ORIGINAL ARTICLE

Demographic Factors Affecting Pregnant Women's Self-Efficacy in Adherence to Taking Fe Tablets

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ABSTRACT

Introduction: Pregnancy anemia is a national problem. A contributing factor to the high rate of iron deficiency anemia in pregnant women is the low self-efficacy of pregnant women in adherence to taking blood supplement tablets. The self-efficacy of pregnant women in taking Fe tablets is influenced by factors of age, education, occupation, gestational age, and gravida. The purpose of this study was to determine the factors that influence the self-efficacy of pregnant women in adherence to taking Fe tablets in the Working Area of Lembursitu Health Center, Sukabumi City. **Methods:** This type of research is correlational with a cross sectional approach. The sample was 80 pregnant women in the working area of Lembursitu Health Center, Sukabumi City. Inclusion criteria included pregnant women who were willing to be respondents, were present at the time of data collection, and were taking blood supplement tablets. The sampling technique used cluster random sampling. The research instrument for the self-efficacy variable refers to a Likert scale that has been tested valid and reliable. Statistical analysis used chi-square and logistic regression. **Results:** The results showed that age, education, occupation, gestational age, and gravida influenced self-efficacy in adherence to taking Fe tablets ($p < 0.05$). The most dominant variable affecting the self-efficacy of pregnant women in adherence to taking Fe tablets is gestational age (OR = 77.621). **Conclusion:** Age, education, occupation, gestational age, and gravida influenced self-efficacy in adherence to taking Fe tablets in the working area of Lembursitu Health Center, Sukabumi City.
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INTRODUCTION

In 2020 the mortality rate of pregnant women, especially those who died during and after childbirth, was reported to be high with around 287,000 women. In the same year, more than 90% of all maternal deaths occurred in middle- to low-income developing countries, and almost every case can be prevented (1). Indonesia's infant mortality rate is projected to be 19.3 per 1,000 live births by 2023. This ranks Indonesia 80th globally (2). In developing countries around 40% of maternal deaths are related to anemia in pregnancy (3). Anemia in pregnancy is a significant nutritional disorder which can lead to bleeding, preterm birth, low birth weight, and perinatal death (4).

Self-efficacy is a crucial factor in changing behavior and determines the success of adherence in implementing healthy behaviors (5). Self-efficacy is influenced by an individual's perception of their agility when trying to achieve a goal. An individual's ability, competence and stability when dealing with problems is actively influenced by their level of self-efficacy. This theory is closely related to health status both in general and in women, where self-efficacy can ensure adherence to Fe tablet consumption levels (6). Poor adherence to iron supplementation reflects a major lapse in self-health care that can have long-term adverse consequences on the health of the mother and her infant (7). Predisposing, enabling, and reinforcing factors are influenced by knowledge and attitudes that encourage pregnant women to comply, while reinforcing factors are influenced by family support and the role of health workers (8). In addition, self-efficacy is directly or indirectly related to age, education, employment status, gestational age and gravida (9).

Gravida status is the number of pregnancies a woman has experienced, including the current pregnancy. Primiparous mothers tend to have lower self-efficacy than multiparous mothers (10). Primiparous mothers have no previous experience so that they are less able and have difficulty in adhering to taking iron tablets.

Self-efficacy is a person's belief in his or her ability to complete certain tasks (10). Gestational age affects self-efficacy in taking Fe tablets. In conducting screening tests and assessing the health of the baby and pregnant mother, health workers make gestational age the most important indicator compared to other data. The process of calculating gestational age is relatively easy and can be done at any time (11).

Other factors that influence self-efficacy in consuming Fe tablets are occupation (12). When someone works, they tend to have better opportunities to interact with other individuals so that their knowledge increases as well. This is the same with a working mother, the knowledge and information obtained while working can increase the mother's compliance to consume Fe tablets. Compared to that, unemployed mothers are considered to be more withdrawn and stay at home a lot, so they tend to have less communication with other mothers and are more likely to have limited knowledge on Fe tablet adherence (13).

Education is another factor that affects self-efficacy in consuming Fe tablets. The high level of education will be in line with knowledge, self-control when dealing with problems, self-confidence in individuals (14). As a result, individuals with higher education are considered better at fulfilling health needs, especially because they are better at issuing positive responses regarding the stimulus received (15).

Age is another factor that affects self-efficacy in consuming fe tablets. In relation to maternal self-efficacy, it is known that high maternal self-efficacy occurs at the age of > 35 years compared to respondents aged 20-35 years. But it does not rule out the possibility that productive age also has good maternal self-efficacy in consuming Fe tablets. At the age of 20-35 years, some pregnant women have high readiness as pregnant women which is associated with the experience and efforts of pregnant women to explore information about pregnancy and birth (16). The purpose of this study was to determine the factors that influence the self-efficacy of pregnant women in adherence to taking Fe tablets in the working area of Lembursitu Health Center, Sukabumi City.

MATERIALS AND METHODS

Study Design

This type of research uses correlation with cross sectional method. This research was conducted from August 2023 to February 2024. This study was conducted at the Lembursitu Health Center Working Area of Sukabumi City. Ethical clearance was obtained prior to data collection (No: 000882/KEP STIKES SUKABUMI/2024.).

Sample

The population of this study was 100 people with a sample of 80 people in the Lembursitu Health Center Working Area of Sukabumi City which is calculated using the Slovin formula. Inclusion criteria included pregnant women who were willing to be respondents, were present at the time of data collection, and were taking blood supplement tablets. Data collection using cluster random sampling technique this was done by randomly drawing lots from each Neighbourhood in the study area, and then each Neighbourhood selected from the random draw would be sampled. The working area of Puskesmas Lembursitu in Sukabumi covers two villages, namely Lembursitu Village with a sample of 29 pregnant women and Situ Mekar Village with a sample of 51 pregnant women.

Instrument

The research procedure begins with an application for research permission, then distributing informed consent sheets followed by distributing questionnaires. The data collection method used a questionnaire, for the self-efficacy variable using the Medication Adherence Self-Efficacy Scale (MASES-R) which has been translated into Indonesian and declared valid (r = 0.91) and reliable (Cronbach α = 0.855) (17). Meanwhile, the other variables are the demographics of the respondents.

Data Analysis

Univariate analysis in this study used descriptive analysis for variables of age, education, occupation, gestational age, gravida, and self-efficacy. Statistical analysis used chi square and logistic regression with a significance value of 0.05. All statistical analyses were performed using the SPSS statistical software package (version 26).

RESULTS

Based on table I shows that most respondents are not at risk, as many as 42 people (52.5%), have high education (SMA / SMK - college), as many as 51 people (63.8%), are not working, as many as 41 people (51.2%), have a gestational age of trismester II, as many as 41 people (51.2%), have a number of multigravida pregnancies, as many as 46 people (57.5%), and Self-efficacy in adherence to taking fe tablets with high categories, as many as 51 people (63.8%).

Based on table II, the results of the chi-square statistical test obtained a p-value <0.05, which means that age, education, occupation, gestational age, and gravida have an influence on the self-efficacy of pregnant women in compliance with consuming Fe tablet.

Table III shows that the results of logistic regression statistical test obtained p-value <0.05 which means that age, education, occupation, gestational age, and gravida contribute to influencing the Self-efficacy of pregnant women in adherence to taking fe tablets significantly with an R Suare value of 0.765 which means that it has a simultaneous influence by contributing an influence of 76.5% and the remaining 23.5% is influenced by

Table I : Univariate Analysis

Variable	N	Percentage (%)
Age		
At Risk	38	47.5
Not At Risk	42	52.5
Education		
Not in School-SMP	29	36.2
SMA/SMK-PT	51	63.8
Occupation		
Not working	41	51.2
Working	39	48.8
Gestational Age		
Trimester I	41	51.2
Trimester II	39	48.8
Gravida		
Primigravida	34	42.5
Multigravida	46	57.5
Self Efficacy		
Low	29	36.2
High	51	63.8

Table II : Bivariate Analysis

Independent Variable	Category	*Self Efficacy*				Total		*P Value*
		Low		High				
		n	%	n	%	n	%	
Age	At Risk	22	57.9	16	42.1	38	100	0.000
	Not At Risk	7	16.7	35	83.3	42		
Education	Not in School -SMP	20	69	9	31	29	100	0.000
	SMA/SMK-PT	9	17.6	42	82.4	51		
Occupation	Not Working	22	53.7	32	46.3	41	100	0.000
	Working	7	17.9	51	82.1	59		
Gestational Age	Trimester II	23	56.1	18	43.9	41	100	0.000
	Trimester III	6	15.4	33	84.6	39		
Gravida	Primigravida	19	55.9	15	44.1	34	100	0.002
	Multigravida	10	21.7	36	78.3	46		

Table III : Multivariate Analysis

Variable	B	*P-Value*	OR
Age	2.236	0.021	9.356
Education	3.252	0.008	25.843
Occupation	3.604	0.003	36.730
Gestational Age	4.352	0.002	77.621
Gravida	2.445	0.029	11.528
Constant	-6.971	0.000	0.001

R Square = 0.765

other factors not studied. The most dominant variable influencing pregnant women's self-efficacy in adherence to taking fe tablets in the Lembursitu Health Center Working Area, Sukabumi City is gestational age. The gestational age variable had an Odds Ratio of 77.621, meaning that pregnant women who had a third trimester of pregnancy had a chance to have Self-efficacy in adherence to taking fe tablets by 77.621 times higher than pregnant women who had a second trimester of pregnancy.

DISCUSSION

The Effect of Age on Pregnant Women's Self-efficacy in Adherence to Taking Fe Tablets

The results showed that there was an effect of maternal age on self-efficacy in adherence to taking Fe tablets. This research is in line with Gebremichael & Welesamuel, the age of pregnant women is also proven to have an effect on self-efficacy in adherence to taking folic acid supplements (18).

Self-efficacy is described as the beliefs held by individuals in managing existing conditions and getting good results. The important role of self-belief is to motivate individuals to make efforts to achieve success and provide strength when facing a difficulty. The self-efficacy of pregnant women is to provide good nutrition and proper stimulation for their baby including compliance in taking blood enhancement tablets (19).
In the age range of early adulthood, individuals have emotional maturity so that they can provide their skills in decision making, in this case related to compliance with fe tablet consumption (20). Mother's age is an aspect of self-efficacy influence when dealing with her child. Older mothers have more stable emotions, more knowledge, and better problem-solving capabilities in child guidance (21). This broader knowledge increases the mother's self-efficacy or confidence in undergoing her pregnancy (22). In addition, maturity is often associated with an increased sense of responsibility for health, which contributes to pregnant women's compliance in consistently taking iron tablets (11).

In early adulthood, women's physical condition is usually at its peak, which supports their mental and physical readiness to take good care of pregnancy. This confidence is also reflected in their adherence to taking blood supplement tablets, as they better understand the benefits and risks associated with anemia during pregnancy (23).Where as young women aged 19-24 years do not yet have the mental readiness to care for pregnancy and will have a direct impact on self-efficacy. Young women who are not mentally prepared will tend to doubt their ability to take good care of pregnancy. This belief can reduce the drive to take necessary actions, such as maintaining health, consuming nutritious food, and following medical advice, including taking blood supplement tablets (TTD).

In the Theory of Planned Behavior, humans are assumed to be rational and use information that is possible for them, systematically. Adults generally think about the implications of their actions before they decide to do or not do certain behaviors so self-efficacy plays a role in making decisions. Individuals with high self-efficacy feel more able to overcome challenges and obstacles that may arise, so they are more likely to act according to their rational judgment. Conversely, individuals with low self-efficacy may hesitate to take actions that are

considered important, even though they have adequate information (17).

The Effect of Education on Pregnant Women's Self-efficacy in Adherence to Taking Fe Tablets

Based on the results of the study, it can be concluded that there is a significant effect of maternal education on the self-efficacy of pregnant women in adherence to taking Fe tablets. The results of this study are in line with Puspita et al. which states that mothers with higher levels of education tend to have better knowledge and motivation to maintain their health and their fetus, increasing their commitment to following medical recommendations including taking Fe tablets regularly (24). It is also in line with the research of Sukarsih & Munarsih which states that mothers who have higher education tend to have better self-efficacy in carrying out health behaviors recommended by medical personnel (25).

Self-efficacy is a person's belief in their ability to manage and carry out the actions needed to achieve desired goals and find solutions if problems occur in the process. Self-efficacy is an important predictive factor in an individual's decision-making regarding their health behaviors, enabling them to adopt health-supportive behaviors and reduce harmful behaviors. Self-efficacy influences individual responses in terms of mindset, emotional reactions, effort, persistence, and decisions to be made (26).

Self-efficacy is a factor that influences adherence in taking Fe tablets. A person's beliefs about their ability to carry out tasks or activities aimed at achieving certain results reflect how confident they are in their abilities. Self-efficacy is an important component in increasing a mother's confidence in her ability to take actions that can help her achieve goals, as well as in choosing the best steps if she faces problems during pregnancy (27).

A factor that can influence pregnant women's self-efficacy in adherence to taking Fe tablets is maternal education. Mothers who have completed higher education, such as high school or college, should be able to analyze and understand various problems in their lives and apply the knowledge gained to solve these problems. Higher education is usually associated with better understanding and knowledge, so that individuals can respond positively to existing stimuli, especially in terms of meeting health needs. With increasing levels of education, awareness of health problems also tends to increase (15). Higher education enables mothers to be more critical of the health information they receive, so that their decisions to take iron tablets are more knowledge-based (28).

The mother's level of education will provide a response to something. The mother's level of education greatly influences how a person acts and looks for causes and solutions in her life. Educated mothers are usually more aware of the importance of health during pregnancy, including regularly taking iron (Fe) tablets to prevent anemia and ensure healthy fetal development. They also tend to be more active in seeking information and discussing health with medical personnel, as well as implementing good health practices in the family (29).

Mothers who have higher education tend to better understand the importance of nutrition and health, so they are more aware of the benefits of Fe tablets in preventing anemia. This knowledge not only increases their awareness, but also their confidence in maintaining personal and fetal health. Better access to health information and resources is also an important factor. Mothers with better education often receive more effective health education, both from medical personnel and other media. Support from the social environment, such as family and friends, also increases the mother's confidence in following health recommendations. Motivation derived from education also contributes to adherence. Mothers who understand the positive impact of good health will be more committed to following recommendations, including regularly taking Fe tablets. Thus, mothers' education level has a direct effect on their self-efficacy and adherence in taking Fe tablets during pregnancy (25).

The Effect of Occupation on Pregnant Women's Self-efficacy in Adherence to Taking Fe Tablets

Based on the results of the study, there is a significant influence between mother's work on the self-efficacy of pregnant women in adherence to taking fe tablets. In line with research conducted by Mochtar et al. which states that maternal employment is one of the factors that can affect maternal self-efficacy in adherence to Fe tablet consumption (30). Maryanto also stated in his research that maternal employment can affect compliance patterns, with mothers who do not work tending to have higher self-efficacy (31).

Self-efficacy of pregnant women with anemia is formed through the stages of cognitive process, motivational process, affective process and selection process (29). Pregnant women with high perceived benefits of folic acid supplementation were 2.72 times more likely to adhere to folic acid supplementation compared to those with low perceived benefits. Pregnant women with high self-efficacy towards folic acid supplementation were 2.91 times more likely to adhere to folic acid supplementation compared to those with low self-efficacy (32). Sociodemographic factors including women's age, women's educational status, husband's educational status, women's occupation, wealth index, media exposure, parity, residence, religion and number of ANC visits were significantly associated with adherence to iron supplementation among married women in making decisions. This decision-making ability is closely related to perceived self-efficacy, where

women feel more confident in their capacity to manage their health effectively when they believe they can make decisions that suit their preferences (33).

Non-working mothers usually have plenty of time to pay attention to their own health. They can organize their daily schedules without the pressure of work, making it easier to adjust the time to take Fe tablets regularly. In addition, without the pressure of work, stress levels in non-working mothers are usually lower. According to Ashour et al., that housewives tend to have lower stress levels and are positively associated with better self-efficacy regarding prenatal care, one of which is taking Fe tablets (34).
Working pregnant women with busy schedules often face difficulties in prioritizing medication adherence, including Fe tablet consumption. This condition can cause physical and mental fatigue, which reduces awareness or motivation to consume Fe tablets regularly, because mothers are more focused on resting after undergoing daily activities (30). In addition, many working pregnant women do not have the flexibility of time to schedule meals or breaks, which are ideally needed to take Fe tablets after meals (31). In line with research conducted by Grenier et al., several factors such as time constraints, costs, family responsibilities, working outside the home and fatigue are challenges that affect the behavior of pregnant women where the greater the challenges faced by pregnant women, the lower the self-confidence (35).

The Effect of Gestational Age on Pregnant Women's Self-efficacy in Adherence to Taking Fe Tablets

Based on the results of the study, there is a significant influence between the mother's work on the self-efficacy of pregnant women in adherence to taking fe tablets. The results of research by Putri et al. stated that gestational age can affect maternal self-efficacy in adherence to Fe tablet consumption (36). In addition, it is in line with the research of Fitri et al., states that increasing gestational age can increase maternal self-efficacy in adherence to taking Fe tablets (37).

Self-efficacy in pregnant women is one of the psychological factors and valuable frameworks that predict maternal behavior and increase confidence and ability during pregnancy. Maternal self-efficacy in adherence to consuming Fe tablets is influenced by several factors, one of which is gestational age. The longer the gestational age will make pregnant women adapt to their pregnancy and the mother's self-efficacy will be better (38).

In mothers with more advanced gestational age, especially in the final trimester, they tend to be more adapted to routines and physical changes during pregnancy. This makes their self-efficacy increase, including in carrying out medical recommendations such as the consumption of Fe tablets. More mature experience during pregnancy also strengthens the mother's confidence in maintaining personal and fetal health (39).

The effect of gestational age on maternal self-efficacy in adherence to taking Fe tablets is related to psychological changes and maternal awareness of different health needs in each trimester. As gestational age increases, maternal self-efficacy tends to increase, especially in facing health challenges and adherence to taking supplements such as Fe tablets (36).

In early pregnancy, mothers often face symptoms such as nausea and vomiting that can reduce their self-efficacy to take Fe tablets regularly. This condition causes low self-efficacy in maintaining health, especially due to physical disorders experienced. pregnant women begin to adapt to changes in the body and are more accustomed to health routines, including taking Fe tablets. At this stage, self-efficacy tends to increase because mothers begin to feel stronger and more aware of the importance of maintaining health. Increased awareness and experience make mothers more confident in managing their own and the fetus' health, which increases compliance. Meanwhile, in the late trimester, maternal self-efficacy usually reaches its peak. Mothers are more aware of health risks, such as anemia that can affect delivery and fetal health, so they feel more confident and motivated to follow medical recommendations, including the consumption of Fe tablets. At this stage, information support from health workers also plays a role in increasing the mother's confidence to comply (37).

The Effect of Gravida on Pregnant Women's Self-efficacy in Adherence to Taking Fe Tablets

The results showed that there was an effect of gravida on the self-efficacy of pregnant women in adherence to taking Fe tablets. This research is in line with Sukmawati et al. which revealed that gravida affects the self-efficacy of pregnant women in taking Fe tablets (40).

Pregnant women are more at risk of anemia due to various factors such as biological changes (menstrual period), malnutrition, food insecurity, and lack of knowledge. The most common factors are iron and folic acid deficiency. Therefore, additional iron supplementation or therapy is required to increase hemoglobin levels (41). Low intake of micronutrients also plays an important role so pregnant women are advised to regularly consume iron/folate supplementation or foods containing Fe (42).

Gravida is a term used to describe a woman who is pregnant. A person's gravida status is determined based on the number of pregnancies experienced. Primigravida refers to women who are pregnant for the first time, while multigravida is a woman who has been pregnant more than once or between two and four times, while women who have been pregnant more than four times are called grandemultigravida (20).

Repeated pregnancy and childbirth can affect the occurrence of anemia in pregnant women. The more often a woman experiences pregnancy and childbirth, the more iron she will lose, increasing the risk of anemia (29). Research conducted by Abdilahi et al (2024) that the increasing prevalence of Anemia as gestational age increases is due to repeated births and high fertility behavior, which is a risk factor for micronutrient deficiencies due to high demand and frequent blood loss during childbirth, which ultimately affects micronutrient storage (43). This observation highlights the potential risk of Anemia among women with multiple pregnancies.

Physiologically, mothers with high parity or a history of frequent births will have a greater increase in blood plasma volume leading to greater hemodilution. Mothers who have given birth more than 3 times are at risk of serious complications such as bleeding, this is influenced by the state of anemia during pregnancy. In addition, the bleeding that occurs causes the mother to lose a lot of haemoglobin and a decrease in iron reserves which makes the next pregnancy more prone to anemia (44).

Mothers with more frequent pregnancies tend to have better experience in undergoing previous pregnancies, including in terms of complying with supplementation recommendations. They are more confident and have the ability to overcome challenges that may arise, such as side effects from supplements, compared to first-time pregnant women. The positive attitudes held by pregnant women stem from their belief that taking supplements is beneficial for their and their baby's health. Similar views regarding positive statements about supplement use were also found in Kenya, where expected and perceived benefits influenced participants' perceptions towards using calcium supplements during routine ANC visits (45). In addition, mothers with high self-efficacy were more likely to be compliant in taking Fe tablets, while mothers with low self-efficacy were at higher risk of non-compliance that could affect their health and that of their infants (37).

However, research conducted by Bahati et al. states that primigravida mothers are almost three times more likely to be compliant with folic acid consumption compared to multigravida mothers (46). The low adherence of multigravida mothers to folic acid consumption can be attributed to their experience in childbirth and previous folic acid use. Primigravida mothers usually have a higher level of self-efficacy in following medical recommendations, including adherence to supplements such as folic acid. This is due to their enthusiasm and desire to ensure the health of their first pregnancy. Their lack of experience means that they tend to adhere better to medical advice.

CONCLUSION

There is an effect of age, education, occupation, gestational age, and gravida on self-efficacy in adherence to taking Fe tablets in the Working Area of Lembursitu health center, Sukabumi City. Lembursitu health center is expected to carry out routine counseling, utilize reminder application facilities, and involve families to increase the self-efficacy of pregnant women in an effort to adhere to taking fe tablets.

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