Jurnal Kesehatan
Vol. 15, No. 1, April 2024
ISSN 2086-7751 (*Print*), ISSN 2548-5695 (*Online*)
http://ejurnal.poltekkes-tjk.ac.id/index.php/JK

Health Belief Model Theory Approach to Analyze Pregnant Women's Ability to Prevent Anemia

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ARTICLE INFO

Article history:

Received date
06 Feb 2024

Revised date
01 Mar 2024

Accepted date
20 Mar 2024

Keywords:

Mother;
Pregnancy;
Self-efficacy.

ABSTRACT

One of the nutritional problems that often occurs in pregnant women is anemia. The inability of pregnant women to prevent anemia needs to be predicted based on various factors using the Health Belief Model theory. The research aims to analyze the mother's ability to prevent pregnancy anemia using the theoretical approach of the Health Belief Model. The quantitative research method, with a cross-sectional approach, was carried out at the Arosbaya Bangkalan Community Health Center from May to August 2023. The sampling technique was determined using simple random sampling with a sample size of 101 respondents. Data analysis used the Chi-Square Test. Statistical test results perceived susceptibility (ρ=0.000), perceived severity (ρ=0.007), perceived benefits (ρ=0.000), perceived barrier (ρ=1.000) and self-efficacy (ρ=0.028). The research conclusion is that perceived susceptibility, perceived severity, perceived benefits, and self-efficacy influence the ability of pregnant women to prevent anemia. In contrast, perceived barriers do not affect the ability of pregnant women to prevent anemia.

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INTRODUCTION

Pregnancy is a period of growth and development of the fetus towards the birth period, so nutritional disorders occurring during pregnancy will have an impact on the health of the mother and fetus. One nutritional problem often occurs in pregnant women is anemia (Tanziha et al., 2016). Organization World Health (WHO) defines anemia in pregnant women as a low Hb concentration of 11.0g/dl (Aboye et al., 2018). WHO estimates that 56.4 million pregnant women worldwide suffer from anemia, and 18.1 million occur in Southeast Asia (Dewita et al., 2022). Cases of pregnant women with anemia in Indonesia increased by 11.8% in 5 last years. Meanwhile, cases of anemia in pregnant women in Bangkalan are 1962 cases from 16443 pregnant women. (Dinas Kesehatan Bangkalan, 2021).

Iron deficiency is the leading cause of pregnancy anemia, with an incidence rate of almost 75%. Intake low and poor iron absorption is a risk factor for anemia (Obai et al., 2016). This matter is influenced by the mother's low ability to prevent anemia, like not consuming iron tablets regularly. Based on 2018 Basic Health Research (Riskesdas), 61.9% of pregnant women in Indonesia consume less than 90 iron tablets (Triharini et al., 2019). The impact of anemia on pregnant women includes postpartum hemorrhage caused by an atony uterus. Meanwhile, the fetus can result in LBW, IUFD, asphyxia, and IUGR (Stephen et al., 2018).

Prevention and control efforts of anemia have been carried out by the government through Permenkes 21 at 2021 Peraturan Menteri Kesehatan Republik Indonesia Number 88, 2014 concerning standards blood-boosting tablets in women of childbearing age and pregnant women, including giving iron tablets during pregnancy at least 90 tablets, and also providing Information Communication and Education (KIE). Basic Health Research (Riskesdas) results for the year 2018 show that the majority of pregnant mothers have received iron tablets, but only around 24% received iron tablets ≥90 items; the rest only got <90 items. The consumption rate of iron tablets

was still relatively low. Only 38.1% of pregnant women consume as many iron tablets as ≥90 items, and the remaining 61.9% only consume <90 (Farida, 2019).

Similar conditions were found at Puskesmas Arosbaya Bangkalan. Based on a preliminary study of 10 pregnant women, six people (60%) do not comply with the consumption of iron tablets and do not yet understand the importance of consuming iron tablets during the pregnancy period, even though the health center has provided KIE. There is an assumption that iron tablets only need to be taken in possession of complaints, which leads to non-compliance with consuming iron tablets. This is supported by research on factors influencing compliance with iron tablets in pregnant women: perceptions of benefits, barriers, and family support (Triharini et al., 2010). Madura community culture prohibits pregnant women from eating vegetables because it can cause complications for both mother and child. The fetus she is carrying can also cause a high incidence of anemia in pregnant women in Arosbaya. Based on Dinas Kesehatan Kabupaten Bangkalan's report, the number of incidences of anemia in pregnant women in 2021 amounted to 57 cases.

The inability of pregnant women to prevent anemia requires the prediction of various factors using the theory health belief model. This theory predicts why people will take measures to prevent, screen, or control disease conditions (Sakinah, 2018). Therefore, this research aims to analyze the mother's abilities to prevent pregnancy anemia with the theoretical approach of the health belief model.

METHOD

This research is Quantitative, with a cross-sectional approach. The study population was all pregnant women who visited community health centers (Puskesmas) Arosbaya, with a total population of 135 pregnant women. The sample consisted of 101 pregnant women. It used a simple random sampling technique. The research was conducted at Puskesmas Arosbaya, Bangkalan, from 1 May to 31 August 2023.

The independent variables in the research include perception of vulnerability, perception of severity, perception of benefits, perception of barriers, and perception of ability. Meanwhile, the dependent variable, the ability of pregnant women to prevent anemia, includes setting gestational age and pregnancy spacing, regulating diet, compliance with taking Fe tablets, and regular ANC.

Data collection uses a questionnaire prepared by researchers and has gone through validity and reliability tests. After data collection is complete, the next stage is data processing. Data processing can be carried out in several stages editing, namely checking, correcting, and correcting any data on the completed question sheet (questionnaire). In this study, researchers checked the completeness of all questions so that they were filled in according to the available question columns. Coding gives a code to each piece of data collected according to the variables of each study, making it easier for researchers to tabulate the data. In this research, the researcher coded the data, namely giving a number or mark to each answer on the questionnaire sheet, to facilitate the data entry and analysis. Coding for questions on the perception of vulnerability, perception of severity, perception of benefits, perception of barriers, and perception of ability has four answer choices, namely strongly agree=4, agree=3, disagree=2, and strongly disagree=1, and coding for variable questions ability of anemia prevention has two options, namely being able to do it, given code 2 and unable to do it, giving code 1. Pregnant women can prevent anemia if they take three or more preventive measures (setting gestational age, pregnancy spacing, regulating diet, compliance with Fe tablets or regular ANC). Moreover, if you take less than three actions, you are said to be unable to prevent anemia. Data analysis uses the chi-square test.

The research instrument was a questionnaire of characteristics of general respondents. Questionnaires of health belief models include perception of vulnerability, perception of benefits, and perceptions of barriers, as well as questionnaires on pregnant women's ability to take precautions against anemia.

This research has received information on the ethical feasibility of KEPK Poltekkes Kemenkes Kemenkes Surabaya with Number EA/1717/KEPKPoltekkes_SBY/V/2023.

RESULTS

Table 1 shows the average age of pregnant women in the healthy reproductive category, 80.2%. In educational characteristics, 28.7% of pregnant women have primary education, namely Elementary School (SD) and Junior High School (SMP). Most pregnant women have health insurance, 56.4%, and given parity, the majority of pregnant women (72.3%) are multigravida due to having more than one pregnancy.

Table 1. Characteristics of pregnant women

Characteristics	n	%
Age		
<20 years	4	4.0
20-35 years	81	80.2
>35 years	16	15.8
Education		
Elementary School	9	8.9
Junior High School	20	19.8
Senior High School	48	47.5
Higher Education	22	21.8
Others	2	2.0
Health Cost		
General	44	43.6
BPJS (Health Insurance)	57	56.4
Parity		
1	28	27.9
2	40	39.8
3	24	23.8
4	9	8.9

Based on perception variables vulnerability, the results show that respondents with an average negative perception – on average, unable to take precautions for anemia and vice versa- have a positive perception on average ability to prevent anemia. The results of the Chi-Square statistical test show the influence of perceived vulnerability on pregnant women's ability to prevent p-value<α (0.05).

Based on the perceived severity variable, The results show that respondents who have a negative perception on average are unable to prevent anemia, and on the other hand, respondents who have positive perceptions on average have the ability to prevent anemia. The Chi-Square test results show an influence of perceived vulnerability on the ability of pregnant women to prevent anemia p-value<α (0.05).

Table 2. Results of bivariate analysis of health belief model factors on the ability of pregnant women in preventing anemia

HBM Factor	The ability of anemia prevention				p-value	OR
	Unable		Able			
	n	%	n	%		
Perception of Vulnerability						
Negative	17	89.5	2	10.5	0.000	13.28
Positive	32	39.0	50	61.0		
Perception of Severity						
Negative	12	85.7	2	14.3	0.007	8.11
Positive	37	42.5	50	57.5		
Perception of Benefits						
Negative	22	81.5	5	18.5	0.000	7.66
Positive	27	36.5	47	63.5		
Perception of Barriers						
Negative	2	50.0	2	50.0	1.000	1.06
Positive	47	48.5	50	51.5		
Perception of Ability						
Negative	7	87.5	1	12.5	0.028	8.50
Positive	42	45.2	51	54.8		

Description: tested using the Chi-Square test

Based on the perceived benefit variable, The results show that respondents who have a negative perception on average are unable to prevent anemia, and on the other hand, respondents who have positive perceptions on average have the ability to prevent anemia. The results of Chi-Square statistics show that there is an influence of perceived vulnerability on the ability of pregnant women to prevent anemia p-value<α (0.05).

Based on the variable perception of obstacles, the results show that respondents have a positive perception but are, on average, unable to prevent anemia. The results of the Chi-Square statistical test show that perceived vulnerability does not affect the ability of pregnant women to prevent anemia p-value>α (0.05).

Based on variables of capability perception, the results show that respondents with an average negative perception – are generally unable to take precautions for anemia. However, quite a lot of respondents who have positive perceptions are unable to prevent anemia. The Chi-Square statistical test results show that perception of vulnerability does not affect pregnant women's ability to prevent anemia p-value>α (0.05).

The odds ratio (OR) value, which is significant, is present in all factors. Perception of severity has the biggest relationship strength, namely 13.28, meaning pregnant women with positive severity perceptions, 13.28 times, are more likely to have the prevention ability of anemia compared to pregnant women with

negative severity perceptions. Meanwhile, the perceived obstacle factor has the weakest relationship power, namely 1.06, which means pregnant women with a positive perception of barriers are only 1.06 times more capable of preventing anemia compared to mothers pregnant women with a perception of severity negative.

DISCUSSION

The influence of perceived vulnerability on the ability of pregnant women to prevent anemia

Based on Table 2, it can be explained that the higher the perceived vulnerability felt by pregnant women, the more likely they are to be able to take measures to prevent anemia, and vice versa. This is supported by a statistical test that produces a p-value=0.000, so it can be concluded that perceived vulnerability significantly influences pregnant women's ability to prevent anemia. Perceptions of a person's vulnerability greatly influence pregnant women in decision-making; in this study, one of them is measures to prevent anemia. Suppose pregnant women get the correct information about anemia. In that case, pregnant women can assess their condition and situations that could threaten their health to form behaviors that lead to efforts to prevent anemia, such as consuming foods that contain lots of iron and taking blood supplement tablets correctly during pregnancy.

This aligns with research Triharini et al. (2019), which states that pregnant women with a high perception of vulnerability tend to behave adequately in preventing anemia. The perceived severity of the disease or health condition is considered a threat. Therefore, individuals are willing to take preventive measures, participate in screening, and control existing diseases. In other research by (Dewi et al., 2020), individuals who believe that pregnant women who perceive vulnerability will consider anemia a severe disease and a health threat, so pregnant women tend to try to prevent or treat it if anemia occurs. It is logical that if someone believes they are at risk of disease, they will do something to prevent it. In contrast, unhealthy behavior tends to occur if people believe they are not at risk or have a low perceived risk of susceptibility (Hardiansyah et al., 2022).

The influence of perceived severity on the ability of pregnant women to prevent anemia

Based on Table 2, it can be explained that the higher the perceived severity felt by pregnant women, the more likely they are to be able to take measures to prevent anemia, and vice versa. This is supported by a statistical test that produces a p-value=0.007, so it can be concluded that perception of severity significantly influences pregnant women's ability to prevent anemia. Severity perception shows an individual's perception of the extent of pain he or she will suffer if the individual contracts an illness or performs an action that threatens or endangers his or her health (Parish et al., 1991). Based on the questionnaire filled in by respondents in this research, it can be explained what pregnant women think that anemia in pregnancy can cause bleeding and even death. Perceptions of severity are often based on medical information or other knowledge. There is also the possibility that it will come from a person's beliefs about the extent of a disease, which impacts life in general (Attamimy & Qomaruddin, 2018). This opinion is reinforced in this research that the perception of severity is positively related to the ability of pregnant women to prevent anemia. Another study conducted by Fitriani et al. (2019) showed a relationship between perceived severity and DM patients' compliance in using insulin correctly, strengthening the results of this study.

The study's results do not align with research Triharini et al. (2023), which states that there is no relationship between perceived severity and anemia prevention behavior of pregnant women (p-value=0.839). The severity felt by the mother regarding anemia in pregnancy does not have an impact on increasing the awareness status of pregnant women regarding the health condition of their fetus. The high perception of severity does not change the mother's behavior in taking measures to prevent anemia in pregnancy. Likewise, if the mother has a low perception of severity, it does not mean that the mother is not trying to prevent anemia.

The influence of perceived benefits on the ability of pregnant women to prevent anemia

Result in Table 2 show that information is also obtained that the higher the perceived benefits felt by pregnant women, the more likely they are to be able to take measures to prevent anemia, and vice versa. This is supported by a statistical test that produces a p-value=0.000, so it

can be concluded that there is a significant influence of perceived benefits on the ability of pregnant women to prevent anemia. Perception of benefit is a pregnant woman's belief in the benefits of taking measures to prevent anemia. If pregnant women feel they are susceptible to anemia, they will take action to treat or prevent the disease. Actions taken to treat or prevent depend on the perceived benefits. Suppose they feel there are benefits from preventive behavior. In that case, pregnant women will take measures to prevent anemia by consuming foods containing lots of iron and taking blood supplement tablets. On the other hand, if pregnant women do not feel the benefits of anemia prevention behavior, they will ignore this behavior. However, there are still pregnant women who believe in the benefits of anemia prevention behavior but do not take preventive measures such as taking Fe tablet supplements due to discomfort when taking supplements, such as nausea and constipation.

This is in line with research Narsih & Hikmawati (2020), which states that there is a significant influence between perceived benefits and preventive behavior. The better a person's positive perception of behavior to prevent a disease, the more likely he or she will take that action. Perceived benefit refers to an individual's assessment of the value or efficacy of engaging in health-promoting behaviors to reduce disease risk. Suppose a person believes that a specific action will reduce susceptibility to a health problem or reduce the seriousness of a health problem. In that case, he or she will most likely carry out that behavior without paying attention to objective facts regarding the effectiveness of the action (Onoruoiza et al., 2015). In this study, it can be explained that if pregnant women believe that taking blood supplement tablets can reduce the risk of anemia, they are more likely to comply than pregnant women who believe that taking blood supplement tablets does not reduce the risk of anemia.

Related to perceived benefits, pregnant women's belief in the effectiveness of preventing anemia in reducing complications, or the perceived benefits of taking these health measures, resulting in behavior change.

The influence of perceived barriers on the ability of pregnant women to prevent anemia

Result in Table 2 show information is obtained that the more obstacles/obstacles pregnant women feel in preventing anemia, the higher the inability of pregnant women to prevent anemia. This is supported by a statistical test that produces a p-value=1.000, so it can be concluded that there is no influence of perceived obstacles on the ability of pregnant women to prevent anemia. The results of this research are strengthened by the opinion (Conner et al., 2017) that the relationship between perceived barriers and healthy behavior is harmful. This means that if the perceived barriers to healthy behavior are high, healthy behavior will not be carried out.

Perceived barriers are obstacles that arise when acting. Perceived barriers indicate how individuals perceive potential negative impacts from suggested or recommended health behaviors (Fitriani et al., 2019). Perceived barriers are an essential and practical component of the Health Belief Model because individuals must be able to take control of behavioral barriers first before they can finally engage in preventive behavior (Fransiska et al., 2022). In this research, several things can be explained that there are supporting factors in assessing perceived barriers, including perceived barriers to discomfort when consuming iron supplements due to side effects, barriers to receiving information about anemia prevention, and perceived barriers to lack of support from husband or family. In line with the opinion of (Parish et al., 1991), in the HBM theory, it is explained that everything that hinders this can be seen in terms of expensive costs, benefits, unsatisfactory and enjoyable health services, as well as support from family and others. Research Mishra et al. (2021) shows that a great deal of ignorance about the symptoms and signs of anemia in pregnancy is an obstacle for pregnant women to visit health services to receive regular antenatal care. Other perceptions also influence perceptions of obstacles. The higher the perceived vulnerability and perceived benefits, the lower the perceived barriers because the perceived benefits are more significant than the losses (Hupunau et al., 2019). According to Yehualashet et al. (2021), if a new behavior, such as prevention or screening, is believed to have benefits (perceived benefits) that are greater than the barriers a person feels (perceived barriers), he or she is more likely to implement the new behavior.

This research is not in line with research Chusna et al. (2021) with adolescent respondents, who explained that most respondents felt they had no obstacles in consuming Fe tablets, and 50% had a strong intensity in consuming Fe tablets. In testing the relationship between perceived barriers and the intensity of Fe tablet consumption in young women, the Spearman correlation test was used, and a p-value of 0.003

(<α 0.05) was obtained, which means there is a significant relationship between perceived barriers and the intensity of Fe tablet consumption in young women. Differences in research results are possible due to differences in respondent characteristics and level of knowledge.

The influence of perceived self-efficacy on the ability of pregnant women to prevent anemia

Information in result is obtained that respondents who have a negative perception of their abilities are, on average, unable to prevent anemia. Respondents with a positive perception of ability are, on average, able to prevent anemia. However, quite a lot of respondents who have a positive perception are unable to prevent anemia. The statistical test produces a value of p-value=0.028, so it can be concluded that perceived self-efficacy significantly influences pregnant women's ability to prevent anemia. Perception of self-ability is an assessment of a person's ability to act. If individuals believe that a new behavior benefits them but think they cannot, the behavior will not be implemented (Chusna et al., 2021).

In this study, it can be explained that pregnant women with a positive perception of their abilities can prevent anemia by regulating the number and spacing of pregnancies, regulating their diet, and complying with taking Fe tablets. This research is in line with Chusna et al. (2021), which states a significant relationship exists between self-efficacy and consumption intensity. The same thing was also expressed by Wijayanti et al. (2022), who stated that there is a relationship between self-efficacy and TTD tablet consumption behavior; the more positive self-efficacy the respondent has, the more compliant the respondent's TTD consumption behavior will be, and vice versa for respondents who do not have self-efficacy towards TTD, tends never to consume TTD.

In this study, the results also showed that respondents who had a negative perception of their abilities were unable to prevent anemia on average. Respondents are not sure they can prepare, provide, and process food that meets the nutritional elements according to the needs of pregnant women. They have a low level of education, so they need more knowledge about choosing, processing, and preparing a menu with balanced nutrition.

Respondents in this study were also not sure they could consume TTD because of the side effects. The HBM theory states that self-efficacy can be changed by eliminating the negative influences from past unsuccessful experiences by overcoming failure. Experiences of failure to consume TTD due to side effects felt by pregnant women can be overcome with counseling by health workers.

Other perceptions also influence self-efficacy. The higher the perceived vulnerability, severity, and benefits, the higher the respondent's self-efficacy. The lower the perceived barriers, the higher the respondent's self-efficacy (Hupunau et al., 2019).

The results of this study are not in line with research Triharini et al. (2019), which explains that self-efficacy does not influence anemia prevention behavior in pregnant women (p-value=0.399). Differences in research results are possible due to differences in respondent characteristics and other factors such as self-motivation. Self-efficacy can influence compliance through self-thinking and motivation (Fitriani et al., 2019).

CONCLUSION

Perceptions of vulnerability, perceptions of severity, and perceptions of benefits influence the ability of pregnant women to prevent anemia. In contrast, perceptions of barriers and perceptions of ability do not influence the ability of pregnant women to prevent anemia.

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