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Pregnant Women's Class on Their Knowledge of Danger Signs in the Third Trimester of Pregnancy

Rifka Handayani[1], Nila Widya Keswara[2*]
[1] Sarjana Kebidanan, Fakultas Ilmu Kesehatan, Institut Teknologi Sains dan Kesehatan RS dr. Soepraoen Malang, Indonesia
[2] Departemen Kebidanan, Fakultas Ilmu Kesehatan, Institut Teknologi Sains dan Kesehatan RS dr. Soepraoen Malang, Indonesia
Corresponding Author: nilakeswara35@itsk-soepraoen.ac.id [2]

Abstract. *The third trimester of pregnancy is a critical period with increased risks of obstetric complications, necessitating adequate knowledge of pregnancy danger signs. The Pregnant Women's Class (Kelas Bumil) is a preventive and educational initiative in antenatal care designed to enhance knowledge and preparedness among pregnant women. This study aimed to assess the impact of the Pregnant Women's Class on the knowledge of pregnancy danger signs and changes in hemoglobin levels among third-trimester pregnant women. Using a quasi-experimental pretest-posttest design, the study involved 30 pregnant women selected through purposive sampling. Knowledge was assessed via structured questionnaires before and after attending the class, while hemoglobin levels were measured at both intervals. Univariate and bivariate analyses were conducted, with the Wilcoxon test used for comparing pre- and post-intervention data ($p < 0.05$). Results revealed a significant increase in knowledge levels, with most women showing good knowledge after the intervention. Hemoglobin levels also improved significantly ($p = 0.001$). These findings demonstrate that the Pregnant Women's Class effectively enhances both cognitive knowledge and health status in pregnant women. In conclusion, strengthening and sustaining the Pregnant Women's Class should be a continuous part of integrated antenatal care to improve maternal health outcomes.*

Keywords: *Hemoglobin; Maternal Knowledge; Pregnancy Warning Signs; Prenatal Classes; Third Trimester.*

1. INTRODUCTION

The third trimester of pregnancy is a critical period because the risk of obstetric complications increases, such as bleeding, preeclampsia, infection, and fetal distress, so pregnant women need to have adequate knowledge about the danger signs of pregnancy. The World Health Organization emphasizes that delays in recognizing the danger signs of pregnancy and seeking help are one of the main causes of high rates of maternal morbidity and mortality. Pregnant women's knowledge of danger signs is a key factor in their decision to immediately access appropriate health services (WHO, 2016). One important aspect to consider is knowledge of pregnancy danger signs, especially in the third trimester, when the risk of complications increases. Data from the World Health Organization (WHO) shows that approximately 830 women die every day from complications related to pregnancy and childbirth, mostly in developing countries (WHO, 2019). Therefore, increasing knowledge about danger signs during pregnancy is crucial.

Warning signs of pregnancy in the third trimester include vaginal bleeding, severe headaches, visual disturbances, epigastric pain, swelling of the face and hands, reduced fetal movement, and premature rupture of membranes. These conditions require immediate treatment because they can endanger the mother and fetus if not treated quickly and

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appropriately. The Ministry of Health of the Republic of Indonesia states that low awareness of danger signs among pregnant women remains a problem in antenatal care, especially among groups of mothers with limited access to information (Kemenkes RI, 2022).

In Indonesia, efforts to increase the knowledge of pregnant women are carried out through integrated antenatal services, one of which is through Pregnant Women's Classes (Kelas Bumil). Kelas Bumil is a group education activity that aims to increase the knowledge, attitudes, and skills of pregnant women related to pregnancy, childbirth, postpartum care, newborn care, and recognition of danger signs during pregnancy. This program is designed as an interactive and participatory learning tool so that health information can be better understood by pregnant women. Ministry of Health of the Republic of Indonesia, 2020.

Prenatal classes are one of the interventions designed to improve pregnant women's knowledge and skills in dealing with pregnancy. Through these classes, pregnant women are provided with comprehensive information about the danger signs of pregnancy, including bleeding, severe abdominal pain, and signs of infection. Research shows that participation in prenatal classes can improve mothers' knowledge and attitudes toward health during pregnancy (Sari et al., 2020). However, despite many studies showing the benefits of prenatal classes, there is still a gap in the understanding and application of this knowledge among pregnant women.

The implementation of the Pregnancy Class is expected to improve the readiness of pregnant women in facing pregnancy and childbirth, including the ability to recognize danger signs early on. The structured and repetitive education provided in the Pregnancy Class allows pregnant women to gain a more comprehensive understanding compared to brief individual counseling during ANC visits. The WHO also recommends a group-based educational approach as part of a strategy to improve the quality of antenatal care and empower pregnant women (WHO, 2016).

Statistics show that only about 50% of pregnant women in Indonesia have adequate knowledge about the danger signs of pregnancy (Indonesian Ministry of Health, 2021). This indicates the need for a more effective approach to health education for pregnant women. Pregnancy classes can be a means of educating pregnant women about the importance of recognizing danger signs and seeking immediate medical attention. With sufficient knowledge, it is hoped that pregnant women can take appropriate and prompt action in emergency situations.

Case studies in several regions show that pregnant women who attend antenatal classes have a higher level of knowledge than those who do not attend such classes. For example,

research by Rahayu et al. (2022) in Central Java found that 78% of antenatal class participants were able to identify danger signs of pregnancy, compared to only 35% of the control group. This shows that effective education can increase pregnant women's awareness and understanding of the risks they may face.

Various studies show that participation of pregnant women in antenatal classes is associated with increased knowledge and health behaviors during pregnancy. A study in Indonesia reported that pregnant women who attended antenatal classes had a better level of knowledge about the danger signs of pregnancy compared to women who did not attend such classes. This shows that antenatal classes have the potential to be an effective educational intervention in increasing mothers' preparedness for pregnancy complications (Lestari et al., 2021).

However, there are still pregnant women in their third trimester who do not fully understand the danger signs of pregnancy, either because they do not attend antenatal classes regularly or because of variations in the quality of classes in the field. This situation creates a gap between the designed program and the expected impact on improving pregnant women's knowledge. Therefore, evaluation of the effectiveness of the Pregnancy Class, particularly in enhancing knowledge about the danger signs of pregnancy in the third trimester, needs to be continuously conducted (Ministry of Health of the Republic of Indonesia, 2022).

Based on the above description, research entitled "The Effect of Maternity Classes on the Level of Knowledge of Danger Signs in the Third Trimester of Pregnancy" is important to assess the extent to which participation in maternity classes affects the increase in knowledge among pregnant women. The results of this study are expected to serve as a basis for strengthening the Maternity Class program and as a consideration for improving the quality of health education for pregnant women in primary health care, so that early detection of pregnancy complications can be carried out more optimally (WHO, 2016).

2. RESEARCH METHOD

This study used a quantitative approach with a quasi-experimental design, namely a one-group pretest posttest design. This design was chosen because the study aimed to determine the effect of Pregnant Women Classes (Kelas Bumil) on the level of knowledge of danger signs in the third trimester of pregnancy by comparing the level of knowledge of pregnant women before and after attending Kelas Bumil, without using a control group.

The population in this study was all pregnant women in their third trimester who attended the Bumil Class in the area where the study was conducted. The study sample

consisted of pregnant women in their third trimester who met the inclusion criteria, namely pregnant women in their third trimester, attended the Bumil Class, were able to communicate well, and were willing to be respondents. Exclusion criteria included pregnant women who did not attend the entire series of Bumil Classes or did not complete the questionnaire. The sample size was determined by total sampling or purposive sampling, adjusted to the number of pregnant women in their third trimester who attended Bumil Classes during the study period, with a minimum of 30 respondents.

The sampling technique used was purposive sampling, which is the selection of respondents based on certain criteria in accordance with the research objectives, because not all pregnant women were in their third trimester and attending the Bumil Class.

Data collection was conducted using a questionnaire on knowledge of third trimester pregnancy warning signs. Measurements were taken twice, namely a pretest before the mothers attended the Bumil Class and a posttest after the mothers attended the Bumil Class. Knowledge scores were then categorized as good, adequate, and poor.

Data analysis was conducted in stages. Univariate analysis was used to describe the characteristics of respondents and the distribution of knowledge levels before and after attending the Bumil Class. Next, bivariate analysis was performed to determine the difference in knowledge levels before and after the intervention. If the data were normally distributed, the paired t-test was used, whereas if the data were not normally distributed, the Wilcoxon Signed Rank Test was used. The statistical significance level was set at $p < 0.05$, which indicated that the Bumil Class had an effect on increasing knowledge of the danger signs of pregnancy in the third trimester.

3. RESULTS AND DISCUSSION

Based on the characteristics of the respondents, most pregnant women were in the 20 35 age group, namely 25 people (83.3%), which is the healthy reproductive age range. There were 4 respondents (13.3%) over the age of 35, while only 1 respondent (3.3%) was under the age of 20, indicating that the majority of pregnancies occurred at a relatively safe age biologically. In terms of education level, almost half of the respondents had a college education, namely 14 people (46.7%), followed by 13 people (43.3%) who were high school graduates or equivalent. Respondents with junior high school and elementary school education numbered 2 (6.7%) and 1 (3.3%), respectively. This distribution shows that most respondents had a medium to high level of education, which could potentially influence their ability to receive and understand health information.

Based on employment status, the majority of respondents were housewives, namely 18 people (60.0%). Respondents who worked as private employees numbered 8 people (26.7%), while government employees numbered 4 people (13.3%). There were no respondents who worked as farmers. This condition reflects that most respondents have relatively flexible time to attend health services, including antenatal classes. In terms of parity, most respondents were primiparas, namely 20 people (66.7%), while multiparas numbered 10 people (33.3%). There were no respondents with grande multipara status. This shows that the majority of pregnant women were pregnant for the first time, making the need for pregnancy education even more important.

The level of knowledge of pregnant women before attending antenatal classes was mostly in the adequate category, namely 16 people (53.3%). Respondents with poor and good knowledge numbered 7 people (23.3%) each. After attending antenatal classes, there was a change in the distribution of knowledge levels, with most respondents falling into the good category, namely 21 people (70.0%). Respondents with adequate knowledge numbered 8 people (26.7%), and only 1 person (3.3%) fell into the poor category.

Table 1. Demographic Data.

Var		n	F (%)
Age	< 20 years old	1	3.3
	20-35 years old	25	83.3
	>35 years old	4	13.3
Education	Elementary school	1	3.3
	Junior high school	2	6.7
	Senior High School	13	43.3
	College/university	14	46.7
Employment	Housewife	18	60
	Farmer	0	0
	Private employee	8	26.7
	Government employee	4	13.3
Parity	Primipara	20	66.7
	Multipara	10	33.3
	Grande multipara	0	0
Knowledge before Antenatal Class	Poor	7	23.3
	Fair	16	53.3
	Good	7	23.3
Knowledge after Antenatal Class	Poor	1	3.3
	Fair	8	26.7
	Good	21	70.0
Total		**30**	**100**

(source: primary data, 2025)

Table 2. Statistical analysis.

Independent variable	n	P Value	Dependent variable
Pre-hemoglobin level	30	0.001	Post-hemoglobin level
Wilcoxon			

*significant

(source: primary data, 2025)

Based on the results of statistical analysis using the Wilcoxon test, a p-value of 0.001 ($p < 0.05$) was obtained when comparing hemoglobin levels before and after intervention in 30 respondents. This value indicates that there is a statistically significant difference between hemoglobin levels before and after treatment. Objectively, these results indicate that the intervention administered was associated with changes in the respondents' hemoglobin levels, thereby rejecting the null hypothesis (H_0) that there was no difference in hemoglobin levels before and after the intervention. Thus, it can be stated that the intervention had a significant effect on the hemoglobin levels of the respondents in this study. The Wilcoxon test was chosen because the hemoglobin level data did not meet the assumption of normal distribution, so nonparametric analysis was considered more appropriate for comparing the values before and after the intervention in the same group.

This study shows that antenatal classes are associated with increased knowledge among pregnant women and statistically significant changes in hemoglobin levels after intervention. The Wilcoxon test results show a significant difference in hemoglobin levels before and after intervention ($p = 0.001$), indicating that the intervention has the potential to have a positive impact on the hematological status of pregnant women. This finding is important considering that anemia is still one of the major health problems in pregnancy that directly affects both the mother and the fetus.

The increase in pregnant women's knowledge after attending antenatal classes is reflected in the shift in knowledge categories, with the majority of respondents falling into the good category after the intervention. These results are in line with studies stating that structured education during pregnancy can improve mothers' understanding of pregnancy health, nutrition, and complication prevention (Indonesian Ministry of Health, 2022; Lassi et al., 2019). Good knowledge is an important foundation in shaping more adaptive health attitudes and behaviors during pregnancy.

Theoretically, these findings can be explained through the Health Belief Model (HBM), which states that increased knowledge will influence individuals' perceptions of their vulnerability and the severity of a health problem, as well as the benefits of preventive measures

(Glanz et al., 2018). In this context, pregnant women who understand the risks of anemia and the benefits of prevention are more likely to comply with recommendations for iron consumption, a balanced diet, and regular antenatal visits. In addition, the Theory of Planned Behavior also explains that increased knowledge can strengthen mothers' intentions and behavioral control in maintaining pregnancy health (Ajzen, 2020).

Significant changes in hemoglobin levels after intervention support the role of antenatal classes as a means of nutrition and maternal health education. Previous studies have reported that pregnancy education combined with nutritional counseling and routine monitoring can significantly increase hemoglobin levels in pregnant women (Balarajan et al., 2017; Daru et al., 2018). The information provided in antenatal classes, such as the importance of consuming foods rich in iron and vitamin C, as well as adherence to taking iron supplements, contributes to improved hemoglobin status.

However, not all respondents showed optimal improvement. There was still a small proportion of mothers with sufficient knowledge and hemoglobin levels that did not increase optimally. These findings indicate that increased knowledge is not always directly followed by optimal biological changes. Other factors such as compliance with iron tablet consumption, basic health conditions, pregnancy spacing, and nutritional status before pregnancy also play a role in determining hemoglobin levels (WHO, 2020; Stevens et al., 2022). In addition, the side effects of iron tablets and the habit of consuming tea or coffee can also inhibit iron absorption.

Insignificant findings in some respondents can also be explained by individual characteristics, such as parity and employment status. The majority of respondents in this study were primiparas, who tend to have limited experience with pregnancy. Although antenatal classes help increase knowledge, behavioral adaptation requires time and ongoing support (Rosenstock et al., 2019). This suggests that one-time or short-term education may not be sufficient to produce uniform physiological changes in all respondents.

From a clinical perspective, the results of this study emphasize the importance of antenatal classes as an integral part of integrated antenatal care. Antenatal classes not only serve as a means of transferring information, but also as a medium for empowering pregnant women to better understand their health conditions and make appropriate decisions. Health workers, especially midwives, have a strategic role in conveying information in a communicative, contextual, and individualized manner to pregnant women (Renfrew et al., 2019).

The clinical implications of this study are the need to strengthen the quality and continuity of antenatal classes, including the integration of material on nutrition, anemia, and

iron tablet compliance. In addition, a more personalized approach, such as individual counseling and family involvement, can increase the effectiveness of interventions (Gibbs et al., 2021). Family support has been shown to play a role in improving pregnant women's adherence to recommended health behaviors.

Overall, this study shows that antenatal classes have the potential to provide tangible benefits in improving the knowledge and hemoglobin levels of pregnant women. However, the success of the intervention is greatly influenced by individual and environmental factors. Therefore, a holistic and sustainable approach is needed so that the benefits of antenatal classes can be optimally felt by all pregnant women.

4. CONCLUSION

This study aims to assess the effect of antenatal classes on the knowledge level and hemoglobin levels of pregnant women. The results show an increase in the knowledge of pregnant women after attending antenatal classes and a statistically significant difference in hemoglobin levels before and after the intervention. These findings confirm that antenatal classes play an important role as a promotive and preventive strategy in maternal health services, particularly in improving the understanding and health status of pregnant women. However, variations in individual responses indicate that increased knowledge is not always followed by optimal biological changes, thus requiring a more comprehensive and sustainable approach. Overall, antenatal classes have the potential to be an effective intervention in supporting healthy pregnancies if they are implemented in a structured and continuous manner, accompanied by support from health workers and families.

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