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COVID-19 VACCINATION DECISION MAKING IN BREASTFEEDING MOTHERS IN THE TANGERANG AREA BANTEN PROVINCE IN 2021

Pengambilan Keputusan Vaksinasi Covid-19 Pada Ibu Menyusui Di Wilayah Tangerang Provinsi Banten Tahun 2021

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Abstrak

Latar belakang: Ibu hamil yang ragu-ragu untuk mendapatkan vaksin Covid-19 mengungkapkan kekhawatiran tentang keamanan dan kemanjuran vaksin. Hal ini tidak menutup kemungkinan ibu yang sedang dalam masa menyusui eksklusif ragu untuk divaksinasi Covid-19 dengan alasan meragukan tingkat keamanannya. Terdapat beberapa faktor yang mempengaruhi pengambilan keputusan vaksinasi seperti faktor sosiodemografi, status kesehatan, dan persepsi terhadap vaksinasi yang diukur dengan Health Belief Model (HBM).
Tujuan: Penelitian ini bertujuan untuk mengetahui hubungan karakteristik sosiodemografi, status kesehatan, persepsi Health Belief Model (HBM) terhadap keputusan vaksinasi ibu menyusui di wilayah Tangerang.
Metode: Design penelitian yaitu cross sectional dan jumlah sampel yang digunakan sebanyak 123 responden di wilayah Tangerang.
Hasil: Faktor sosiodemografi dan status kesehatan tidak berhubungan dengan pengambilan keputusan vaksinasi Covid-19, kecuali tingkat pendidikan ibu menyusui. Berdasarkan analisis persepsi HBM terhadap persepsi keparahan, persepsi manfaat, persepsi hambatan, isyarat tindakan dan motivasi kesehatan memiliki hubungan dengan pengambilan keputusan tentang vaksinasi Covid-19 pada ibu menyusui.
Kesimpulan: Pada penilaian persepsi HBM terdapat hubungan persepsi keparahan, persepsi manfaat, isyarat bertindak, dan motivasi kesehatan dengan pengambilan keputusan vaksinasi Covid-19. Begitu juga dengan persepsi negatif yang tidak ada hubungannya dengan pengambilan keputusan vaksin, yang merupakan prediktor kuat untuk mendapatkan vaksin Covid-19.

Keywords: *Covid-19*, pengambilan keputusan, *health belief model*, vaksinasi

Abstract

***Background**: Pregnant women who were hesitant to obtain a Covid-19 vaccine expressed worries about vaccine safety and efficacy. This does not rule out the possibility that mothers who are in the period of exclusive breastfeeding have doubts about being vaccinated of Covid-19 on the grounds that they doubt the level of safety. There are several factors that influence vaccination decision making, such as sociodemographic factors, health status, and perceptions of vaccination as measured using the Health Belief Model (HBM).*
***Objective**: This study aims to determine the association between sociodemographic, health status, and perceptions of Health Belief Model (HBM) on vaccination decisions for breastfeeding mothers in the Tangerang area.*
***Methods**: An analytical design with a cross sectional approach and a total sample of 123 respondents were used in this study in the Tangerang area.*
***Results**: Except for the level of education of breastfeeding mothers, sociodemographic and health status factors are not associated with the decision making of Covid-19 vaccination. Based on the analysis of HBM perceptions on the perceived severity, perceived benefits, perceived barriers, cues to action and health motivation have a relationship with decision-making about Covid-19 vaccination in breastfeeding mothers.*
***Conclusions**: In the HBM perception assessment there is a relationship between perceived severity, perceived benefits, cues to act, and health motivation with Covid-19 vaccination decision making. Likewise with negative perceptions have nothing to do with vaccine decision making, which is a strong predictor of getting the Covid-19 vaccine.*

Keywords: *Covid-19, decision making, health belief model, vaccination*

INTRODUCTION

On December 31, 2019, WHO China Country Office identified a case of pneumonia with unknown cause in Wuhan, Hubei Province, China. On January 7, 2020, China discovered the case as a new type of coronavirus. On January 30, 2020, WHO designated this incident as a public health emergency that concerned the world or a public health emergency of international concern (PHEIC)[1]. In Indonesia, the first positive case of Covid-19 was confirmed on March 2, 2020. The number of positive cases is increasing day by day. Based on covid-19.go.id data on November 21, 2021 the number of positive cases in women was 49% of cases, 50% recovered, and 44.5% of cases died from Covid-19[2]. During the Covid-19 pandemic, new concerns emerged for breastfeeding mothers, such as whether breast milk could transmit Covid-19 to the baby, whether skin-to-skin contact was still carried out during breastfeeding, if it was positive whether the mother could still breastfeed her baby[3].
The Indonesian government officially started the Covid-19 vaccination program on January 13, 2021[4]. The success of the vaccination program will depend heavily on the participation and support of the entire community. This is because vaccines require a certain amount of coverage before they can produce a protective effect through herd immunity[5].

The Ministry of Health has stated that the Covid-19 vaccination is safe for breastfeeding mothers in accordance with the Republic of Indonesia Ministry of Health circular letter regarding the implementation of the Covid-19 vaccination No. HK.02.02/I/368/2021[6]. Based on a decree issued by the Ministry of Health in August 2021, the types of Covid-19 vaccines that may be used for breastfeeding mothers in Indonesia are the MRNA Pfzier Platform vaccine, Moderna vaccine, and the Sinovac Inactivated Platform vaccine[7, 8]. After administering the vaccine, mothers are still safe to breastfeed because breastfeeding and skin to skin contact can significantly reduce the risk of infant death and have greater benefits than the potential risk of transmission of Covid-19[7].

There are several factors that influence vaccination decision making, such as confidence to be vaccinated, fear of vaccination, and sociodemographic factors seen from age and level of education[9]. The Indonesian government has predicted that some people will reject the Covid-19 vaccination program.

The results of an online survey in September 2020 of more than 115,000 respondents in 34 provinces in Indonesia, showed that the majority of respondents (65%) received the vaccine, 27% were unsure and 8% refused. From the survey results it is also known that the reason people refuse vaccines is that as many as 30% still doubt its safety and do not believe that vaccination will be effective (22%). While a small number of others said they did not believe in vaccines (13%), were afraid of side effects (12%), religious reasons (8%), and other reasons (5%)[10]. Previous study showed that pregnant women who were hesitant to obtain a Covid-19 vaccine expressed worries about vaccine safety and efficacy[11]. This does not rule out the possibility that mothers who are in the period of exclusive breastfeeding have doubts about being vaccinated on the grounds that they doubt the level of safety.

For this reason, it is necessary to have an understanding of what factors hinder mothers from carrying out the Covid-19 vaccination. Sociodemographic, health status of breastfeeding mothers and mothers' perceptions of vaccination as measured using the Health Belief Model (HBM) are interesting aspects in decision making and implementation of Covid-19 vaccinations.

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This study aims to determine the relationship between perceptions of HBM and other factors, namely sociodemographic characteristics (age, educational level, marital status, economic level, and number of biological children) and health status (temperature, blood pressure, and positive history of Covid-19) by taking Covid-19 vaccination decisions for breastfeeding mothers in the Tangerang area (Tangerang District, Tangerang Municipality and South Tangerang Municipality).

METHODS

Study Design

Cross-sectional study was conducted between December 2021 and January 2022. The subjects comprised of all exclusively breastfeeding mothers who live in Tangerang District, Tangerang Municipality, and South Tangerang Municipality, Banten Province, Indonesia.

Non-probability sampling with quota sampling technique was used in this study. Inclusion criteria in this study were mother: 1) breastfeeding exclusively, 2) living in the Tangerang area, Banten Province, 3) having a mobile phone and social media (WhatsApp), 4) filling out an online questionnaire, 5) not having a chronic disease, 6) willing to be a respondent and fill in informed consent. The exclusion criteria were mothers who breastfeed exclusively but did not fill out the questionnaire completely.

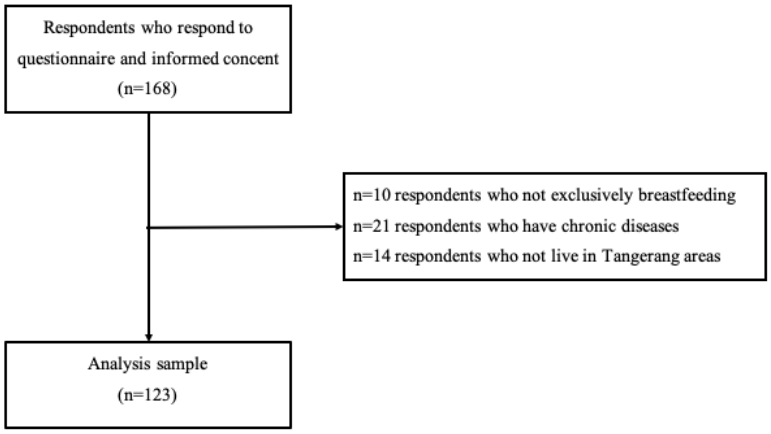

Figure 1. Flow chart of study participants

Among the 168 respondents who completed the questionnaire and signed informed consent, we excluded 10 respondents who were not exclusively breastfeeding, 21 respondents who had chronic diseases, and 14 respondents who did not live in Tangerang areas (Figure 1). Finally leaving 123 respondents who were analyzed for the aim of this study.

Data Collection

Data collection was carried out offline (face to face interview) and online by using a questionnaire in a google form which accessed through links that we shared via social media networks (WhatsApp). The questionnaire consisted of socio-demographic, health status, and 6 statements of HBM. The Cronbach Alpha of this questionnaire was 0.77.

Variables

The dependent variable in this study was the decision making of the Covid-19 vaccination which was measured by using the question "Have breastfeeding mothers received the Covid-19 vaccine?" to which the answer was categorized as yes or no.

The independent variables are socio-

demographics (i.e.: age, education level, marital status, economic level, and number of biological children), health status of the respondent based on the results of the respondent's own report (i.e.: temperature, blood pressure, and a positive history of Covid-19) and HBM. HBM was measured by 6 statements namely perceived susceptibility, perceived severity, perceived benefits, perceived barrier, cues to act, and health motivation).

Data Analysis

The data were analyzed using descriptive statistical methods to describe the distribution of data and presented by mean for continuous variables and percentage for categoric variables. The association between dependent and independent variables were performed by bivariate analyses, using Mann Whitney test and Chi-squared tests for continuous variables and categorical variables, respectively. IBM SPSS version 19 (IBM Corp., Armonk, NY, USA) was used for analyses. The statistical tests were two-sided. P-value < 0.05 were considered to be statistically significant.

The ethical approval of this study was approved by the Ethical Commission of the Sekolah Tinggi Ilmu Kesehatan Banten (STIKes Banten) number 023/KE/STIKBA/XI/2021.

RESULTS

Table 1. Characteristics, Health Status and Vaccine Decision Making for Breastfeeding Mothers in the Tangerang Areas (n=123)

Variables	n	%
Sociodemography		
Domicile		
Tangerang District	68	55.3
Tangerine Municipality	6	4.9
South Tangerang Municipality	49	39.8
Age		
High risk age	20	16.3
Low risk age	103	83.7
Education		
Low education	39	31.7
Higher education	84	68.3
Marital status		
Marry	120	97.6
Live/dead divorce	3	2.4
Economic status		
Low economy (< 3,500,000)	72	58.5
High economy (≥ 3,500,000)	51	41.5
Number of biological children		
Number of children (1-2)	91	74.0
Number of children (> 3)	32	26.0
Health Status		
Poor	19	15.4
Good	104	84.6
Covid-19 Vaccination Decision		
No	12	9.8
Yes	111	90.2

Table 1 shows that most of the respondents (55.3%) came from Tangerang District. The majority of respondents are willing to vaccinate (90.2%). The remaining 9.8% of breastfeeding mothers are not willing to vaccinate against Covid-19, and 83.7% of mothers are aged 20-35 years or are of productive age. The results of this study also show that 68.3% of mothers have higher education (more than high school). In terms of marital status, the majority (97.6%) of mothers were married or living with their partners,

50.5% had low economic status (< 3,500,000), 84.7% had 1-2 biological children and the majority (84.6%) had good health status.

Table 2. Health Belief Model (HBM) for Breastfeeding Mothers in the Tangerang Area in 2021

Variabel	Mean	Standard Deviation (SD)	Lowest Value	Highest Value
Perceived susceptibility	5.87	1.33	2	8
Perceived severity	5.86	1.13	2	8
Perceived benefits	6.24	0.98	3	8
Perceived barrier	2.41	0.80	1	4
Cues to action	12.96	3.68	5	20
Health motivation	9.31	1.48	7	12

Table 2 shows the results of the analysis of the mother's perception of the score regarding the implementation of the vaccine using HBM. The cues to action component are a strong predictor of the mother's willingness to vaccinate. In accordance with the results of the analysis of cues to action statements, the highest average value is 12.96 (SD = 3.68).

Table 3. Relationship between Sociodemographic Factors and Health Status with Decision Making for Covid-19 Vaccination for Breastfeeding Mothers in 2021 (n=123)

Variable	Decision to vaccinate				Total	*p*-value
	No		Yes			
	n	%	n	%	n	
Sociodemographic Characteristics						
Age						
> 35 years or < 20 years	3	15.8	17	85.0	20	0.41
20-35 Years	9	8.7	94	91.3	103	
Education						
Low Education (No school, elementary, Junior high school)	7	17.9	32	82.1	39	0.05
High Education (Senior High School, Higher Education)	5	6.0	79	94.0	85	
Marital Status						
Married	12	10.0	108	90.0	120	1.00
Divorced Living/Dead	0	0	3	100	3	
Economic Status						
Low Economic Status (< 3,500,000)	9	12.5	63	87.5	72	0.35
High Economic Status (≥ 3,500,000)	3	5.9	48	94.1	51	
Number of Biological Children						
Number of Children (1-2)	9	9.9	82	90.1	91	1.00
Number of Children (>2)	3	9.4	29	90.6	32	
Health Status						
Poor	3	15.8	16	84.2	19	
Good	9	8.7	95	91.3	104	0.39

Table 3 shows that there is a relationship between mother's education and decision making on vaccination (decision to vaccinate) Covid-19 (p-value = 0.05). The mother's age variable shows that there is no association between the mother's age and the decision to vaccinate (decision to do the vaccine) for Covid-19 (p-value = 0.41). Then the marital status showed no association with vaccination decision making (p-value = 1.00). Economic status also shows no association with the decision making of Covid-19 vaccination (p-value = 0.35). Likewise with the variable number of biological children showing no significant association with the decision making of Covid-19 vaccination (p-value = 1.00). The health status variable showed no association with the decision making of Covid-

19 vaccination (p-value = 0.39).

Table 4. Relationship between Health Belief Model (HBM) and Decision Making for Covid-19 Vaccination for Breastfeeding Mothers in the Tangerang Region in 2021

Variable	Decision Making Mean		*p-Value*
	No	Yes	
Perceived susceptibility	6.00	6.00	0.09
Perceived severity	5.00	6.00	0.01
Perceived benefits	6.00	6.00	0.02
Perceived barriers	3.00	2.00	0.11
Cues to action	9.00	13.00	0.00
Health motivation	7.50	9.00	0.04

Table 4 shows that there is a relationship between perceived severity (p-value = 0.01), perceived benefits (p-value = 0.02), cues to action (p-value = 0.00), and health motivation (p-value = 0.04) with the Covid-19 vaccination decision in breastfeeding mothers. Perceived barrier which is a negative form of the HBM statement, namely "to get a Covid-19 vaccination requires time and effort", showing no relationship with the decision making of Covid-19 vaccination p-value = 0.11.

DISCUSSION

This study found that 9.8% of breastfeeding mothers are not willing to vaccinate against Covid-19. This is related to the previous study that one of the reasons for vaccine refusal was the vaccine would harm the baby[12]. The characteristics of the respondents in this study were independent variables consisting of age, educational status, marital status, economic status, and number of biological children as well as health status as well as an assessment of the mother's perception of the implementation of the Covid-19 vaccination using the Health Belief Model (HBM) with the statement components: perceived vulnerabilities, perceived severity, perceived benefits, perceived barriers, cues to act, and health motivation. Regarding breastfeeding mothers aged 20-35 years or at a productive age, mothers are more active on social media.

Previous study on Covid-19 vaccination decision making stated that the level of education affects a person to have the ability to synthesize all information received from various sources. Someone who has a low level of education will not be good at synthesizing the information obtained, thus resulting in low knowledge that leads to perceptions about the Covid-19 vaccine[3]. Another study has shown that higher educational level compared to a medium level was associated with higher intention to get vaccinated[13]. Our sociodemographic and decision to vaccinate showed that respondents who decided not to vaccinate were more likely to have a lower education level. In line with previous study shows that the lowest acceptance of the Covid-19 vaccination is for respondents who did not finish elementary school or did not go to school[14].

This study also revealed that economic status shows no association with the decision making of the Covid-19 vaccination. Previous studies which stated that participants with lower household income had significantly lower intention to vaccinate than those higher household income[15, 16]. This is might be because the Covid-19 vaccination in Indonesia is carried out free of charge[17].

Our study also showed that maternal age is not related to vaccination decision making, this is in line with previous study which states that age was not associated with acceptance of Covid-19 vaccine[16]. Although in this study there was no association between maternal age and vaccination decision making (the decision to vaccinate), interestingly, the majority of respondents aged 20-35 years are more willing to vaccinate against Covid-19. One possible reason for this finding maybe that the participants in the aged 20-35 years thinks that the vaccination is being done as protection for their children.

This study also found that marital status has no association with vaccine decision making. By contrast, previous study indicate that married individuals are more realize of the vaccine than unmarried individuals[18]. Although in this study there was no association between marital status and vaccination decision making, this study showed that respondents who decided to vaccinate were more likely to live with their spouse and children. Thus, we assume that mothers who decided to vaccinate have a desire to protect their families from transmission of Covid-19.

Our study also identified that the number of children is not related to the decision-making process regarding Covid-19 vaccination. Previous study reported that there is association between the number of children and a parents' intention to get vaccinated[19]. There was no association between the number of biological children and vaccination decision making in this study, might be because the percentage of mothers who underwent Covid-19 vaccination was the same for both mothers who had 1-2 children and mothers who had >2 children.

This study also showed there is no association between health status and decision making for Covid-19 vaccination, this is in line with previous study which reported that perceived health status was not related to individual intentions to vaccinate Covid-19[14]. Judging from the large number of mothers who have received the Covid-19 vaccination, it indicates that most of the mothers' health status is good.
This study highlights that there is an association between perceived severity, perceived benefits, cues to action, and health motivation with the decision making of Covid-19 vaccination in breastfeeding mothers, previous study using perception assessment with the same 6 components used in this study, also used the same approach, namely HBM, showing that these components are indicators that influence individuals in making decisions about Covid-19 vaccination[14]. The HBM theory states that the perception of the seriousness or severity of a disease causes a person to have an attitude to make treatment efforts[20]. Previous study regarding perceptions of receiving Covid-19 vaccination through HBM, in terms of perceived severity was described into 3 categories, namely Covid-19 causing serious complications, fear of being infected and feeling great pain if infected with Covid-19, the results of this study showed that individuals who felt infected and seriously ill have 2 times greater chance of getting the vaccine. From these three things, it can be said that the perception of severity has an association with the acceptance of the Covid-19 vaccination [21].

Furthermore, this study revealed that the perceived benefits was a significant association with decision of vaccination, this is in line with another study that assessed the acceptance of vaccination with HBM, the study reported that people with a high perceived benefit will have a greater chance of being vaccinated than those who are not[21]. Other study showed that there is an association between perceived benefits and vaccine acceptance, especially the Covid-19 vaccine. Previous study has shown that people who receive vaccines also have high perceived benefit scores[22]. This is in accordance with the HBM theory which states that the higher the effectiveness of the level of trust in a strategic plan designed to reduce the threat of a disease, the individual will automatically take preventive action, in this case will carry out the Covid-19 vaccination[20]. We assume that the reason for mothers to vaccinate against Covid-19 is the possibility of reducing the transmission of Covid-19 to other people, especially the people closest to breastfeeding mothers, namely the family.

Our findings also showed that the perception of cues to act in decision making on Covid-19 vaccination in this study is in accordance with the HBM theory which states that cues to trigger actions, such as events that occur on the body or events that occur in the environment such as media publicity play a role in decision making[23]. The government issued a decree on vaccines, in the digital era like now, making it easier to spread information about the Covid-19 vaccination. This makes mothers who receive information about the Covid-19 vaccine have a greater chance of getting the vaccine compared to mothers who have not received sufficient information about the vaccine. Furthermore, mothers who receive support from family or friends and receive advice from doctors to vaccinate, as well as working mothers who

receive mandatory vaccine requirements from their place of work, are most likely to vaccinate.

In addition, present study showed that there was association between mother's perceptions regarding health motivation (i.e., eating healthy food and exercise) and decision making. This study was different from previous study which stated that there was no association between perceptions of health motivation[14]. One possible reason might be because mothers who have done the Covid-19 vaccine, feel that they have fully taken steps to prevent Covid-19, thus, mother continues to maintain a healthy diet and routine physical activity.

This study also found that perceived susceptibility shows no association with decision making for Covid-19 vaccination, in contrast to previous studies which showed that perceived vulnerability is a significant indicator for respondents to vaccinate Covid-19. Previous study reported that people those with a high perception of susceptibility have a higher chance of getting the vaccine compared to those with a low perceived susceptibility[20]. In this study, the mother's perception thinks that people who have been vaccinated will still be infected with Covid-19, this perception is obtained directly from the results of observations of the mother and from various sources of information spread on social media, this is an obstacle for mothers to vaccinate Covid-19. Another thing that made the mother hesitate to do the Covid-19 vaccination, it was found in Indonesia, there were cases that people died after doing the vaccine. Even though this case was not a direct result of the vaccine, however, it would be important concern to individuals to vaccination.

In addition, the present study showed that there were association between education level and decision vaccination. However, education can be done in various ways, one of which is by disseminating information online that is easily understood by mothers of various levels of education.

In contrast to other perceptions, on perceived barriers which are a negative form of the HBM statement namely "to get a Covid-19 vaccination requires time and effort", which shows that there is no relationship with the decision making of a Covid-19 vaccination. Thus, the perceived barriers could be a strong predictor of the mother's intention to vaccinate against Covid-19. Our results showed that the mean value of perceived barriers indicate that participants does not agree that getting the vaccine takes time and effort. Therefore, the distance and time to get the Covid-19 vaccination which is easy to reach and spread in various nearby places such as health centers, village offices or other places where Covid-19 vaccination services are provided.

CONCLUSION

The characteristics of age, marital status, economic status, and the number of biological children and health status were not related to vaccination decision making. Meanwhile, educational status relates to the decision making of the Covid-19 vaccination. In the HBM perception assessment there is a association between perceived severity, perceived benefits, cues to act, and health motivation with the decision making of the Covid-19 vaccination, this is a strong predictor in the decision making of the Covid-19 vaccine. Likewise with negative perceptions, namely perceived obstacles have nothing to do with vaccine decision making, which is a strong predictor of getting the Covid-19 vaccine.

RECOMMENDATIONS

The present study suggest that the education for breastfeeding mothers are needed regarding the implementation of the Covid-19 vaccination, especially for those at low education levels.

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