



The Determinants of Healthy Food Consumption Behaviour During the Covid-19 Pandemic

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Abstract

Healthy Food Consumption Behaviour (HFCB) is needed for reducing the prevalence rate of non-communicable diseases and minimizing the negative impacts of Covid-19. Hence, improving HFCB during Covid-19 pandemic is important. Thus, this study investigated the determinants of HFCB during Covid-19 pandemic. More specifically, this study aimed to test the impact of e-health literacy, the perceived threat of Covid-19, digital health communication media usage, perceived benefit of HFCB related to Covid-19, healthy food extension education intensity, healthy food affordability, injunctive norm, descriptive norm, and attitude toward HFCB on HFCB simultaneously. A survey with 249 respondents in the Tangerang City, Indonesia, was performed to collect the data. The data was analysed by using multiple regressions analysis. The research results showed that HFCB was influenced by attitude toward HFCB, healthy food affordability, digital health communication media usage, and descriptive norm significantly and positively. It was also revealed that HFCB was significantly and negatively affected by perceived threat of Covid-19. However, perceived benefits of healthy food consumption, e-health literacy, healthy food extension education intensity, and injunctive norm did not pose an impact on HFCB.

INTRODUCTION

Nowadays, NCDs and the Covid-19 pandemic have become two serious health issues. Related to these issues, HFCB can reduce the prevalence rate of non-communicable diseases (NCD) (Indonesian Ministry of Health, 2014). Many studies have shown that HFCB influenced the risk of contracting NCDs significantly (Febriani & Sudiarti, 2019; Akil & Top, 2019; Kalsum et al., 2018; Amrein et al., 2017; Trapp et al., 2015). Furthermore, during the pandemic, consuming healthy foods was also one of the recommended

efforts to deal with Covid-19 (Aman & Masood, 2020). The consumption behaviour could strengthen the immune system so that the negative impacts of Covid-19 could be minimized (Aman & Masood, 2020). Therefore, it is important to study HFCB during Covid-19 pandemic.

HFCB had received great attention in the literature. A lot of researchers investigated HFCB (Trap et al., 2015; Pedersen et al., 2015; Amrein et al., 2017; Flaherty et al., 2018; Broers et al., 2020; Cardoso et al., 2020; Huang & Liu, 2020; Samoggia & Riedel, 2020). However, there were

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several gaps in the literature.

First, there were only a few empirical studies on HFCB during the Covid-19 pandemic. Furthermore, most previous researches on HFCB during the Covid-19 pandemic focused on the impact of such behaviour (e.g., Di Renzo et al., 2020; Kriaucioniene et al., 2020; López-Moreno et al., 2020; Pellegrini et al., 2020; Pham et al., 2020; Reyes-Olavarria et al., 2020). There was a lack of empirical studies that specifically investigated factors that influenced HFCB during the pandemic. HFCB could be seen as a health behaviour (Jayawardena & Misra, 2020). The Health Belief Model (HBM) identified that health behaviour was influenced by the perceived benefit of the health behaviour and the perceived threat of disease (Rosenstock, 1974). Therefore, during the Covid-19 pandemic, perceived benefit of HFCB related to Covid-19 and the perceived threat of Covid-19 might influence healthy food consumption.

Second, information technology and the internet have been used by various parties to provide health information, which included information regarding healthy food. There were several digital health communication media that can be easily accessed in Indonesia, such as Alok Dokter, Halodoc, and Klikdokter. Related to this issue, there were two factors that might influence healthy food consumption, namely digital health communication media usage (Kontos et al., 2015; Yang et al., 2017) and electronic health literacy (e-health literacy) (Mitsutake et al., 2016; Yang et al., 2017). Unfortunately, there was a lack of research that tested the effect of digital health communication media usage and e-health literacy on HFCB.

Third, previous researches on HFCB have indicated that there were several other factors that might influence it. The factors were social influences (Pedersen et al., 2015; Staunton et al., 2014; Lally et al., 2011), attitude toward HFCB

Table 1. The operational definition of this research variables

	Variable	Operational Definition
1	HFCB	The frequency of healthy foods - which are fruit fruits, vegetables, animal proteins and plant proteins consumption (Trapp et al., 2015; Sumaedi & Sumardjo, 2020)
2	Attitude toward HFCB	Someone's favourable or unfavourable evaluation of healthy food consumption (Ajzen, 1991; Sumaedi & Sumardjo, 2020).
3	e-Health literacy	How capable someone is to find, evaluate and use internet-based health information (Norman & Skinner, 2006; Alhuwail & Abdulsalam, 2019)
4	DHCM usage	How often someone used digital health communication media to find healthy food information (Sumaedi & Sumardjo, 2020)
5	Healthy food extension education intensity	How often people access health-related information provided through extension education meetings (Sumaedi & Sumardjo, 2020)
6	Healthy food affordability	Someone's evaluation of the comparison between the cost they must pay for healthy food and their financial ability (Williams et al., 2010; 2014)
7	Injunctive norm	The recommendation of the important people around someone for routinely consuming healthy foods (Pedersen et al., 2015)
8	Descriptive norm	The behaviour of the important people around someone on routinely consuming healthy foods (Pedersen et al., 2015, Sumaedi & Sumardjo, 2020)
9	Perceived benefit of HFCB related to Covid-19	Someone's perception of how beneficial the HFCB in reducing the threat of Covid-19 (Petrovici & Ritson, 2006; Acheampong & Halde-man, 2013)
10	Perceived threat of Covid-19	Someone's perception of the threat of Covid-19 based on their evaluation of their susceptibility and the potential severity (Sumaedi & Sumardjo, 2020; Sumaedi et al., 2020a)

Table 2. The Measurement of this research variables

No	Variable	Measurement	Adapted From
1	HFCB	The frequency of fruit consumption The vegetables consumption frequency The frequency of animal proteins – e.g., fish, beef, and poultry products - consumption The frequency of plant proteins – e.g., tempe, oncom, nuts, fresh petai - consumption	Sumaedi & Sumardjo (2020); Trapp et al.(2015)
2	Attitude toward HFCB	The liking of routinely fruit consumption The liking of routinely vegetables consumption The liking of routinely animal proteins consumption The liking of routinely plant proteins consumption	Ajzen (1991); Saak-sjarviet al. (2009); Sumaedi & Sumardjo (2020)
3	e-Health literacy	Able to identify internet-based health resources that are useful Able to search internet-based health information Able to solve problem by using health information Able to evaluate internet-based health information Able to differentiate high quality information from low quality information Able to use health information to support health problem decision making	Norman & Skinner (2006); Alhuwail & Abdulsalam (2019).
4	DHCM usage	The healthy food information searching frequency through the website platform-based DHCM The healthy food information searching frequency through the smartphone application platform-based DHCM The healthy food information searching frequency through the social media platform-based DHCM	Son et al.(2019); Rahardjo et al. (2016); Sumaedi & Sumardjo (2020)
5	Healthy food extension education intensity	The healthy food extension education meetings with government extension agents / officers attending frequency The healthy food extension education meetings with community cadres attending frequency	Sumaedi & Sumardjo (2020)
6	Healthy food affordability	The price affordability of fruit in the home environment The price affordability of vegetables in the home environment The price affordability of animal proteins in the home environment The price affordability of plant proteins in the home environment	Williams et al.(2010); (2014)

Table 3. The results of validity and reliability testing

No	Variable	Kaiser-Meyer-Olkin	Bartlett's Test of sphericity (sig.)	Factor Loading	Cronbach Alpha Coefficient
	Cut-off Value (Sekaran & Bougie, 2010; Hair <i>et al.</i> , 2010; Malhotra & Birks, 2007)	≥ 0.5	≤ 0.05	≥ 0.5	≥ 0.6
1	HFCB	.794	.000	.789 - .890	.857
2	Attitude toward HFCB	.795	.000	.823 - .846	.855
3	e-Health literacy	.904	.000	.822 - .904	.933
4	DHCM usage	.735	.000	.891 - .933	.897
5	Healthy food extension education intensity	.500	.000	.990 - .990	.980
6	Healthy food affordability	.777	.000	.691 - .881	.793
7	Injunctive norm	.796	.000	.853 - .906	.899
8	Descriptive norm	.678	.000	.625 - .813	.732
9	Perceived benefit of HFCB related to Covid-19	.782	.000	.806 - .902	.886
10	Perceived threat of Covid-19	.808	.000	.779 - .849	.896

(Hearty *et al.*, 2007; Cooke & Papadaki, 2014; Chang, 2017), healthy food extension education intensity (Sahyoun *et al.*, 2004; McClelland *et al.*, 2013; Savoie *et al.* 2015; Pettigrew *et al.*, 2016), and healthy food affordability (Dibsdall *et al.*, 2003; Turrell & Kavanagh, 2006; Bihan *et al.*, 2010; Williams *et al.*, 2010; 2014). Social influences consisted of injunctive norm and descriptive norm (Pedersen *et al.*, 2015; Staunton *et al.*, 2014; Lally *et al.*, 2011). Nevertheless, there was a lack of research that tested their effect on HFCB simultaneously.

To fill the gaps in the existing literature, this study investigated the determinants of HFCB during Covid-19 pandemic. More specifically, this study aimed to test the impact of e-health literacy, the perceived threat of Covid-19, digital health communication media usage, perceived benefit of HFCB related to Covid-19, healthy food extension education intensity, healthy food affordability, injunctive norm, descriptive norm, and attitude toward HFCB on HFCB simultaneously.

This research was performed in Tangerang City. This research selected Tangerang City as the location of the research due to three reasons. First, in Indonesia, the city was one of the cities with a serious Covid-19 infection rate. Second, Tangerang City also faced the problem of NCDs and bad HFCB (Indonesian Ministry of Health, 2018). Third, Tangerang City has a high internet access rate so it is suitable for investigating HFCB

and digital health communication media usage (Indonesian Center Bureau of Statistic, 2019).

The study focused on 15-years-old and older Tangerang City residents who are digital health communication media (DHCM) user. This was based on two reasons. First, the productive age in Indonesia starts from 15 years old. Thus, a person who is 15 years old or older has the capability to answer the questionnaire independently. Second, the selection of someone who has used digital health communication media as a population was to ensure that the person answered the questionnaire based on their experience regarding the digital health communication media usage.

MATERIALS AND METHODS

Healthy Food Context

Healthy food was defined as food that is safe and contains physiologically useful components (Puspadewi & Briawan, 2014; Briawan, 2016). Previous studies generally proxied healthy food using foods recommended by a government's healthy diet guideline (Zarnowiecki *et al.*, 2011; Trapp *et al.*, 2015). Fruits and vegetables were the most frequently-used foods to represent healthy foods (Mckinley, 2009; Trapp *et al.*, 2015). In the context of Indonesia, the government published a healthy diet guideline, namely General Guidelines for Balanced Nutrition or known as *Pedoman Umum Gizi Seimbang* (PUGS) – The General Guidelines on Balanced Nutrition – (Indonesian

Table 4. The sample (respondent) demographic profile

No	Demographic Variables	%
1	Age	≥ 50 years old
		16.9
		45-49 years old
		9.2
		40-44 years old
		10.8
		35-39 years old
		13.7
2	Sex	30-34 years old
		14.9
		25-29 years old
		12.9
		20-24 years old
		10.8
		15-19 years old
		10.8
3	Education Background	Male
		47.4
		Female
		52.6
4	Marital Status	Diploma & Bachelor
		6
		Senior high school
		76.7
5	Occupation	Junior high school
		14.9
		Elementary school
		2.4
6	Other	Married
		70.3
		Divorce
		2.0
		Single
		27.7
		Civil servant/police/military personnel
		2.0
7	Private company employees	25.3
		Entrepreneur
		21.3
		Student
		9.2
		Freelance / honorary labor
		8.8
		Household wife
8	Unemployed	27.3
		5.2
9	Other	0.8

Ministry of Health, 2014). Based on PUGS, this study used four food types, which were fruits, vegetables, animal proteins – e.g., fish, beef, and poultry products - and plant proteins – e.g., tempe, oncom, nuts, fresh petai -, for measuring healthy food.

Variables and Measures

Ten variables were used in this research, namely DHCM usage, healthy food extension education intensity, perceived threat of Covid-19, healthy food affordability, attitude toward HFCB, perceived benefit of HFCB related to Covid-19, injunctive norm, descriptive norm, e-health literacy, and HFCB. To ensure the content validity, the indicators (measurements) that are used to measure the variables were adopted from the previous studies and relevant literatures (Sekaran & Bougie, 2010). The operational definition and the measurements of the variables are shown in Table 1 and Table 2. To avoid the respondent's respon-

se bias due to the mid-point (Shmueli, 2021; Lee et al., 2002), a four-point Likert scale was used.

Construct Validity and Reliability

A factor analysis was conducted to examine the construct validity of the instrument. This research used three criteria to evaluate the construct validity, namely the p-value of Bartlett's test of sphericity, the value of Kaiser-Meyer-Olkin (KMO), and factor loading value. This study used Cronbach's alpha coefficient to evaluate the construct reliability of the instrument. The cut off value and the results of validity and reliability testing are shown in Table 3. Table 3 shows that the instrument fulfilled the construct validity and reliability testing criteria. In other words, the instrument used was valid and reliable.

Sample and Data Collection

The data were gathered through a survey. The survey used a questionnaire. The study col-

Table 5. The statistic descriptive of data transformation results

Variable	Mean	Standard Deviation
HFCB	76.071	17.081
Attitude toward HFCB	78.146	14.612
e-Health literacy	65.774	16.799
DHCM usage	47.434	25.134
Healthy food extension education intensity	23.025	33.144
Healthy food affordability	97.523	8.598
Injunctive norm	76.473	15.375
Descriptive norm	96.888	8.953
Perceived benefit of HFCB related to Covid-19	75.402	16.510
Perceived threat of Covid-19	51.316	24.121

lected data from November 18th to December 6th, 2020 in Tangerang City, Indonesia.

The population of this research was Tangerang City residents who are 15-years-old and older and digital health communication media user. Since the population characteristic was unknown, this research performed a sampling process as follows. First, this study selected one district that fulfilled three criteria: (1) the district has more than one public health centre, (2) the district has government-designed healthy behaviour development programs with good performance, and (3) the district has high population density in Tangerang City. Second, in the selected district, this study chose two sub-districts to obtain samples based on two criteria: (1) the existence of public health center and (2) the performance of their clean and healthy behaviour development program. Two sub-districts chosen were the ones with the lowest and highest performance. Third, the sample was taken purposively in the selected sub-districts. This study selected samples that fulfilled the population criteria, namely people aged 15 years old and over and has used digital health communication media. According to Calder et al. (1981 cited in Park & Sullivan, 2009), a study aimed to examine a conceptual model could use a purposive sampling technique. This study aims to examine a HFCB model. Thus, due to the unknown characteristic population and Calder et al. (1981)'s view, the purposive sampling technique was considered acceptable for this research.

The survey was performed in the selected sub-districts. The respondents were recruited in their houses. They then received the questionnaire of the survey and filled it. Their engagement was voluntary. To ensure that the respondent is digital health communication media user, the questionnaire provided the definition and examples of health communication media. Furthermore,

the questionnaire included questions regarding the demographic profile and statement indicators of the variables.

The sample size of the research was 249. It fulfilled the minimum size required by the analysis method of the research— multiple regression analysis-. Hair et al. (2006) argued that the minimum sample size needed for performing multiple regression analysis was five times the number of indicators. This study involved 41 indicators, which means this research needed at least 205 respondents. Most was female (52.6%), married (70.3 %), aged 50 years old and above (16.9 %) and had an education background of senior high school (76.7 %). The demographic profile of the sample can be seen in Table 4.

Data Analysis

This research went through two data analysis stages. First, the data were transformed using the technique previously conducted by Aminah et al. (2015), namely Indicator Transformation Index. The second stage is a multiple regression analysis. The method was chosen because many previous studies on similar topic used multiple regression analysis (Afina & Retnaningsih, 2018; Goetzke et al., 2014; Patch et al., 2005; Siegrist et al., 2015; O'Connor & White, 2010) and the model of this research involved ten independent variables with one dependent variable (Hair et al., 2010), which was suitable for multiple regression analysis. There are two steps in this stage. First, the evaluation of the goodness-of-fit of the regression model was performed using the F test. The goodness-of-fit of the model was confirmed if the p-value of the model was 0.05 or lower (Sekaran & Bougie, 2010; Hair et al., 2010). Second, the t-test was used to evaluate the effect of the independent variable of the model on HFCB. An independent variable has a significant effect on

Table 6. The results of multiple regression analysis

Variable	Unstandardized coefficients	Std. Error	Standardized coefficients	t	Sig
	\square		Beta		
(Constant)	1.045E-15	.041		.000	1.000
e-health literacy	.099	.055	.099	1.803	.073
DHCM usage	.227	.075	.227	3.038	.003
Healthy food Extension Education Intensity	.001	.060	.001	.024	.981
Injunctive Norm	.085	.060	.085	1.418	.158
Descriptive Norm	.122	.049	.122	2.503	.013
Affordability	.130	.045	.130	2.847	.005
Attitude toward Healthy food consumption	.414	.062	.414	6.649	.000
Perceived Threat of Covid-19	-.106	.048	-.106	-2.195	.029
Perceived Benefit of Healthy food consumption related to Covid-19	.096	.058	.096	1.638	.103

Note(s): $R^2=60\%$, $F = 39.867$, $p = 0.000$

HFCB if the p-value was 0.05 or lower (Sekaran & Bougie, 2010; Hair et al., 2010). The data analysis was conducted using SPSS.

RESULTS

Table 5 showed the statistic descriptive of the data transformation results. The transformed data scale was 0-100. Two variables, which are healthy food affordability and descriptive norm, have high score. In other hand, two variables, namely DHCM usage and healthy food extension education intensity, have low score. As previously mentioned, after the data transformed, the multiple regression analysis was performed by using the transformed data.

Table 6 showed the results of multiple regression analysis. From Table 6, it can be seen that the regression model has a good fit since the p-value of the model is 0.000. Thus, the proposed independent variables simultaneously influenced HFCB. Based on the regression coefficients, t-values and p-values of the independent variables, HFCB was significantly and positively influenced by DHCM usage, healthy food affordability, descriptive norm, and attitude toward HFCB. HFCB was affected by perceived threat of Covid-19 significantly and negatively. However, perceived benefits of healthy food consumption, e-health literacy, healthy food extension education intensity, and injunctive norm did not pose an impact on HFCB.

DISCUSSION

Theoretical Implications

The first finding showed that perceived threat of Covid-19 negatively and significantly affected HFCB. This finding was different from HBM's proposition that perceived threat of disease influence health behaviour positively (Rosenstock, 1974). The negative and significant impact of perceived threat of Covid-19 on HFCB might relate to the availability of other alternatives and the difficulty of consuming healthy food. During the Covid-19 pandemic, even when someone felt that it was as a serious threat, he or she might find healthy foods impractical to obtain. Buying healthy foods, such as fresh vegetables and fruits required someone to go out. On the other hand, people tend to stay at home and strictly limit their outdoor activities (Sumaedi et al., 2020a). In Indonesia, there was limited options to buy certain healthy food, such as fresh vegetables and fruits, through online platforms. Thus, someone might replace the consumption of healthy foods with other easier and more practical alternatives, such as supplement or multivitamins. This condition created negative relationship between perceived threat of Covid-19 and HFCB.

The second finding revealed that the perceived benefit of healthy consumption did not affect HFCB significantly. The finding was different from HBM that suggested the significant impact of perceived benefit on health behaviour (Rosenstock, 1974). The finding was also different from the findings of previous studies, such as Petrovici

& Ritson (2006) and Acheampong & Haldeman (2013). This finding might relate to the benefit of HFCB that could not be quickly felt. Someone needed to perform the behaviour consistently in the long-term to feel a significant health benefit. On the other hand, Covid-19 is an imminent threat that needs to be dealt quickly. Someone might prefer other alternatives, such as supplements and medicines believed to be able to provide a swift outcome. Thus, even though someone thought favourably of healthy food consumption when it came to facing the Covid-19, they still might not perform the behaviour.

The third finding showed that e-health literacy did not affect HFCB significantly. This finding did not corroborate previous studies, such as the ones conducted by Mitsutake et al. (2016) and Yang et al. (2017). This may be caused by several conditions. First, the Indonesian central and local government have routinely promoted their Covid-19 official website as the formal websites regarding the Covid-19, which included health behaviour information needed to face Covid-19. Second, the Indonesian government routinely and consistently published false and or misinformation regarding Covid-19 and other health-related information. Third, there were many credible and easily accessed digital health communication media. These conditions might cause both high- and low-level electronic health literacy have high exposure to high quality information regarding the Covid-19 and healthy food consumption. The overall high exposure to high quality information regarding the Covid-19 and healthy food consumption might lead to invariability and insignificant impact on HFCB.

The fourth finding revealed that digital health communication media usage influenced HFCB positively and significantly. The finding meant that increased usage of DHCM would lead to increased consumption of healthy foods during this pandemic. This finding supported the IMeHU (Mitsutake et al., 2016; Yang et al., 2017) and in line with the finding of previous studies (Kontos et al., 2014; Hall et al., 2015; Tennant et al., 2015; Alhuwail & Abdulsalam, 2019).

The fifth finding showed that attitude toward HFCB influenced HFCB positively and significantly. The finding meant that a more favourable evaluation towards the consumption of healthy food would result in the actual increase of consumption. The finding also supported Hearty et al. (2007), Cooke & Papadaki (2014), and Chang (2017).

The sixth finding of this study showed that healthy food extension education intensity did

not significantly influence HFCB. This finding was different from the finding of the previous studies (Sahyoun et al., 2004; McClelland et al., 2013; Savoie et al. 2015; Pettigrew et al., 2016).

The non-significant impact of healthy food extension education intensity on HFCB might be because healthy food extension education was not the main source of health information for Indonesians during the Covid-19 pandemic. This was due to two reasons. First, In Indonesia, the extension education was generally performed through face-to-face meetings. On the other hand, during the pandemic, the government limited this type of activity. Second, the central and local governments published the official information related to Covid-19, which included healthy behaviour, in their official Covid-19 websites (Sumaedi et al., 2020b). Furthermore, they also routinely promoted the use of the website for official information regarding Covid-19 (Sumaedi et al., 2020b).

The seventh finding of this research revealed that healthy food affordability influenced HFCB positively and significantly. This finding indicated that if healthy foods were deemed as affordable, people would be more likely to consume them. The finding supported the TPB (Ajzen, 1991). The finding also corroborated the findings of other studies (Dibsdall et al., 2003; Turrell & Kavanagh, 2006; Bihan et al., 2010; Williams et al., 2010; 2014).

The eighth finding of this study showed that injunctive norm did not significantly influence HFCB. This finding was a deviation from the SCT (Bandura, 1998; 2004). This finding was also different from the finding of Pedersen et al. (2015). This finding could be explained as follows in which the injunctive norm was a recommendation to consume healthy food (Pedersen et al., 2015). The recommendation came from someone's social circles (Pedersen et al., 2015). The non-significant effect might relate to the perceived information quality of the recommendation. It was well known that perceived information quality has an important role in determining whether someone was going to perform (or not to perform) the action after receiving the information (Filieri & McLeay, 2013). On the other hand, in Indonesia, there was a plethora of misinformation regarding health topics, including the ones related to the Covid-19 pandemic. According to the Indonesian Ministry of Communication and Information, as of August 2020, there were 1,028 false or misinformation on the Covid-19 pandemic (Indonesian ministry of communication and information, 2020). The falsehood or misinformation might come from someone's social circles.

This condition might create a negative perception towards the information quality of the recommendation to consume healthy foods that came from social circles. Consequently, the impact of the injunctive norm on HFCB was insignificant.

The ninth finding of this research revealed that descriptive norm positively and significantly influenced HFCB. It implied that when someone felt that people around him or her liked to consume healthy foods, he or she would tend to skew to similar behaviour. This finding supported the SCT (Bandura, 1998; 2004) and previous findings of Lally et al. (2011), Staunton et al. (2014), and Pedersen et al. (2015).

Managerial Implications

Based on the findings, this research also provided several managerial implications that should be executed to improve HFCB during the Covid-19 pandemic. This research found that (1) attitude positively and significantly influenced health food consumption behaviour, (2) perceived threat of Covid-19 negatively and significantly affected HFCB, and (3) perceived benefit of HFCB related to Covid-19 did not have an impact on HFCB significantly. Based on these findings, to improve HFCB during the Covid-19 pandemic, several actions should be performed. First, it was well known that the performance of a government program in improving public health should be monitored. A good performance monitoring system should consist of lagging and leading indicators (Neely et al., 2000). Related to this issue, in the context of HFCB, attitude toward HFCB could be used as the leading indicators of the performance of the government program in improving HFCB. In other words, attitude toward HFCB must be measured and monitored. Second, public health education strategies should be focused on improving positive attitude on HFCB. Third, in promoting the benefits of HFCB during covid-19 pandemic, explaining the short-term and long-term benefit of HFCB is important. This was because people might think that consuming healthy foods would only benefit them in the long run and they would choose alternatives with faster effects, such as supplements and medicines during the Covid-19 pandemic. Fourth, to avoid the negative impact of perceived threat of Covid-19 on HFCB, it was essential to emphasize the importance of consuming healthy foods regardless the existence of supplements and medicines. It is also important to educate the community about balanced-diet and portion sizes that should (or should not) be complemented with supplements.

Related to social influences, this research found that social influences have an important role on HFCB. However, specifically, this research showed that the social influences that have significant impact on HFCB was the descriptive norm. On the other hand, the injunctive norm did not affect HFCB. Based on these findings, during the Covid-19 pandemic, public health education program has to involve the key social figures and/or opinion leaders in order to improve HFCB. However, the involvement of the key social figures and/or opinion leaders should not only by asking them to spread the messages of the importance of healthy food consumption, but also by showing to the community that they consistently consumed healthy food.

Related to public health education approach, this research found that HFCB was affected by DHCM usage significantly while healthy food extension education intensity did not significantly affect HFCB. Hence, to improve healthy food consumption, DHCM should be prioritized to perform public health education. The government could perform DHCM-based public health education using two approaches. First, the government should create partnerships with the existing DHCM. The existing DHCM must be directed to provide an education service that focuses on improving HFCB during the pandemic. Second, the government could build a digital health communication media and perform healthy food extension education through it.

This research found positive and significant effect of healthy food affordability on HFCB. Thus, to improve HFCB during the pandemic, the government should ensure that the healthy foods are affordable. To obtain healthy food, people must bear the cost. It consists of the goods' price and other costs needed to obtain the food, such as travel cost (Williams et al., 2014). Consequently, the government should ensure that the total cost for obtaining healthy foods is affordable.

CONCLUSION

HFCB has already attracted researchers' attention. HFCB was needed to deal with the Covid-19 pandemic. This research investigated the effect of DHCM usage, e-health literacy, perceived benefit of HFCB related to Covid-19, perceived threat of Covid-19, healthy food extension education intensity, healthy food affordability, injunctive norm, descriptive norm, and attitude toward HFCB on HFCB simultaneously.

The result of this research showed that HFCB was influenced by DHCM usage, healthy food affordability, descriptive norm, and attitude

toward HFCB positively and significantly. This research also revealed that HFCB was significantly and negatively affected by perceived threat of Covid-19. However, e-health literacy, perceived benefits of healthy food consumption, healthy food extension education intensity, and injunctive norm that did not pose an impact on HFCB.

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