondents washed them with running water and a food-grade soap. This has followed the WHO's 5 steps to safer food recommendations. Disinfection should be practised with caution, by maintaining the quality of the food contained in it. It is advisable to handwash immediately with soap after removing food from its packaging (23). Heating food to 70°C can kill bacteria and viruses in food. However, reheating may reduce the nutritional quality of foods.

In storing raw foodstuffs, this study found the potential for cross-contamination due to storage on the same shelf or not being separated at all. This still has not met the food safety recommendations of the WHO to avoid cross-contamination between cooked and raw foods, especially meat products. Another important thing that needs to be discussed further based on this study is the behavior of consuming raw/undercooked animal protein sources. This did not meet the points in the recommended 5 keys to food safety, namely consuming food that is processed properly and cooked thoroughly. Many foodborne illnesses can arise from meat products that are not cooked properly. In addition, it is stated that the consumption of infected animal meat/organs can cause foodborne zoonotic infections, although this is quite rare (24).

Regarding compliance with the use of PPE, the results of this study have shown a high percentage of using at least a face mask when shopping. However, there is no supporting data regarding the use of these masks whether they meet the recommended guidelines. In a study in Japan, the prevalence of mask use was 80.9%, but the level of adherence was very wideranging from 38.3% to 83.5%. While the correct use of masks following the recommendations only reaches 23.1% (25). This shows the need to measure the use of appropriate masks in the community for future studies. The inappropriate wearing of face masks can hinder their effectiveness (26). Regarding the use of gloves, a recent publication highlighted that the use of disposable gloves can increase the risk of spreading the SARS-CoV-2 virus if proper techniques and precautions are not followed, especially touching the face and using mobile phones. Therefore, the recommendation for the general public is that hand washing is a more comfortable and safe practice to implement during the Covid19 pandemic (27).

Based on the results of multivariate analysis, the associate factors of consumer food sanitation and hygiene practices include people's attention to the virus transmission when doing direct shopping, having a nonpermanent job, access to a single source of information on food handling during a pandemic, and currently not married. In addition, there were two protective factors including changes in the frequency of direct shopping and online buying as the method of food purchasing. Respondents who admitted that they experienced changes in the frequency of direct shopping and who purchase food online had better food sanitation hygiene practices.

Perception influences health behavior where it will provide motivation leading to individual decisionmaking to take disease prevention measures. According to the findings of this study, those who pay less attention to the virus transmission when shopping has poorer food sanitation hygiene practices. Astudy in China emphasized that the high attention to food safety in the community was strongly influenced by food and public health-related incidents (17). Covid19 has increased public awareness of food safety when there are confirmed cases in the surrounding environment. Furthermore, information media serves as a conduit for public knowledge. The current study's findings also highlight the importance of multi-source information media in improving hygiene and sanitation practices.

Regarding the type of work associated with food sanitation hygiene practices indirectly through the respondent's level of knowledge and education. In particular, there is a strong positive relationship between poor food safety practices and poor personal health management (28).

The method of food purchasing and changes in the frequency of direct shopping affect the hygiene and sanitation practices of respondents. This is consistent with other studies which portrayed an increase in online purchases (5). Meanwhile, online studies in America show that online food spending has increased by 10-15% during the pandemic (10). From this study, it is hypothesized that changes in food-buying behavior are partly explained by the perception of fear of Covid19 transmission. This perception of anxiety also affects a person's practices related to health such as food sanitation hygiene. In this study, online purchasing is a protective factor for food sanitation hygiene practices.

The last thing related to the respondent's food sanitation hygiene practices is the source of information regarding food handling during a pandemic. The explanation for this relationship is closely related to changes in individual behavior and perceptions. From this study, it was found that multi-sources of information regarding food handling during a pandemic have an effect on better practices related to food safety compared to one source. This is an important finding as a strategy in health promotion that supports community behavior change. Educational facilities are needed that include various educational media to increase people's knowledge, attitudes and behavior.

Finally, this study has several limitations. First, there was a risk of potential bias associated with the nature of online surveys. However, with the increase in internet access in Jakarta and surrounding satellite cities, especially during the pandemic, the online survey is considered quite representative. Second, this study did not measure the level of knowledge with standardized instruments, which is particularly important. However, it has been able to provide a descriptive description of the proxies of the respondent's level of knowledge. It is hoped that future studies will be able to use standardized instruments to determine knowledge levels.

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#### CONCLUSION

This study showed that the food sanitation hygiene practices of consumers during the Covid19 pandemic in Indonesia are still classified as unfavorable. The determinants of the food sanitation hygiene practices of consumers include the type of non-permanent job of the respondent, the perception of concern about transmission when shopping directly, and single sources on food handling during a pandemic. Meanwhile, changes in the frequency of direct shopping and online food purchasing are considered as protective factors to better food hygiene and sanitation practices. With changes in people's purchasing behavior during this pandemic, appropriate educational strategies are needed to improve better food sanitation hygiene practices in the community.

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