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Predisposing Factors that Affect the Early Detection of the Risk of Preeclampsia

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ABSTRACT

Maternal mortality due to preeclampsia (PE) can be prevented by antenatal care and screening early detection of PE risk. The initial survey at the Bangkalan Health Center, 5 of pregnant women (63%) had risk factors for PE, but did not realize that their pregnancy was a risk for PE. The aim of this research is to explain the predispositing factors that influence the behavior of early detection of PE risk in pregnant women. This study was analytical observational study design with cross-sectional approach. The population were all pregnant women who visited Bangkalan Health Center. Sample size was 100 pregnant women, selected using cluster random sampling. Independent variables were age, occupation, education, knowledge, attitudes; while dependent variable was early detection behavior of PE risk. Data were collected using questionnaire, then were analyzed using regression test. The variables that influence behavior were age (p = 0.002), knowledge (p = 0.005), and attitude (p = 0.000). The variables that had no effect were education and occupation. As conclusion; age, knowledge, and attitudes were predisposing factors of early detection behavior of PE risk.

Keywords: preeclampsia; early detection; age; occupation; education; knowledge

INTRODUCTION

Preeclampsia is a major cause of maternal morbidity and mortality worldwide and is one of the most feared complications of pregnancy because it can cause various adverse health conditions in the future [1]. Preeclampsia is a syndrome that occurs during pregnancy, and its clinical symptoms appear in pregnancy after 20 weeks. Clinical symptoms of preeclampsia are characterized by an increase in systolic blood pressure greater than or equal to 140 mmHg or diastolic pressure greater than or equal to 90 mmHg and total proteinuria of 300 mg protein or more than 30 mg/dL per 24 hours [2].

The incidence of preeclampsia in the world ranges from 5% to 7% of all pregnant women and causes more than 70,000 maternal deaths and 500,000 fetal deaths worldwide each year [1]. Data from the Health Office of East Java Province in 2017 reported the Maternal Mortality Rate (MMR) in East Java was 91.92 per 100,000 live births with the first cause being other causes (29.11%) or 154 people. Preeclampsia is the second cause of maternal death (26.28%) or 139 people [3].

The cause of maternal death due to preeclampsia can be prevented with adequate antenatal care (ANC) and early detection of the risk of preeclampsia in pregnant women. Early detection of risk factors for complications is an activity to find pregnant women with risk factors and obstetric complications. Early identification of preeclampsia risk factors is one of the important elements of antenatal care [4]. Most pregnant women have risk factors for preeclampsia so that the risk factors for preeclampsia are still relevant to be used as a good prevention [5].

Although detection of the risk of preeclampsia is very important, most pregnant women tend not to detect the risk of preeclampsia so that many come with more serious complaints and complications. The initial survey was conducted on 8 pregnant women who visited the Bangkalan Health Center, 5 of them (63%) had risk factors for preeclampsia, but the mothers were not aware that their pregnancy had risk factors for preeclampsia. The reason for visiting the Puskesmas was not because of the mother's awareness of routine pregnancy checks, but the presence of complaints such as frequent urination, back pain and leg cramps.

Based on Lawrence Green's theory of health behavior, health behavior is influenced by predisposing factors[6]. Predisposing factors for maternal health behavior in early detection of preeclampsia risk include age, occupation, education, knowledge and attitudes [7,8].

Behavior regarding early detection of preeclampsia risk and what actions which should be taken immediately if you have preeclampsia risk factors are very important things for pregnant women to have. With regular ANC, some information about pregnancy that is not known to the mother can be conveyed, one of which is screening for preeclampsia risk factors. Recent guidelines from the National Institute for Health and Clinical Excellence (NICE) recommend routine screening of specific risk factors for pre-eclampsia, namely: nulliparity, older age, body mass index, family history of preeclampsia, having kidney disease, chronic hypertension, more pregnancy. than 10 years, and a history of preeclampsia in a previous pregnancy [9].

Therefore, mothers are expected to be able to detect risk factors for preeclampsia and carry out routine pregnancy checks to health workers, and if there are complications that accompany pregnancy, health workers can carry out early detection of maternal and neonatal emergencies, carry out intensive monitoring of maternal and fetal well-being, and conduct early planned referrals, if needed so that it reduces complications to the mother and fetus [10].

METHODS

This study used an analytic observational design with a cross-sectional approach. This research had received an ethical certificate issued by the Poltekkes Kemenkes Surabaya with the number: EA/207/KEPK-Poltekkes_Sby/V/2020.

The population was 108 pregnant women in the Bangkalan Health Center area. The sample size was 100 pregnant women, selected using cluster random sampling technique. The inclusion criteria of the respondents were pregnant women who live in the working area of the Bangkalan Health Center and are willing to be respondents.

The independent variables were predisposing factors, consisting of age, occupation, education, knowledge, attitude. The dependent variable was early detection behavior of preeclampsia risk. Data were collected by means of a questionnaire referring to the guidelines of the National Institute for Health and Clinical Excellence (NICE). Before filling out the questionnaire, the researcher had given informed consent to the respondents. The data were analyzed using Chi-square and logistics regression tests.

RESULTS

Characteristics of Respondents

Table 1. Distribution of demographic characteristics of pregnant women

Characteristic	Frequency	Percentage
Age		
<20 th	10	10
20-35 th	67	67
>35 th	23	23
Education		
Elementary school/ equal	17	17
Junior high school/ equal	18	18
Senior high school/ equal	42	42
Academy / higher	23	23
Occupation		
Housewives	83	83
Farmers (owners)	0	2
Farming / factory workers	6	6
Merchants / private workers	6	6
Goverment servants	3	3
Nutritional status		
Normal	59	59
Fat	31	31
Obes	10	10
Gravida		
Primigravida	19	19
Multigravida	81	81
Risk of preeclampsia		
Existing	52	52
Non existing	48	48

The characteristics of pregnant women (table 1) indicate that most of the respondents were in the healthy reproductive age range, namely 20 to 35 years, the highest level of education was senior high school, the occupation of pregnant women was mostly housewives, nutritional status of pregnant women the largest was normal nutrition and most were multigravida. From the results of screening for preeclampsia risk factors based on guidelines from the National Institute for Health and Clinical Excellence (NICE), most pregnant women had risk factors for preeclampsia.

Predisposing Factors for Preeclampsia

Table 2. Distribution of age, occupation, education, knowledge and attitudes of pregnant women

Age	Frequency	Percentage
Unhealthy reproduction	33	33
Healthy reproduction	67	67
Occupation		
Unemployed	83	83
Employed	17	17
Education		
Elementary and junior high school	35	35
High school	42	42
Higher	32	32
Knowledge		
Good	15	15
Fair	19	19
Poor	66	66
Attitude		
Good	22	22
Fair	68	68
Poor	10	10

Based on table 2, it is known that the average age of pregnant women was in the healthy reproductive category, but it was still found that the age of pregnant women in the unhealthy reproductive category was 33%. Meanwhile, from the characteristics of education, the highest level of education was senior high school. Most of the pregnant women (83%) were housewives. Most of the knowledge of pregnant women about early detection of preeclampsia risk (66%) was in the poor category. Meanwhile, the average attitude of pregnant women about early detection of the risk of preeclampsia was mostly in the fair category.

Early Detection Behaviors of Preeclampsia Risk Factors

Table 3. Distribution of early detection behavior of preeclampsia risk factors in pregnant women

Early detection behaviors	Carrying out	Not carrying out
Screening of risk factors	51	49
Regular ANC	51	49
USG examinations	30	70

Based on table 3, it is known that on average pregnant women carried out early detection of the risk of preeclampsia in the form of risk factor screening and regular ANC examinations, while ultrasound examinations were only carried out by a few respondents.

The Effect of Predisposing Factors (Age, Education, Knowledge and Attitudes) on the Behavior of Early Detection of Preeclampsia Risk

Based on the age, the results show that the dominant respondents were those who had unhealthy reproduction and did not carry out early detection of the risk of preeclampsia, 24 respondents (72.7%). The results of Chi-square test show that there was an influence of age on the behavior of early detection of preeclampsia risk ($p<0.05$).

Based on the occupation, it can be seen that the respondents who work and did not perform early detection of preeclampsia risk were 10 respondents (58.8%). This number was greater when compared to respondents who did not work and did not carry out early detection of the risk of preeclampsia, 39 respondents (47.00%). The

results of Chi-square test showed that there was no influence of work on the behavior of early detection of preeclampsia risk (p>0.05).

Based on the education level, the results showed that respondents with higher education levels who carried out early detection of the risk of preeclampsia had a greater number of 19 respondents (86.75%) than respondents with primary and secondary education levels. The results of Chi-square test showed that there was no influence of education on the behavior of early detection of preeclampsia risk(p>0.05).

Based on the knowledge, the results showed that the dominant respondents were those who had good knowledge and carry out early detection of the risk of preeclampsia, 13 respondents (86.75%). The results of Chi-square test showed that there was an influence of knowledge on early detection behavior of preeclampsia risk (p <0.05).

Based on the attitude, it can be seen that the respondents who had a positive attitude and perform early detection of preeclampsia risk were 19 respondents (86.4%). This number was greater when compared to respondents who had a negative attitude and did not perform early detection of the risk of preeclampsia, namely 8 respondents (88.00%). The results of Chi-square test showed that there was an influence of attitude on the early detection behavior of preeclampsia risk (p <0.05).

Table 4. Chi-square analysis of predisposing factors (age, occupation, education, knowledge and attitudes) with the early detection behavior of preeclampsia risk factors in pregnant women

Predisposing factors	Behavior of early detection of risk factors for PE				Total		p value
	Not carrying out		Carrying out				
	n	%	n	%	n	%	
Age							
Unhealthy Reproduction	24	72.7%	9	27.3%	33	100.0%	0.002
Healthy reproduction	25	37.3%	42	62.7%	67	100.0%	
Occupation							
Unemployed	39	47.0%	44	53.0%	83	100.0%	0.533
Employed	10	58.8%	7	41.2%	17	100.0%	
Education							
Elementary and junior high school	20	57.1%	15	42.9%	35	100.0%	0.117
High school	22	52.4%	20	47.6%	42	100.0%	
Higher education	7	30.4%	16	69.6%	23	100.0%	
Knowledge							
Poor	39	59.1%	27	40.9%	66	100.0%	0.005
Fair	8	42.1%	11	57.9%	19	100.0%	
Good	2	13.3%	13	86.7%	15	100.0%	
Attitude							
Poor	8	80.0%	2	20.0%	10	100.0%	0.000
Fair	38	55.9%	30	44.1%	68	100.0%	
Good	3	13.6%	19	86.4%	22	100.0%	

Table 5. The results of the logistic regression analysis on the influence of predisposing factors (age, education, knowledge and attitudes) on the early detection behavior of preeclampsia risk in pregnant women.

		Chi-square	df	Sig.
Step 1	Step	40.913	7	0.000
	Block	40.913	7	0.000
	Model	40.913	7	0.000

Based on the omnibus test of model coefficients table, the p-value (sig.) = 0.000 was obtained, then the four predisposing variables (age, education, knowledge and attitudes) affected the early detection behavior of preeclampsia risk in pregnant women.

Through the model summary (table 6), the value of Nagelkerke's R Square was 0.448. This indicates that the behavior of early detection of preeclampsia risk of 44.8% was simultaneously influenced by factors of age, education, knowledge and attitudes, while 55.2% was influenced by other factors outside the four variables.

Table 6. The results of Nagelkerke's R-square analysis of the influence of predisposing factors (age, education, knowledge and attitudes) on the early detection behavior of preeclampsia risk in pregnant women

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R-square
1	97.677[a]	0.336	0.448

DISCUSSION

General Characteristics of Respondents

Based on the results of the study, it is known that the average age of the respondents was in the healthy reproductive category, but it was still found that the respondent's age is in the unhealthy reproductive category. Pregnancy <20 years or >35 years is a high-risk pregnancy, a pregnancy that allows complications during pregnancy and delivery from the risks the mother has compared to normal pregnancies [11]. There are still pregnant women who are <20 years old or >35 years old. It is possible that there is a lack of knowledge about healthy reproductive age. Hanum (2018) in her research entitled The relationship between knowledge and attitudes of pregnant women with the incidence of high-risk pregnancy at the Sunggal Pratama Clinic, Medan, explained that the majority of pregnant women's knowledge about high-risk pregnancy was in the poor category (42.9%) [12].

Education is a person's basic capital to receive and understand information conveyed by other people both orally and in writing. In terms of education, there are still some respondents with basic education, namely elementary and junior high schools. Najib's research on the Badur Community, Sumenep Madura in 2019, shows that the public's view of formal education turns out to be a dichotomy of science, where people who still view higher education are not a necessity. Overall the causes of low education factors are the level of parental knowledge, poverty, early marriage and low motivation [13].

Most of the respondents' occupations were housewives. This condition may occur due to low and middle education levels making it difficult to find decent work. In addition, the culture of the Madurese community which is more dominant towards patriarchy also has an impact on this. Although patriarchal culture can be reduced, patriarchal values are difficult to remove and eliminate, considering that these values are local cultures that are influenced by tradition and understanding of religion.

The average nutritional status of pregnant women was normal, but pregnant women with above average nutritional status were still overweight and obese. A person is categorized as obese if the BMI calculation is more than or equal to 30 mkg/m2, and is categorized as overweight if the BMI is 25-29.9 kg/m2. This situation is possible because the respondent's diet tends to consume more carbohydrates than protein, fat or vitamins. Research by Diana R et al in 2016, many taboo foods are imposed on pregnant women of Madurese ethnicity, either for health reasons or for cultural reasons. In this study, more multigravida were found. This is because most of the respondents are in the age range of 20-35 years and generally mothers at that age have been pregnant and given birth to children several times, so more multigravida are obtained.

The results of screening for preeclampsia risk factors based on the latest guidelines from the National Institute for Health and Clinical Excellence (NICE) showed that most respondents had a risk of preeclampsia. This is because there are respondents who are primigravida, age > 35 years and obesity nutritional status. Harumi's research (2019), pregnant women in the working area of the Jagir Health Center Surabaya who experienced preeclampsia were more common in primigravida pregnant women, 22 (26.2%) and there was a relationship between primigravida and the incidence of preeclampsia [14].

Overweight and obesity are a high-risk obstetric condition. Overweight and obesity have been shown to be associated with hypertension in pregnancy. A 15-year retrospective study involving 79,005 women with pre-pregnancy weight in the normal range (weight 55-75 kg), 9,355 women with moderate obesity (weight 90-120 kg), and 779 women with severe obesity (weight > 120 kg) found an increased risk of hypertension in pregnancy in the moderately obese (OR 2.38; 95% CI 2.24-2.52) and severe obesity (OR 3.00; 95% CI 2.49-3.62) [15].

The Influence of Age on the Early Detection Behavior of preeclampsia Risk in Pregnant Women

The results indicate that maternal age affected the behavior of early detection of the risk of preeclampsia in pregnant women in the Bangkalan Health Center. This is in line with Notoatmodjo's theory which states that the higher a person's age, the more knowledge or knowledge they have because one's knowledge is obtained from one's own experience and experience gained from others [6]. Other studies also state that a healthy reproductive age has a 7.3 times chance of having good knowledge in recognizing the danger signs of pregnancy compared to pregnant women who have an unhealthy reproductive age [16].

Preeclampsia early detection behavior is a maternal health behavior that is expected to be carried out by mothers independently at home. This can happen if pregnant women are of mature age/reproductive age and are physically and mentally ready to face pregnancy, childbirth and the puerperium along with the risks that can be experienced. Mature age will make it easier for mothers to absorb knowledge and experience from other people so that mothers can make early detection of preeclampsia risk independently.

The Effect of Occupation on the Early Detection Behavior of Preeclampsia Risk in Pregnant Women

Statistical test results show that work did not affect the behavior of early detection of preeclampsia risk. This is in line with the research of Sugiarti et al in 2012 which stated that pregnant women who did not work were able to carry out early detection of high risk pregnancy by 80% and the results of logistic regression tests showed that there was no effect between work and the ability to detect high risk of pregnancy early [17]. This is because everyone who works or who does not work has the same opportunity to detect high-risk pregnancies early. Work is something that is done to earn a living or livelihood. People who are busy with daily activities or work will have less time to obtain information, especially in conducting early detection of high-risk pregnancies.

The results of this study contradict the previously stated opinion which states that material/work factors contribute to the difference in a person's level of health because material factors have a direct effect on psychosocial and health behavior [18]. Other research also states that Madurese women have high potential for economic and social development even though women's involvement in the public sector tends to be followed by social and cultural injustice [19, 20].

The Effect of Education on the Early Detection Behavior of Preeclampsia Risk in Pregnant Women

Based on the results of data analysis, it was found that the education of pregnant women had no effect on the behavior of early detection of the risk of preeclampsia by pregnant women. This is contrary to the results of another study conducted by Hasliani and Rahmawati which stated that there was a significant effect of providing health education on efforts to prevent preeclampsia at the Bangkala Health Center, Jeneponto Regency [21]. Other studies also state that increasing a person's level of education will affect person's health behavior [22]. This would suggest that the health benefits of higher education can justify the costs of interventions aimed at increasing the quantity and quality of education in countries with weaker compulsory school laws.

This can happen because of differences in operational definitions of the two studies above. Education which is the benchmark in this study is the level of education in general, elementary, junior high, high school, DIII or Higher while in Hasliani's research the benchmark is whether or not pregnant women have received health education about preeclampsia given by midwives or other health workers.

The Effect of Knowledge on Early Detection Behavior of Preeclampsia Risk in Pregnant Women

Respondents' knowledge about early detection of preeclampsia risk is mostly in the poor category. Knowledge is the result of knowing and this occurs after the person has sensed a certain object. most of the knowledge is acquired through the eyes and ears. Knowledge or cognitive is a very important domain for the formation of one's actions. Because from experience and research it turns out that behavior based on knowledge will last longer than behavior not based on knowledge. This will have a positive impact on pregnant women by helping the government reduce morbidity and mortality rates. Knowledge is influenced by several factors such as education, age, information, socio-culture, environment and experience [6]. The more dominant factor from the results of this study is information where the more information obtained, the higher the level of knowledge about preeclampsia. Research by Dewi in 2015 states that exposure to information on danger signs has an influence on the ability to detect early risk of postpartum hemorrhage and preeclampsia with a significant value of 0.033 and an Exp (B) value of 5.657, meaning that pregnant women who are exposed to information on danger signs for early detection are good at 5,657 times compared to pregnant women who were not exposed to the information. According to cybernetic theory, information will determine the process of learning because learning is the processing of information [7].

The results of the study also showed that there was a significant influence between respondents' knowledge of the behavior of early detection of pre-eclampsia in pregnant women. This is in line with the results of other previous studies which state that pregnant women with good knowledge are better able to carry out early detection of the risk of preeclampsia compared to pregnant women with less and sufficient knowledge [7]. Pregnant women who have a good level of knowledge tend to have good behavior in their pregnancy by checking their pregnancy to health workers so that they are able to make early detection of their pregnancy and get sufficient information about their pregnancy so that if their pregnancy has a risk of preeclampsia, efforts to prevent complications can be carried out as early as possible. possible.

The Effect of Attitude on Early Detection Behavior of Preeclampsia Risk in Pregnant Women

The average attitude of pregnant women about early detection of the risk of preeclampsia is in the sufficient category. According to Notoatmodjo [6], attitude is a reaction or response that is still open from a stimulus or object, which clearly shows the connotation of a reaction to a certain stimulus in everyday life, which is an emotional reaction to social stimuli. According to Allport cit. Notoatmodjo [6] that attitudes are influenced by knowledge, thoughts, and beliefs as well as emotions and play an important role in the formation of attitudes. Not in line with this study, most of the respondents' knowledge will be lacking but the attitude of pregnant women about early detection of preeclampsia risk is in the sufficient category. For attitude to become a real action, it is not only determined from knowledge, it is necessary to have a supporting factor or a condition that supports a positive mother's attitude, which must be confirmed by husband, parents and in-laws. This can be seen from the results of the study which showed that most of the respondents received good support from their families.

The results also show that attitudes can affect the behavior of early detection of pre-eclampsia in pregnant women. This is in line with the results of another study proposed by Hessien which states that there is a statistically significant correlation between maternal knowledge, practices and attitudes related to preeclampsia promotive self-care measures [23]. Crombag et al also mentioned that women who have a positive assessment of early detection of preeclampsia will screen for preeclampsia independently or jointly with health workers [4]. The tendency of positive attitudes from respondents has a good impact on early detection of the risk of preeclampsia in pregnant women. This happens because the mother has a view (cognitive component of attitude) that preeclampsia is a pregnancy disease that can be detected early in order to get a good outcome for the mother and fetus, besides that the mother will also feel anxious (affective component of attitude) if she does not make efforts. detection of risk in pregnancy and the mother will tend to behave (conative component of attitude) in accordance with the attitudes of pregnant women.

The Influence of Predisposing Factors (Age, Education, Knowledge and Attitudes) on the Early Detection behavior of Preeclampsia Risk

The results showed that overall the four predisposing variables (age, education, knowledge and attitude) had an effect on the behavior of early detection of pre-eclampsia. The behavior of early detection of preeclampsia risk, 44.8%, is simultaneously influenced by factors of age, education, knowledge and attitudes, while 55.2% is influenced by other factors outside the four variables.

Based on the basic theory developed by Green (1991), the health of a person or society is influenced by two main factors, namely behavioral causes and non-behavioral causes. Meanwhile, behavioral causes are influenced by three factors, namely: predisposing factors, enabling factors and the last reinforcing factors.

The results of this study indicate that predisposing factors have a significant role considering that the behavior of detecting the risk of preeclampsia is not only influenced by predisposing factors, but also enabling factors and reinforcing factors.

CONCLUSION

Predisposing factors that influence the behavior of pregnant women in conducting early detection of the risk of preeclampsia are age, knowledge and attitude. Some things that can be recommended from the results of this study include the Bangkalan District Health Office: it is hoped that they can create new programs or improve old programs in an effort to increase women's knowledge about preeclampsia and early detection of preeclampsia, especially those related to preeclampsia risk factors. health services and promotions related to efforts to increase women's knowledge about preeclampsia and early detection of preeclampsia, especially those related to preeclampsia risk factors. increase women's knowledge about preeclampsia and early detection of preeclampsia, especially those related to preeclampsia risk factors.

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