

## Utilizing the Health Belief Model Theory to Forecast Early Breastfeeding Initiation in Karanganyar Regency, Central Java

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### ABSTRACT

**Background:** Early initiation of breastfeeding has the potential to reduce the risk of neonatal death. Babies who do not start breastfeeding within the first hour after birth have a higher risk of death. This study aimed to determine the relationship between the Health Belief Model construct and early breastfeeding initiation behavior.

**Subjects and Method:** The study was conducted in February-March 2024 with a sample of 200 mothers who had children aged 0-3 months at Posyandu in the Karanganyar Regency working area. This study used an observational analytic design with a cross-sectional study approach. Sampling used was fixed disease sampling. The dependent variable was early initiation of breastfeeding and the independent variables were perceived vulnerability, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy. The data were collected using questionnaire and analyzed using multiple logistic regression analysis.

**Results:** This study provided empirical evidence that a number of constructs in the Health Belief Model can be used as predictors of early breastfeeding initiation. Mothers who have a high perceived vulnerability (OR= 4.48; CI 95%= 1.12 to 17.89; p= 0.034), high perceived severity (OR= 4.14; CI 95%= 1.16 to 14.87; p=0.029), high perceived benefit (OR= 4.37; CI 95%= 1.15 to 16.56; p=0.030), and high self-efficacy (OR= 16.76; CI 95%= 3.91 to 71.79; p <0.001) showed a positive relationship with increasing early breastfeeding initiation behavior.

**Conclusion:** There is a positive relationship between perceived vulnerability, perceived severity, perceived benefits, and self-efficacy with early breastfeeding initiation behavior.

**Keywords:** early initiation of breastfeeding, health belief model, mortality, neonatal.

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### BACKGROUND

Neonatal mortality is high in the first week of life, with a global average of 17 per 1,000 live births. Indonesia is in the 7th rank in

Asia with 12.4 deaths per 1,000 live births (UNICEF, 2019). In 2021, there were 27,566 deaths of toddlers in Indonesia, 73.1% of deaths occurred during the neo-

natal period (Ministry of Health of the Republic of Indonesia, 2022). One predictor of neonatal death is a delay in initiation of breastfeeding within one hour after birth (Orsido et al., 2019).

Globally in 2017, only 42% of babies received breast milk (ASI) within one hour after birth, with a global early breastfeeding initiation (EBI) target of 70% (WHO, 2018). Based on Basic Health Research data (2018), the national level of early breastfeeding initiation coverage is 58.2%. Early breastfeeding initiation coverage in Central Java Province in 2021 increased to 85.0%, compared to the 2020 achievement of 75.9%, with Karanganyar Regency being included in the top three with the lowest early breastfeeding initiation coverage in the province (Central Java Health Office, 2021). Early breastfeeding initiation coverage in Karanganyar Regency in 2021 decreased to 64.6%, compared to 2020 which reached 66.9%, with the number of babies receiving EBI of 7,459 out of a total of 11,540 babies born (Karanganyar Health Office, 2021).

WHO and UNICEF (2018), recommends that babies start breastfeeding within the first hour after birth and be given exclusive breast milk for the first six months of life. Timely initiation of breastfeeding has significant benefits for child survival in the first 28 days after birth, with the potential to reduce the risk of neonatal death by a maximum of 15% for the entire infant population (Phukan et al., 2018).

The Health Belief Model (HBM) is a theory that can explain an individual's reasons or motivation for carrying out or not carrying out health behavior (Fitriani et al., 2019). HBM has main constructs that can predict a person's confidence in preventing, overcoming or controlling disease, namely perceived susceptibility, perceived severity, perceived benefit, perceived barrier, cues to

action and self-efficacy (Glanz et al., 2002). The application of the Health Belief Model theory in the context of early initiation of breastfeeding can help to understand the factors that influence a mother's decision to initiate early breastfeeding.

Based on the background above, This study aimed to determine the relationship between the Health Belief Model construct and early breastfeeding initiation behavior.

## SUBJECTS AND METHOD

### 1. Study Design

This study used an observational analytical design with a cross-sectional study approach carried out at Posyandu in the Karanganyar Regency Community Health Center Work Area in February – March 2024.

### 2. Population and Sample

The population in this study were all mothers who had children aged 0-3 months in Posyandu in the Karanganyar Regency Health Center Working Area. The samples used in this study were 200 samples. The number of samples chosen was of medium size, in accordance with considerations to be more representative based on the rule of thumb.

### 3. Study Variables

The dependent variable was early initiation of breastfeeding (EBI). The independent variable were the Health Belief Model construct including perceived vulnerability, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

### 4. Operational Definition of Variables

**Early initiation of breastfeeding** is the practice of giving breast milk to babies as soon as possible within the first hour after the baby is born, where the baby is allowed to find and suck the mother's nipple independently.

**Perceived vulnerability** is how the mother views the risk of her baby being susceptible to disease or other undesirable consequences if she does not initiate early breastfeeding.

**Perceived severity** is the mother's view of the extent to which the consequences of not initiating early breastfeeding can impact the baby's health.

**Perceived benefit** is a way for mothers to see the health benefits that can be obtained for both babies and mothers if they initiate early breastfeeding.

**Perceived barrier** is obstacle or barrier that mothers may face in carrying out early breastfeeding initiation, such as how mothers view early breastfeeding initiation as a difficult or easy job.

**Cues to action** are factors that encourage mothers to initiate early breastfeeding.

**Self-efficacy** is the mother's belief or confidence in her ability to carry out early breastfeeding initiation correctly and effectively.

**5. Study Instruments**

The instrument used in this research was a questionnaire. The questionnaire was designed by researchers based on existing theory to measure variables, namely perceived vulnerability, perceived severity, perceived benefits, perceived barrier, cues to action and self-efficacy. The questionnaire has been tested for validity and reliability.

**6. Data analysis**

Univariate analysis aims to explain and describe the characteristics of each re-

search variable. Bivariate analysis in this study used the Chi-Square test and multivariate analysis used multiple logistic regression analysis.

**7. Research Ethics**

Ethical aspects in this research include informed consent, anonymity and confidentiality of data. Research ethical approval was obtained from the Health Research Ethics Committee of Dr. Moewardi Hospital, with the number of: 448/II/HREC/-2024.

**RESULTS**

**1. Sample Characteristics**

The characteristics of the respondents are explained in table 1. It showed that 155 respondents were <35 years old and 45 people aged ≥35 years old. There were 9 respondents with children aged 1 month, 54 people aged 2 months, and 137 people aged 3 months. There were 68 respondents with 1 child, 83 people with 2 children, 43 people with 3 children, 5 people with 4 children, and 1 person with 5 children. The last level of education of 1 respondent was found to have not completed elementary school, 13 people at elementary school level, 65 people at junior high school level, 89 people at high school level, 3 people at diploma level, 28 people at bachelor's level, and 1 person at master's level. There were 38 respondents who were employed and 162 people were employed and as housewife.

**Table 1. Characteristics of research subjects**

Characteristics	Category	Frequency (n)	Percentage (%)
<b>Maternal age</b>	<35 years old	155	77.50
	≥35 years old	45	22.50
<b>Childrens age</b>	1 month old	9	5.50
	2 month old	54	27.50
	3 month old	137	68.50
<b>Number of children</b>	1	68	34.0

Characteristics	Category	Frequency (n)	Percentage (%)
<b>Education</b>	2	83	41.50
	3	43	21.50
	4	5	2.50
	5	1	0.50
	Not completed Elementary School	1	0.50
	Elementary school	13	6.50
	Junior High School	65	32.50
	Senior High School	89	44.50
	Diploma	3	1.50
	Bachelor	28	14.00
<b>Occupation</b>	Magister	1	0.50
	Employed	38	19.0
	Housewives	162	81.0

**2. Univariate analysis**

Table 2 shows that the perceived vulnerability variable has the lowest value of 0 and the highest value of 6 with an average value of 3.645 (mean= 3.645; SD= 1.95). The perceived severity variable has the lowest value of 0 and the highest value of 6 with an average value of 3.52 (mean= 3.52; SD= 1.78). The perceived benefit variable has the lowest value of 0 and the highest value of 6 with an average value of 5.19 (mean= 5.19; SD= 1.19). The perceived barriers variable has the lowest value of 0 and the highest value of 6 with an average value of 1.355 (mean= 1.355; SD= 1.77). The action signal variable has the lowest value of 2 and the highest value of 6 with an average value of 5.35 (mean= 5.35, SD= 1.06). The self-efficacy variable has the lowest value of 0 and the highest value of 6 with an average value of 5.315 (mean= 5.315; SD= 1.20).

Table 3 shows that respondents with low perceived vulnerability were 82 people

(41.00%) and respondents with high perceived vulnerability were 118 people (59.00%). Respondents with a low perceived severity were 85 people (42.50%) and respondents with a high perceived severity were 115 people (57.50%). Respondents with low perceived benefits were 84 people (42.00%) and respondents with high perceived benefits were 116 people (58.00%).

Respondents with low perceived barriers were 89 people (44.50%) and respondents with high perceived barriers were 111 people (55.50%). Respondents with low cues to action were 67 people (33.50%) and respondents with high cues to action were 133 people (66.50%). Respondents with low self-efficacy were 67 people (33.50%) and respondents with high self-efficacy were 133 people (66.50%). There were 174 respondents who carried out early breastfeeding initiation (87%) and 26 people who did not carry out early breastfeeding initiation (13.00%).

**Table 2. Frequency distribution of respondent characteristics (continuous data)**

Variable	n	Mean	Std. Dev	Min.	Max.
Perceived Vulnerability	200	3.645	1.95	0	6
Perceived Severity	200	3.52	1.78	0	6
Perceived Benefits	200	5.19	1.19	0	6
Perceived Barriers	200	1.355	1.77	0	6
Cues to Action	200	5.35	1.06	2	6
Self-Efficacy	200	5.315	1.20	0	6

**Table 3. The results of univariate analysis test (categorical data)**

Characteristics	Category	Frequency (n)	Percentage (%)
<b>Perceived Vulnerability</b>	Low	82	41.0
	High	118	59.0
<b>Perceived Severity</b>	Low	85	42.50
	High	115	57.50
<b>Perceived Benefits</b>	Low	84	42.00
	High	116	58.00
<b>Perceived Barriers</b>	Low	89	44.50
	High	111	55.50
<b>Cues to Action</b>	Low	67	33.50
	High	133	66.50
<b>Self-Efficacy</b>	Low	67	33.50
	High	133	66.50
<b>Early Breastfeeding Initiation</b>	Yes	174	87.00
	No	26	13.00

### 3. Bivariate analysis

Table 4 shows that 20 people who did not initiate early breastfeeding had a low perceived vulnerability, and 112 people who initiated early breastfeeding had a high perceived vulnerability. The results of statistical tests showed that there was a significant relationship between high perceived vulnerability and early initiation of breastfeeding, and this relationship was statistically significant (OR= 6.02; CI 95%= 2.29 to 15.78;  $p < 0.001$ ).

Table 4 shows that 21 people who did not initiate early breastfeeding had a low perceived severity, and 110 people who initiated early breastfeeding had a high perceived severity. The results of statistical tests showed that there was a significant relationship between high perceived severity and early initiation of breastfeeding, and this relationship was statistically significant (OR= 7.21; CI 95%= 2.59 to 20.07;  $p < 0.001$ ).

Table 4 shows that 22 people who did not initiate early breastfeeding had a low perceived benefits, and 112 people who initiated early breastfeeding had a high perceived benefits. The results of statistical tests show that there was a significant relation-

ship between high perceived benefits and early initiation of breastfeeding, and this relationship was statistically significant (OR= 9.93; CI 95%= 3.27 to 30.13;  $p < 0.001$ ).

Table 4 shows that 5 people who did not initiate early breastfeeding had a low perceived barriers, and 90 people who initiated early breastfeeding had a high perceived barriers. The results of statistical tests showed that there was a significant relationship between high perceived barriers and early initiation of breastfeeding, and this relationship was statistically significant (OR= 0.25; CI 95%= 0.09 to 0.70;  $p = 0.009$ ).

Table 4 shows that 15 people who did not initiate early breastfeeding had low cues to action, and 122 people who initiated early breastfeeding had high cues to action. The results of statistical tests showed that there was a significant relationship between high cues to action and early initiation of breastfeeding, and this relationship was statistically significant (OR= 3.19; CI 95%= 1.37 to 7.43;  $p = 0.007$ ).

Table 4 shows that 23 people who did not initiate early breastfeeding had low self-efficacy, and 130 people who initiated early

breastfeeding had high self-efficacy. The results of statistical tests showed that there was a significant relationship between high self-efficacy and early initiation of breast-

feeding, and this relationship was statistically significant (OR= 22.65; CI 95%= 6.48 to 79.12; p< 0.001).

**Table 4. Bivariate analysis test results of the relationship between perceived vulnerability, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy with EIB.**

Variable	Early initiation of Breastfeeding				OR	95%CI		p
	No		Yes			Lower Limit	Upper Limit	
	n	%	n	%				
<b>Perceived Vulnerability</b>								
Low	20	24.39	62	75.61	6.02	2.29	15.78	<0.001
High	6	5.08	112	94.92				
<b>Perceived Severity</b>								
Low	21	24.71	64	75.29	7.21	2.59	20.07	<0.001
High	5	4.35	110	95.69				
<b>Perceived Benefits</b>								
Low	22	26.19	62	73.81	9.93	3.27	30.13	<0.001
High	4	3.45	112	96.65				
<b>Perceived Barriers</b>								
Low	5	5.62	84	94.38	0.25	0.09	0.70	0.009
High	21	18.92	90	81.08				
<b>Cues to Action</b>								
Low	15	22.39	52	77.61	3.19	1.37	7.43	0.007
High	11	8.72	122	91.73				
<b>Self-Efficacy</b>								
Low	23	34.33	44	65.67	22.65	6.48	79.12	<0.001
High	3	2.26	130	97.74				

**4. Multivariate analysis**

Table 5 shows the results of multiple logistic regression analysis regarding the relationship between the Health Belief Model (HBM) construct and early breastfeeding initiation).

Table 5 shows that there was a positive relationship between perceived vulnerability and early breastfeeding initiation behavior. Mothers who have a high perceived vulnerability were 4.48 times more likely to initiate early breastfeeding than those with a low perceived vulnerability, and this relationship was statistically significant (OR= 4.48; CI 95%= 1.12 to 17.89; p=0.034).

Table 5 shows that there was a positive relationship between perceived severity and early breastfeeding initiation behavior. Mothers who have a high perceived severity were 4.14 times more likely to initiate early breastfeeding compared to those with low perceived severity, and this relationship is statistically significant (OR= 4.14; CI 95%= 1.16 to 14.87; p=0.029).

Table 5 shows that there was a positive relationship between perceived benefits and early breastfeeding initiation behavior. Mothers who have a high perceived benefit were 4.37 times more likely to initiate early breastfeeding compared to mothers with low perceived benefit, and this relationship

was statistically significant (OR= 4.37; CI 95%= 1.15 to 16.56; p= 0.030).

Table 5 shows that there was a positive relationship between self-efficacy and early breastfeeding initiation behavior. Mothers who have high self-efficacy were

16.76 times more likely to initiate early breastfeeding than those with low self-efficacy, and this relationship was statistically significant (OR= 16.76; CI 95%= 3.91 to 71.79; p <0.001).

**Table 5. Results of the multiple logistic analysis test of the relationship between perceived vulnerability, perceived severity, perceived benefits, and self-efficacy with early breastfeeding initiation**

Variable	Odds Ratio (OR)	95% CI		P
		Lower Limit	Upper Limit	
Perceived Vulnerability	4.48	1.12	17.89	0.034
Perceived Severity	4.14	1.16	14.87	0.029
Perceived Benefit	4.37	1.15	16.56	0.030
Self-efficacy	16.76	3.91	71.79	<0.001

**DISCUSSION**

**1. The relationship between perceived vulnerability and early initiation of breastfeeding behavior**

There were 59.00% of respondents who had a high perceived vulnerability. This means that the majority of respondents felt that there was a risk to their baby's health if they did not initiate early breastfeeding. Individuals who believe they are at risk of developing a disease are more likely to adopt preventive behavior and conversely, if individuals feel they are not at risk of developing a disease, they are less likely to take preventive action (Rachmawati, 2019).

Mothers who have a high perceived vulnerability were 4.48 times more likely to initiate early breastfeeding than those with a low perceived vulnerability, and this relationship is statistically significant (OR= 4.48; CI 95%= 1.12 to 17.89; p=0.034).

According to Jose et al. (2020), a high perceived vulnerability to a particular health problem can influence individual actions to reduce the risk of that problem. Mothers who feel vulnerable to their baby's health tend to initiate early breastfeeding because it is considered important for the baby's health. They are more open to information and support. In contrast, mothers

who feel less vulnerable may be less active in seeking support because they are more confident or less worried about their baby's health.

This research is in line with Tao et al. (2021) which states that a high level of perceived vulnerability is correlated with a higher level of acceptance of the COVID-19 vaccine among pregnant women (aOR = 2.18; CI 95%= 1.36 to 3.49).

**2. The relationship between perceived severity and early initiation of breastfeeding behavior**

There were 57.50% of respondents who had a high perceived severity. This means that most respondents agree that not starting to breastfeed the baby immediately after birth has serious or potentially detrimental consequences for both the baby and the mother.

Mothers who have a high perceived severity were 4.14 times more likely to initiate early breastfeeding compared to a low severity perception, and this relationship was statistically significant (OR= 4.14; CI 95%= 1.16 to 14.87; p=0.029).

According to Mant et al. (2021), if someone feels that a particular disease is serious and they are susceptible to it, they are more likely to adopt preventive mea-

asures. Perceptions of the negative impacts of not initiating early breastfeeding can influence individual's decisions. Awareness of the severity of these impacts may encourage mothers to adopt the practice of early initiation of breastfeeding as a preventive measure.

This research is in line with Mahmud et al. (2021) which states that perceived severity in the Health Belief Model (HBM) construct is positively related to COVID-19 vaccination intentions.

### **3. The relationship between perceived benefit and early initiation of breastfeeding behavior**

There are 58.00% of respondents who have a high perceived benefits. This shows that the majority of respondents are aware of the great benefits of early initiation of breastfeeding.

Mothers who have a high perceived benefit were 4.37 times more likely to initiate early breastfeeding compared to those with low perceived benefit, and this relationship was statistically significant (aOR= 4.37; 95% CI= 1.15 to 16.56; p= 0.030). Individuals are more likely to adopt early breastfeeding initiation behavior if they believe that it provides significant benefits to their health and that of their baby.

This research is in line with Solomon et al. (2019) which states that there is a relationship between perceived benefits and cervical cancer screening practices and is statistically significant (aOR= 1.18; CI 95%= 1.12 to 1.24; p<0.001).

### **4. The relationship between self-efficacy and early initiation of breastfeeding behavior**

There were 66.50% of respondents who had high self-efficacy. This shows that the majority of respondents feel confident and able to start the breastfeeding process as soon as possible after the baby is born.

Mothers who have high self-efficacy were 16.76 times more likely to initiate early breastfeeding than low self-efficacy, and this relationship was statistically significant (OR= 16.76; 95% CI= 3.91 to 71.79; p<0.001). Self-efficacy reflects an individual's belief in their own ability to adopt and implement recommended health behaviors (Glanz et al., 2015).

Mothers who are confident in their abilities tend to start breastfeeding as soon as the baby is born. This confidence helps them overcome challenges and provides necessary support. Lack of confidence can result in delaying or not initiating early breastfeeding. This study is in line with García et al. (2020) which states that there is a significant relationship between self-efficacy and the practice of breast self-examination (aOR= 1.16; CI 95%=1.12 to 1.20).

### **AUTHOR CONTRIBUTION**

All authors have contributed significantly in analyzing existing data, as well as actively participating in preparing the final manuscript of the research results.

### **FUNDING AND SPONSORSHIP**

This study is self-funded.

### **CONFLICT OF INTEREST**

There is no conflict of interest in this study.

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### **REFERENCES**

- Dinas Kesehatan Jawa Tengah (2021). Profil kesehatan Jawa Tengah tahun 2021. Dinas Kesehatan Jawa Tengah (Central Java health profile in 2021. Central Java Health Service)  
Dinas Kesehatan Kabupaten Karanganyar



- (2021). Profil kesehatan kabupaten karanganyar 2021. Dinas Kesehatan Kabupaten Karasnganyar (Karanganyar district health profile 2021. Karanganyar District Health Service)
- Fitriani Y, Pristianty L, Hermansyah A (2019). Pendekatan health belief model (HBM) untuk menganalisis kepatuhan pasien diabetes melitus tipe 2 dalam menggunakan insulin (Health belief model (HBM) approach to analyze type 2 diabetes mellitus patient compliance in using insulin). *J. farm. Indones.* 16(02): 167–177. Doi: 10.30595/pharmacy.v16i2.5427
- Glanz K, Rimer BK, Viswanath K (2002). Health behaviour and health education, Fourth Ed. 45-66, Jossey Bass, San Francisco
- Glanz K, Rimer BK, Viswanath K (2015). Health behaviour: Theory, research, and practice, 5th Ed. New York, Ny John Wiley & Sons, 34-57
- García JDM., Solís DJGM, Téllez A (2020) . Adaptation and Validation of the Health Belief Model Scale for Breast Self-Examination in Mexican Women. *Value Health Reg Issues*, (23): 30–36. Doi: 10.1016/j.vhri.2019.-11.006
- Jose R. Narendran M, Bindu A, Beevi N, L M, Benny PV (2020) Public perception and preparedness for the pandemic COVID 19: A Health Belief Model approach. *Clin Epidemiol Glob Health*, (9): 41–46. Doi: 101-016J.-cegh.2020.06.009
- Kementerian Kesehatan RI (2022). Profil kesehatan Indonesia 2021 (Indonesia health profile of 2021). In Pusdatin.Kemenkes.Go.Id<https://www.kemkes.go.id/downloads/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-2021.pdf>
- Mahmud I, Kabir R, Rahman MA, Mohamed AA, Vinnakota D, Mohaimeed AA (2021). The health belief model predicts intention to receive the COVID-19 vaccine in saudi arabia: Results from a cross-sectional survey. *Vaccines*, 9(8): 1–11. Doi: 10.3390/vaccines9080864
- Mant M, Holland A, Prine A (2021). Canadian university students' perceptions of COVID-19 severity, susceptibility, and health behaviours during the early pandemic period. *Public Health Pract*, 2(2021), 100114. Doi: 10.1016/j.puhip.2021.100114
- Orsido TT, Asseffa NA, Berheto TM (2019). Predictors of neonatal mortality in neonatal intensive care unit at referral hospital in Southern Ethiopia: A retrospective cohort study. *BMC Pregnancy Childbirth*, 19(1): 1–9. Doi: 10.-1186-/s12884-019-2227-5
- Phukan D, Ranjan M, Dwivedi LK (2018). Impact of timing of breastfeeding initiation on neonatal mortality in India. *Int Breastfeed J*, 13(1): 1–10. Doi: 10.1186/s13006-018-0162-0
- Rachmawati WC (2019). Teori ilmu perilaku, Promosi kesehatan dan ilmu perilaku (Behavioral science theory, Health promotion and behavioral science). Malang: Wineka Media
- Riset Kesehatan Dasar (2018). Hasil utama riset kesehatan dasar 2018 (Main results of basic health research 2018). Kementerian Kesehatan Republik Indonesia.
- Solomon K, Tamire M, Kaba M (2019). Predictors of cervical cancer screening practice among HIV positive women attending adult anti-retroviral treatment clinics in Bishoftu town, Ethiopia: The application of a health belief model. *BMC Cancer*, 19(1): 1–11. Doi: 10.1186/s12885-019-6171-6
- Tao L, Wang R, Han N, Liu J, Yuan C, Deng L, Han C, et al. (2021). Acceptance of

a COVID-19 vaccine and associated factors among pregnant women in China: a multi-center cross-sectional study based on health belief model. *Hum Vaccin Immunother*, 17(8): 2378–2388. Doi: 10.1080/21645515-2021.1892432

UNICEF (2019). Neonatal mortality. <https://data.unicef.org/topic/child-survival/-neonatal-mortality/>  
WHO, UNICEF (2018). Capture the moment early initiation of breastfeeding: The best start for every newborn.