



Assessment of the Compliance to Food Hygiene and Protection Measures for Prevention of COVID-19 in Urban Area

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Abstract. To stop the spread of COVID-19, numerous public policies and programs have been implemented worldwide. Globally, social and public health initiatives have been put in place to stop the COVID-19 virus from spreading. Effective pandemic control relies on community compliance with these measures. Urban areas play a significant role as the hub of national economic activity and government, for which the pandemic has had a significant impact. To evaluate the compliance of adults residing in the greater Jakarta area, a cross-sectional study was carried out. A questionnaire consisting of demographic questions, questions about personal hygiene, and questions about personal safety practices was administered online between August and September 2022. 515 people in total responded to the survey. The majority of respondents followed the advised personal and hygienic precautions to prevent SARS-CoV-2 contamination. Some significant flaws, however, were found, including the failure to wear face masks when in public, improper hand washing and sanitizing, poor food hygiene, and insufficient house cleaning and sanitization. This study suggests that ongoing risk communication and preventive advice are necessary to stop the COVID-19 from spreading.

Keywords: Food hygiene · COVID-19 · Personal protection · Food handling · Indonesia

1 Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that originated in Wuhan, China and spread throughout the world is the cause of the new type of coronavirus (Covid-19), a highly contagious and pathogenic viral infection [1, 2]. Since the outbreak of the coronavirus disease (COVID-19) was first reported in December 2019, it has been almost three years. In January 2020, the World Health Organization declared the COVID-19 pandemic a global emergency. Nevertheless, the illness is still widespread, and 4 million COVID-19-related deaths have been reported globally [3, 4].

The World Health Organization (WHO) and several nations were quick to publish recommendations for the public, using a variety of communication channels, to stop the spread of COVID-19 [5–7]. The World Health Organization (WHO) and the Indonesian Ministry of Health advise the populace to practice better personal hygiene and adopt new social norms in order to stop the spread of COVID-19. The Indonesian Ministry of Health has issued a Covid-19 prevention and control protocol and a health protocol in public settings, advising people to limit their movement, wear masks, and wash their hands frequently [8–10]. The Indonesian Ministry of Health and the Food and Drug Administration (BPOM) also released guidelines on food management hygiene and sanitation during the Covid-19 pandemic [11, 12].

With a population of 267 million, Indonesia has the fourth-largest total population in the world. Particularly the Jakarta capital city has a sizable urban area. The complexity of the urban area will act as a catalyst for the spread of the infectious disease in the event of an outbreak of a contagious disease (outbreak) [13, 14]. The Covid-19 pandemic will have a significant impact in the Jakarta region, which includes the capital city of Jakarta and its surrounding areas, including Bogor, Depok, Tangerang, and Bekasi. Of the confirmed Covid-19 cases, 22% come from the DKI Jakarta province, and 17% come from West Java province [15].

Considering that DKI Jakarta is the epicenter of the transmission of Covid-19 in Indonesia [14], the researchers decided to examine the community's adherence to personal recommendations and food hygiene in order to better understand the community's adherence to personal protection and food hygiene recommendations during the Covid-19 pandemic, as well as other factors related to compliance. This is significant to understand the adherence of the community towards the personal protection and food hygiene during the Covid-19 pandemics, because a thorough understanding of the extent to which public recognize and adhere towards preventive behavior will improve the effectiveness of health risk communication.

2 Methods

The cross-sectional study was conducted using a questionnaire that was created on the Google®Forms platform and publicly distributed via the internet and social networks using a Google form (WhatsApp, Facebook, Instagram). Data was gathered anonymously and voluntarily for one month between August and September 2022. Three categories of questions on a questionnaire were used to collect the data: 1. Sociodemographic information (gender, age, marital status, educational attainment, and family income); 2. Personal protection recommendations; 3. Recommended food hygiene practices; and 4. Recommended environmental hygiene practices [5]. There were 5 answer's option for each question; "Always", "Most of the time", "Occasionally", "Rarely", and "Very rare". "Always" means more than 95% of the time; "Most of the time" means 50 to under 95%; "occasionally" means 20 to under 50%; and "Rarely" means below 20% [16]. In this study, we also considered "Very rare", which means around 0%.

This study's population consists of adults aged 17 and up who live in Jakarta, Bogor, Depok, Tangerang, and Bekasi. A non-probabilistic sampling design was used to select research participants. This study's participants were adult respondents aged at least 17 years old who lived in the greater Jakarta area, including Bogor, Depok, Tangerang, and Bekasi, also known as the Jabodetabek area, and could fill out questionnaires distributed through social media platforms. The questionnaire was completed by 515 people, 493 of whom were eligible to be included in the data analysis.

3 Results

3.1 Sociodemographic Analysis

A total of 493 individuals responded the survey, covering Greater Jakarta. The survey did not intend to target a specific social segment, but responses of people with high school (35.3%) and undergraduate degrees (35.9%) prevailed (Table 1). Reported professions and education status were compatible with the middle-class group in the urban area of Jakarta. Hence the survey unsuccessful to reach the most vulnerable segments of the population, which have limited, if any, access to the internet. Notably, the most vulnerable population is more prone to contamination with COVID-19 and other infectious diseases, due to the difficulties to follow to public preventive measures since they live in unsanitary conditions, overcrowded homes, food insecurity, and possibly low-quality information [6].

3.2 Adherence Towards Personal Protective and Food Hygiene Recommendation During Covid-19 Pandemics

The most frequently used preventive measure was frequently wearing a mask in public places. This was followed by changing into clean clothes, especially when getting home, and practicing cough etiquette (covering mouth and nose when coughing and sneezing). Avoiding crowded areas, using alcohol-based hand sanitizers, and maintaining a social distance. Other customs included frequent hand washing, refraining from touching one's face, avoiding crowded areas, handling food properly, and wiping down surfaces (see Table 2). This conclusion was supported by earlier research, which revealed that study participants complied with advice to wear masks and wash their hands, [17, 18], and cover the mouth and nose when coughing and sneezing to prevent COVID-19 infection [17]. The previous study recommended using hand sanitizer and avoiding public places to stop the spread of COVID-19. [6, 18]. Other precautions like showering and changing clothes may be less important for the spread of COVID-19 than hand washing, but they do show a greater awareness of good hygiene.

According to Table 2, this survey showed that about 81% of the participants regularly washed their fruits and vegetables as advised by Indonesian authorities, which is a good indication of how well they adhered to food hygiene recommendations. According to the majority of the survey, cleaning food packaging after offline or online purchases was one of the most popular practices. The most widely adopted preventative measure among the participants was washing hands before preparing food. COVID-19 is a respiratory illness

Table 1. Sociodemographic characteristics of the respondents.

Category	Group	Number of answers	%
Age	17–29 years	297	60.2
	30–44 years	148	30.0
	45–59 years	47	9.5
	> 60 years	1	.2
Education	Junior high school	5	1.0
	Senior high school	174	35.3
	Diploma degree	45	9.1
	Bachelor degree	177	35.9
	Master degree	89	18.1
	Doctorate degree	3	.6
Marital status	Single	256	51.9
	Married	227	46.0
	Divorced	10	2.0
Sex	Female	138	28.0
	Male	355	72.0
Region	East Jakarta	41	8.3
	West Jakarta	19	3.9
	Central Jakarta	12	2.4
	South Jakarta	75	15.2
	North Jakarta	8	1.6
	Depok	158	32.0
	South Tangerang	21	4.3
	Bekasi	28	5.7
	Bogor	131	26.6
Occupation	Public server	59	12.0
	Soldier and policemen	2	.4
	Employees of state-owned company	19	3.9
	Employees of private company	161	32.7
	Entrepreneur	22	4.5
	Farmer	2	.4

(continued)

Table 1. (continued)

Category	Group	Number of answers	%
	Student	118	23.9
	Housewife	39	7.9
	Other professions	71	14.4
No of people in households	1	21	4.3
	2–3	133	27.0
	4–5	250	50.7
	> 6	89	18.1

that spreads primarily through direct contact with respiratory droplets and interpersonal contact. In food, coronaviruses cannot survive or grow. There was no proof that COVID-19 spread via food or food packaging. [2, 19–21]. However, there is a high likelihood that infected food processors will spread the virus to surfaces that come into contact with food, packaging materials, and equipment [19]. A person may also contract COVID-19 by touching a coronavirus-contaminated surface or object and then touching their mouth, nose, or possibly their eyes. [20]. It is advised to wash, rinse, and sanitize food contact surfaces or utensils as well as wash fruits and vegetables with potable water before consumption to reduce the risk of food-related COVID-19 transmission [2]. The virus particles on food packaging do not spread the disease because they become inactivated over the course of 24 h. To make a secure purchase, it is necessary to disinfect surfaces and toss disposable grocery bags. [21].

The majority of the participants in this study reported cleaning their home's surfaces on a regular basis, including the floors and furniture. To lower the amount of virus particles on surfaces and the risk of COVID-19 transmission, it is advised to regularly disinfect and clean surfaces at home. It was advised to wash with soap and water or use a disinfectant. Products like ethanol, hydrogen peroxide, sodium hypochlorite, quaternary ammonium, and peracetic acid are also known to be effective against coronavirus infection. [6].

The majority of respondents (50.5%) fell into the "good" category for compliance with personal protection recommendations, according to the information in Table 3. The majority of respondents (58.6%) fell into the less category in terms of adhering to recommendations for food hygiene. Previous study also demonstrated the same results with the good awareness of prevention and control among the 302 participants from an online survey [22]. Prior research also found that consumer food sanitation hygiene practices during the pandemic were rated as unfavorable in terms of adherence to food hygiene recommendations [23].

Table 2. Adherence to the hygiene measures by type of recommendation

Category	Group	Number of answers	%
Personal protection measures			
Wearing mask	Very rare	0	0
	Rarely	6	1.2
	Occasionally	37	7.5
	Most of the time	126	25.6
	Always	324	65.7
Avoiding crowded place	Very rare	4	.8
	Rarely	20	4.1
	Occasionally	132	26.8
	Most of the time	182	36.9
	Always	155	31.4
Practicing social distancing	Very rare	7	1.4
	Rarely	29	5.9
	Occasionally	137	27.8
	Most of the time	186	37.7
	Always	134	27.2
Avoidance of public place	Very rare	7	1.4
	Rarely	41	8.3
	Occasionally	162	32.9
	Most of the time	169	34.3
	Always	114	23.1
Frequency of handwashing	Very rare	1	.2
	Rarely	6	1.2
	Occasionally	32	6.5
	Most of the time	169	34.3
	Always	285	57.8
Using hand sanitizer	Very rare	8	1.6
	Rarely	16	3.2
	Occasionally	70	14.2
	Most of the time	181	36.7
	Always	218	44.2
Practicing cough etiquette	Very rare	6	1.2

(continued)

Table 2. (continued)

Category	Group	Number of answers	%
	Rarely	12	2.4
	Occasionally	35	7.1
	Most of the time	140	28.4
	Always	300	60.9
Showering when arrive at home	Very rare	5	1.0
	Rarely	14	2.8
	Occasionally	78	15.8
	Most of the time	142	28.8
	Always	254	51.5
Changing clothes when arrive at home	Very rare	3	.6
	Rarely	11	2.2
	Occasionally	51	10.3
	Most of the time	135	27.4
	Always	293	59.4
Food hygiene measures			
Washing raw food ingredients (vegetables and fruits) before cooking	Very rare	5	1.0
	Rarely	10	2.0
	Occasionally	78	15.8
	Most of the time	400	81.1
	Always	5	1.0
Disinfecting food packaging after doing groceries	Very rare	39	7.9
	Rarely	51	10.3
	Occasionally	135	27.4
	Most of the time	143	29.0
	Always	125	25.4
Disinfection food packaging from online purchasing	Very rare	43	8.7
	Rarely	67	13.6
	Occasionally	119	24.1
	Most of the time	142	28.8
	Always	122	24.7

(continued)

Table 2. (continued)

Category	Group	Number of answers	%
Washing hands before cooking	Very rare	2	.4
	Rarely	4	.8
	Occasionally	21	4.3
	Most of the time	112	22.7
	Always	354	71.8
Hygiene measures at home			
Cleaning floor surface	Very rare	1	.2
	Rarely	7	1.4
	Occasionally	60	12.2
	Most of the time	170	34.5
	Always	255	51.7
Cleaning furniture surface	Very rare	4	.8
	Rarely	17	3.4
	Occasionally	80	16.2
	Most of the time	185	37.5
	Always	207	42.0

Table 3. Frequency distribution of the variables

Variable	n	%
Community adherence towards personal protection recommendation during Covid-19 pandemics		
Good	249	50.5
Poor	244	49.5
Community adherence towards food hygiene recommendation during Covid-19 pandemics		
Good	204	41.4
Poor	289	58.6

4 Conclusion and Remarks

Even knowing that the most important route of transmission of the SARS-CoV-2 is the person-to-person contact, the recommended measures for personal and food hygiene remain important in preventing diseases. Our online survey between August – September 2022 indicated that adult population in the urban area in Greater Area of Jakarta were mostly compliant to the government personal protection and food hygiene measures.

This online survey also revealed that the majority of respondents, who have access to the internet, mostly comply with personal protection recommendations in the good category. However, most of the respondents fell into ‘poor adherence’ category in terms of the adherence towards food hygiene recommendations. It is advised to use educational interventions to spread awareness of personal protection and food hygiene practices during the pandemic.

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