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Health Belief Model on the Choice of Medical Doctor among Mothers of Children with Diarrhea

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ABSTRACT

Background: Diseases among young children are the major causes of morbidity and mortality particularly in the developing countries. An estimated 13 million infants and children die annually in developing countries. In most developing countries, the health of the children is strongly dependant on maternal healthcare behavior. Evidence on health seeking behavior has been lacking in Central Java, Indonesia, particularly mother's choice to visit pediatrician rather than general practitioner for her ill child. The purpose of this study was to examine factors associated with the choice of medical doctor among mothers of children with diarrhea, using Health Belief Model.
Subjects and Method: A case control study was carried out at Sangkrah community health center, Surakarta, Central Java, in January 2017. A sample of 164 mothers was selected by fixed disease sampling. The dependent variable was mother's choice to visit doctor. The independent variables were perceived susceptibility, seriousness, threat, benefit, and barrier. The data were collected by questionnaire and analyzed by path analysis.
Results: The chance of mother decided to visit pediatrician rather than general practitioner was directly increased with strong perceived threat (b= 0.91; 95% CI= 0.24 to -1.57; p= 0.008), strong perceived benefit (b= 0.85; 95% CI= 0.19 to 1.50; p= 0.012), and decreased with strong perceived barrier (b= -0.67; 95% CI= -1.36 to 0.01; p= 0.053). Mother's choice to visit pediatrician was indirectly affected by perceived susceptibility and perceived seriousness.
Conclusion: Mother's choice to visit pediatrician rather than general practitioner is directly increased with perceived threat, perceived benefit, and decreased with perceived barrier. Mother's choice to visit pediatrician is indirectly affected by perceived susceptibility and perceived seriousness.

Keywords: mother's choice, pediatrician, general practitioner, diarrhea, health believe model, children

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BACKGROUND

Diarrhea is a disease that can be prevented and treated easily, but it is still a global health problem, especially in developing countries including Indonesia. According to the Ministry of Health (2015), the incidence of diarrhea in children under five is 11.48%. In Central Java, the incidence of diarrhea in infants is 21.57% and the incidence in Surakarta is 28.04% (Central Java Provincial Health Office, 2015; Surakarta City Health Office, 2015).

The Indonesian government has designed a national diarrhea treatment pathway that is reflected through Integrated Management of Childhood Illness (IMCI). In diarrhea with mild classification, there are signs of anxious children; fussy or irritable; fast thirsty; stomach skin pinch is slow again, the treatment can be done at a

primary level health facility that is directly handled by a general practitioner. Diarrhea is accompanied by complications, such as the condition of a toddler unconscious; sunken eyes; lazy to drink and pinch the stomach back very slowly, must be referred to secondary level health facilities handled by pediatricians (Hidayat, 2008; IDAI, 2014; Ministry of Health, 2015).

There are phenomena that occur in the community, namely the tendency of a mother who has a toddler with mild diarrhea who prefers to check her toddler to a pediatrician rather than to a primary health facility, in this case a general practitioner. The maternal knowledge about proper handling of diarrhea in children under five and giving ORS to children with diarrhea and the right time to consult with a doctor are very important to reduce the incidence of diarrhea in children under five.

In a preliminary study conducted in the work area of the Sangkrah Health Center, data obtained show that Sangkrah Health Center supervised Sangkrah, Kedunglumbu, and Semanggi villages. The incidence of diarrhea in children under five throughout 2015 in the Sangkrah Puskesmas working area is 37%. From the results of interviews with several mothers who have children under five years, the underlying reason for a mother decides to check her toddler to a pediatrician including a mother who considers that diarrheal disease is a life-threatening disease, therefore it should be handled by a pediatrician . Diarrhea is also a disease that is considered serious by a mother, so that the treatment cannot be compared to other diseases that are considered lighter. The level of trust of a mother to a general practitioner in handling diarrhea in children under five is also still low.

The purpose of this study was to analyze factors associated with the choice of medical doctor among mothers of children with diarrhea, using Health Belief Model.

SUBJECTS AND METHOD

1. Study Design

This was an analytic observational study with a case control design. The study was carried out at Sangkrah community health center in Surakarta, in January 2017.

2. Population and Samples

The target population in this study was mothers who had children under five. While the source population is mothers who have children under five in the work area of Sangkrah Health Center in Surakarta City. The sample size of this study was 164 subjects selected through fixed disease sampling with a ratio of 1: 1, namely the number of case subjects (mothers who examined their children to pediatricians) 82 and controls (mothers who examined their children to general practitioners) approximately 82 subjects.

3. Study Variables

The dependent variable was the choice of the type of doctor. The independent variables were the perceived susceptibility, perceived seriousness, perception threat, perceived benefit, and perceived barrier. The inclusion criteria consisted of mothers who had children under five had diarrhea.

4. Operational Definition of Variables

Perceived susceptibility was defined as maternal perception of the possibility of getting a disease. The greater perceived risk, the more likely it is to engage in behavior to reduce the risk.

Perceived seriousness was defined as maternal beliefs about the seriousness or severity of the disease. Perceived seriousness is often based on medical information or knowledge, it can also be based on someone's belief that he will have difficulties due to illness and will make or affect his life in general.

Perceived of threat was defined as an individual's urge to take action to prevent or cure diseases caused by the perceptions of vulnerability and seriousness.

Perceived benefit was defined as a perceived benefit when adopting recommended behavior. Perception of benefits is a person's perception of the value or usefulness of a new behavior in reducing the risk of getting a good disease that benefits both physically and psychologically.

Perceived barrier were related to new behavior to be adopted. Someone must believe that the benefits of new behavior outweigh the consequences of continuing old behavior. This allows barrier to be overcome and new behaviors to be adopted.

Mother's choice of medical doctor was defined as maternal decision to visit pediatrician check her child suffering from diarrhea.

5. Data Analysis

Data analysis was performed using path analysis with the Stata 13 program to determine the effect of independent variables on the dependent and determine the magnitude of the effect.

6. Research Ethics

The research ethical clearance was obtained from the Research Ethics Committee at Dr. Moewardi Hospital, Surakarta, Central Java, Indonesia. Research ethics included issues such as informed consent, anonymity, confidentiality, and ethical clearance.

RESULTS

1. Univariate Analysis

Univariate analysis in the study in table 1 is presented as follows. Table 1 shows that out of 164 study subjects, there were 51.2% of mothers aged ≥31 years, 58.5% of mothers with education <senior high school, 54.3% of mothers who worked outside the home, and 53% of mothers had income <Rp 2,400,000, and mothers who have children <2 children by 50.6%.

Tabel 1. Univariate Analysis of variables

No.	Characteristics	Frequency (n)	Percentage (%)
1.	Maternal age		
	< 31 years old	80	48.8
	≥ 31 years old	84	51.2
2.	Education level		
	<Senior high school	96	58.5
	≥Senior high school	68	41.5
3.	Maternal occupation		
	Working at home	75	45.7
	Working outside of house	89	54.3
4.	Family income		
	<Rp 2,400,000	87	53.0
	≥Rp 2,400,000	77	47.0
5.	Children's Age		
	Under three years old	97	59.1
	Under five years old	67	40.9
6.	Number of children		
	< 2	83	50.6
	≥ 2	81	49.4

Table 2. The Description of Variable

No	Characteristics	Frequency (n)	Percentage (%)
1.	**Perceived susceptibility**		
	Weak	61	37.2
	Strong	103	62.8
2.	**Perceived seriousness**		
	Weak	46	28.0
	Strong	118	72.0
3.	**Perceived threat**		
	Weak	68	41.5
	Strong	96	58.5
4.	**Perceived benefit**		
	Weak	73	44.5
	Strong	91	55.5
5.	**Perceived barrier**		
	Weak	60	36.6
	Strong	104	63.4

Table 2 explains that mothers who have a low perception of vulnerability amount to 37.8%, and those who have a high vulnerability perception amount to 62.8%. Mothers who have low perceptions of seriousness amount to 28%, and those who have a high perception of seriousness amount to 72%.

Mothers with low threat perceptions amounted to 41.5%, and those with high threat perceptions amounted to 58.5%. Mothers who had a low perception of barriers amounted to 36.6%, and those who had a high obstacle perception amounted to 63.4%.

2. Bivariate Analysis

Bivariate analysis was conducted to see the effect of independent variables (perceptions of vulnerability, perceptions of seriousness, perception of threat, perception of benefits, perception of obstacles with dependent variables (selection of types of doctors).

The analysis test used in bivariate analysis was chi square test with 95% confidence degree ($p < 0.05$).

Table 3. Bivariate Analysis of the Effect of Independent Variables with the Selection of Doctor Types

Variables	The Selection of Doctor Types				OR	CI (95%)		P
	General doctor		Pediatrician			Lower limit	Upper limit	
	N	%	n	%				
Perceived susceptibility								
Low	38	62.3	23	37.7	2.22	1.16	4.23	0.015
High	44	42.7	59	57.3				
Perceived seriousness								
Low	38	62.3	23	37.7	2.01	1.01	4.21	0.037
High	44	42.7	59	57.3				
Perceived threat								
Low	43	63.2	25	36.8	2.51	1.33	4.77	0.004
High	39	40.6	57	59.4				
Perceived benefit								
Low	44	60.3	29	39.7	2.11	1.13	3.96	0.018
High	38	41.8	53	58.2				
Perceived barrier								
Low	23	38.3	37	61.7	0.47	0.24	0.91	0.023
High	59	56.7	45	43.3				

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3. The Results of Path Analysis

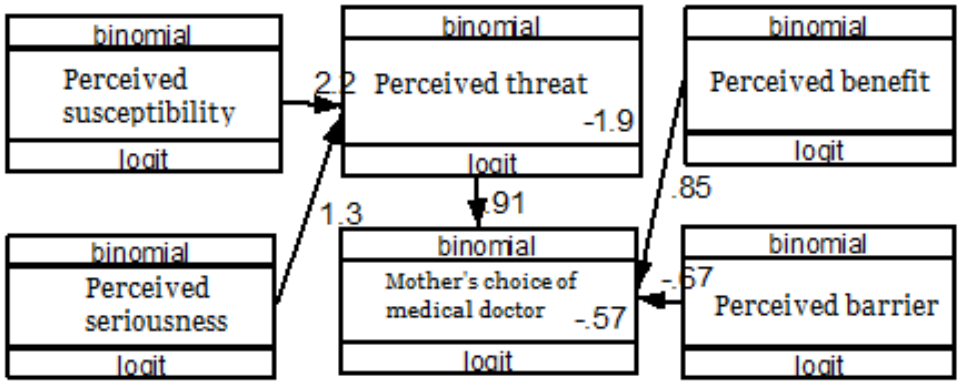

Figure 1. Structural Model of Path Analysis with Estimation

Table 4 showed that choice of medical doctor among mothers of children with diarrhea was affected by perceived susceptibility, perceived seriousness, perceived threat, perceived benefit, and perceived barrier.

Maternal choice to visit pediatrician was directly affected by perceived threat, perceived benefit, and perceived barrier.

Maternal choice to visit pediatrician was increased with strong perceived threat (b=0.91; 95% CI= 0.24 to 1.57; p=0.008), and strong perceived benefit (b= 0.85; 95% CI= 0.19 to 1.50; p= 0.012), but was decreased with strong perceived barrier (b= -0.67; 95% CI= -1.36 to 0.01, p=0.053).

Maternal choice to visit pediatrician was indirectly affected by perceived susceptibility and perceived seriousness through perceived threat. Perceived threat was positively affected by strong perceived susceptibility (b=2.22; 95% CI= 1.46 to 3.00; p<0.001) and perceived seriousness (b=1.28; 95% CI= 0.43 to 2.12; p=0.002).

Table 4. The Results of Path Analysis

Dependent variable		Independent variable	b	95% CI		p
				Lower Limit	Upper Limit	
Direct Effect						
Maternal choice to visit pediatrician	←	Strong perceived threat	0.91	0.24	1.57	0.008
Maternal choice to visit pediatrician	←	Strong perceived benefit	0.85	0.19	1.50	0.012
Maternal choice to visit pediatrician	←	Strong perceived barrier	-0.67	-1.36	0.01	0.053
Indirect Effect						
Perceived threat	←	Strong perceived susceptibility	2.22	1.46	3.00	<0.001
Perceived threat	←	Strong perceived seriousness	1.28	0.43	2.12	0.003
N Observation= 164 Log Likelihood = -187.42						

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DISCUSSIONS

1. The effect of perceived susceptibility on maternal choice to visit pediatrician

The result of analysis showed that perceived susceptibility has an indirect effect on the choice of medical doctors through perceived threat. Mothers who have high perceived susceptibility would increase the choice of medical doctors (Pausir et al., 2014). The result of analysis was in line with a study done by Sukawana (2015), which stated that perceived susceptibility or personal risk was one of the strongest perceptions in encouraging people to adopt healthy behavior. The greater the perceived risk, the more likely it was to engage in behavior to reduce the risk. Perceived severity was related to individual beliefs about the seriousness or severity of the disease.

Perceived seriousness about diarrheal disease affected perceived threat, in addition, perceived susceptibility of diarrhea also affected the prevention of diarrhea by mothers. The role of parents in the prevention and treatment of diarrhea in children was very important. Factors that influenced were perceived susceptibility, seriousness, maternal age, level of education, maternal knowledge about healthy living, and the prevention of disease. Low perceived susceptibility was one of the causes of children who were late to be treated and late in getting help so that one of the impacts was dehydration during diarrhea. This was because the mothers did not have a low perceived seriousness related to the effects caused by diarrhea so that the mothers chose to provide treatment independently or check their children to a general practitioner (Gunawan, 2010).

2. The effect of perceived seriousness on maternal choice to visit pediatrician

The result of analysis showed that there was an effect of maternal perception about the seriousness on the choice of medical doctors through perceived threat. The result of analysis was in line with a study done by Siswandwika *et al.* (2017), which showed that low perceived seriousness was 0.34 times less likely to have high perceived threat, this was because an individual who felt that diarrheal disease was not a serious disease would have a greater likelihood of taking the treatment by checking her/his child to a general practitioner.

Perceived seriousness of the individual's perceived illness refer to the feeling of the severity of the illness and the perceived threat to the clinical impact and possible consequences (death, disability and illness), thus giving the appropriate treatment for the child to a pediatrician (Sigler *et al.*, 2014).

Perceived seriousness felt by the mothers were influenced by many factors, including maternal knowledge about diarrhea, education, national health insurance participation, adequate health facilities, distance to health facilities, and maternal employment (Shazma *et al.*, 2016). Based on the results of the study, it was known that most of the research subjects have a low level of education, it could affect low maternal perceived seriousness because the maternal knowledge about diarrhea treatment was poor. Strong perceived seriousness would affect the proper prevention and treatment of diarrhea, in addition, healthy behavior was done as an effort to prevent the occurrence of diarrhea (Vega, 2013).

3. The effect of perceived threat on maternal choice to visit pediatrician

The result of analysis showed that perceived threat increased the choice of medical doctors. The result of this study showed that research subjects with high perceived threat checked their children to a pediatrician. In Health Belief Model (HBM) theory, individuals would perform health behaviors based on perceived threat of health problems.

This study was in line with a study done by Adamo and Brett (2013), which stated that the feeling of being threatened or worried arised from the perception that individuals were susceptible to health problems and these problems can lead to serious consequences, thus the choice of pediatricians was a form of maternal attitude because they felt that diarrheal disease in their children was a disease that must be treated immediately.

Al-mazrou *et al.* (2002) explained that the choice of pediatricians for diarrhea treatment was affected by a high perceived threat to encourage the belief or attitude of mothers who believe that diarrhea was a disease that must be treated immediately so that pediatrician was the maternal choice for the treatment of their children.

Good knowledge about the signs of diarrheal disease was highly important to be known by the mother as an initial reference in taking appropriate treatment to avoid complications or child mortality due to diarrhea (Adisasmito, 2007).

Better knowledge of diarrheal diseases affected maternal perceived threat to diarrheal diseases, therefore, mothers with high perceived threat chose treatment at pediatricians as an effort to treat diarrhea.

4. The effect of perceived benefit on maternal choice to visit pediatrician

The result of analysis showed that perceived benefit increased the choice of medical doctors. The result of this study was supported by a study of Lee *et al.* (2015), which showed that mother with high perceived benefit related to diarrhea treatment especially the choice of doctors affected the treatment for children with diarrhea.

General practitioners did not limit their practice to certain diseases or certain treatment methods. While specialist doctor according to WHO was doctor who diagnose, cure, and prevent diseases, injuries, other physical and mental disorders, and maintain general health in humans through the implementation and procedures of modern medicine (Budhathoki *et al.,* 2016). Specialist doctors specialized in certain categories of diseases, types of patients or treatment method, could carry out education and research in the area of specialization they chose. Knowledge regarding the authority of the doctor need to be known by the mothers so that they were able to choose a doctor who was suitable for children with diarrhea. In addition, high knowledge also affected the perceived benefit of mothers for the diarrhea treatment (Gunawan, 2014).

High perceivd benefit of treatment affected the choice of specialist doctors for the diarrhea treatment and also encouraged the mothers to take preventive actions for diarrhea complications or prevention to stop the diarrhea. Therefore, perceived benefit related to appropriate treatment for diarrhea encouraged the mothers to provide the best treatments, one of them was by checking the children at a pediatrician.

5. The perceived barrier on maternal choice to visit pediatrician

The result of this study showed that perceived barrier decreased the choice of medical doctors. The result of this study was supported by a study of Cuevas (2015), which stated that mothers with low perceived barrier were more likely to do diarrhea treatment at general practitioner because they felt that the treatment of diarrhea in general practitioners were more accessible, it was influenced by many other factors. Equselassie (2012) described that factors that affected perceived barriers include access to services, income, previous experience, and knowledge.

Mohebi et al. (2013), explained that maternal knowledge about diarrhea affected the treatment for the children. Perceived susceptibility and seriousness of the disease affected the treatment given by the mothers, in addition, other factors that affected were the educational status, previous experience in managing the disease, perceived barriers and benefits to the treatment. Perceived barries could arise due to many influential factors, lack of access to information related to appropriate treatment was one of the factors related to the maternal perceived barriers in determining the type of doctor to the treatment of their children.

Amare *et al.* (2012) explained that perceived barrier affected the choice of treatment for toddlers with diarrhea. Another study also found that the treatment of diarrhea in toddlers was strongly influenced by maternal attitude in perceiving the diarrhea, and maternal perception of diarrheal disease which supported by the condition of a baby or child who have diarrhea (Ambreen et al., 2016).

Child condition who were considered stable and able to move as usual made mothers have a perception that diarrheal disease was not a serious threat to their children, on the contrary, high perceived threat was able to affect the mothers to provide treatment by checking their children to a pediatrician (Ibrahim and Shankar, 2012).

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