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Original Research

The Effect of Audiovisual Media on Anemia Prevention on Increasing Pregnant Women's Knowledge in the Ciwaruga Public Health Center Area

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ABSTRACT

Background: Anemia in pregnant women remains a health problem that can affect the health of both the mother and the fetus. One important factor in preventing anemia is the level of knowledge among pregnant women. Lack of knowledge can cause pregnant women to fail to recognize the signs and symptoms of anemia, which can result in delays in seeking health services and appropriate treatment. If anemia is not detected and treated early on, it can develop into severe anemia, which can increase the risk of pregnancy complications. This study aims to determine the effect of audiovisual media on anemia prevention in increasing the knowledge of pregnant women in the Ciwaruga community health center area. **Methods:** This study used a quantitative, pre-experimental design with a one-group pre-test and post-test. The study sample consisted of 37 pregnant women selected using accidental sampling. **Results:** There was an increase in pregnant women's knowledge of anemia prevention. The Wilcoxon test showed a difference in knowledge levels, with a p-value < 0.001 ($p < 0.05$). **Conclusion:** Audiovisual media were effective in increasing pregnant women's knowledge about anemia.

Keywords: Anemia; pregnant women; health education; knowledge

1. INTRODUCTION

Anemia is the biggest public health problem in the world, especially for pregnant women, as many suffer from iron deficiency. Anemia contributes to an increased prevalence of morbidity and mortality in mothers and babies.[1] According to the Indonesian Ministry of Health (2023),[2] anemia during pregnancy increases the risk of bleeding complications, low birth weight (LBW), low birth length (LBL), and premature birth. According to the World Health Organization (WHO), the global prevalence of anemia among pregnant women is 35.5%.[3] The 2023 Indonesian Health Survey indicates that anemia in pregnant women remains a public health issue in Indonesia, with a prevalence of 27.7%.[4] However, the prevalence of anemia among pregnant women decreased by 21.2% (from 48.9% to 27.7%) compared with the 2018 Riskesdas survey. In West Java in 2020, the total number of pregnant women with anemia decreased to 63,246, from 53.8% to 32.5%. According to a 2020 survey in West Bandung Regency, the prevalence of anemia was 2,047.[5]

Research by Yunida et al. (2022) indicates that while iron deficiency is not the sole cause of anemia, it becomes the primary cause as the prevalence of anemia increases.[6] Furthermore, iron requirements in pregnant women are

significantly higher than in non-pregnant women, in line with increased physiological needs during pregnancy. From the beginning of the second trimester through the end of the third trimester, there is an expansion or increase in red blood cell mass. Anemia during pregnancy can also lead to various complications and adverse effects on fetal growth and development in the womb, and may increase the risk of maternal and infant mortality.[7]

The factors causing anemia in pregnant women include inadequate dietary intake, and about 95% of cases during pregnancy are due to iron deficiency (iron deficiency anemia).[8] The level of knowledge among pregnant women about anemia is one of the factors that also contribute to the incidence of iron deficiency anemia during pregnancy. A good level of knowledge among pregnant women can make it easier for them to identify foods that can harm their pregnancy and choose things that can support the quality of their pregnancy.[9]

A study conducted in Iran in 2021 revealed significant differences between the control group and the experimental group. However, three months after the educational intervention was implemented, the experimental group demonstrated significant improvements in knowledge, attitudes, perceived behavioral control, subjective norms, behavioral intentions, and nutritional performance gizi.[10]

There are still several gaps in previous studies, which have focused more on the relationship between compliance with iron tablet use and the incidence of anemia in pregnant women, as well as on pregnant women's knowledge of iron tablets as a factor influencing compliance. However, most of these studies still focus on conventional approaches such as verbal counseling or print media (leaflets and booklets). There have been few studies that specifically examine the effectiveness of audiovisual media as an educational intervention in increasing pregnant women's knowledge about anemia prevention, especially in the context of using more interactive and engaging information technology.

This study was conducted to analyze the effect of audiovisual media on improving pregnant women's knowledge of anemia prevention in the Ciwaruga Community Health Center service area. The importance of this study stems from the lack of knowledge among pregnant women regarding the signs and symptoms of anemia. Therefore, a study is needed to demonstrate the effect of using audiovisual media on anemia prevention and its impact on improving pregnant women's knowledge in the Ciwaruga Community Health Center service area.

2. METHODS

2.1 Research Methods

The research approach used in this study is pre-experimental, with a one-group pretest-posttest design: first observing, then administering the independent variable treatment to one group.

2.2 Selection and Sampling

The population in this study consisted of 57 pregnant women in Ciwaruga Village, within the Ciwaruga Community Health Center area, in January. The sample comprised 37 pregnant women from the Ciwaruga Community Health Center area. Sampling was conducted using accidental sampling, namely, pregnant women encountered during the study who met the inclusion criteria.

2.3 Research Measuring Tools

The instrument used in this study was a questionnaire on pregnant women's knowledge of anemia. The questionnaire consisted of 17 closed-ended questions with two answer choices: true or false. This questionnaire was developed by a previous researcher in a thesis and has undergone validity and reliability testing.[11] The validity test results using product-moment showed that the 17 valid questions had a calculated r value above the table r (0.284). In contrast, the reliability test results showed a Cronbach's alpha of 0.793, indicating that the questionnaire items were reliable for use in the study.

2.4 Data Collection Procedure

This study used a pretest-posttest design on a single group. On the day of the study, after obtaining permission from the community health center and coordinating with the posyandu cadres in Ciwaruga Village, the researchers explained the stages of data collection and questionnaire completion to the respondents. Pregnant women who agreed to be respondents filled out their identity data and signed a consent form. The researcher distributed the pretest questionnaire for respondents to complete before providing education through audiovisual media. Next, the researcher conducted the intervention by providing education on anemia prevention through audiovisual

media. Afterwards, the posttest questionnaire was distributed to respondents to complete after receiving education via audiovisual media.

2.5 Data Analysis

Data analysis in this study was conducted using SPSS version 31. The analysis in this study aims to describe the characteristics of respondents and the distributions of each research variable. The characteristics of respondents analyzed include the age of pregnant women, education level, occupation, parity, and gestational age. This is to assess the change in knowledge scores among pregnant women after receiving audiovisual media on anemia prevention. Based on the analysis results, a significance value (Sig.) was obtained. Because the significance value ($p < 0.05$) indicates that the pre-test and post-test are not normally distributed, the analysis of differences in knowledge levels before and after the intervention can be performed using a non-parametric statistical test, namely the Wilcoxon Signed Rank Test, which is suitable for comparing two paired data with non-normal distributions.

3. RESULTS

Based on the above, the pre-test results or before the intervention was carried out on 37 respondents showed that a large number of respondents already had sufficient to good levels of knowledge before the intervention was given, namely 18 respondents (48.6%) with a good level of knowledge, 17 respondents (45.9%) with a sufficient level of knowledge, and 2 respondents (5.4%) had a low level of knowledge.

Table 1. Knowledge of pregnant women before intervention in the Ciwaruga Community Health Center area

Pre-test knowledge	n	%
Insufficient knowledge	2	5.4
Adequate knowledge	17	45.9
Good knowledge	18	48.6
Total	37	100.0

Based on Table 2, the post-test results for the 37 respondents who received the intervention show that all respondents (100.0%) were in the good knowledge category.

Table 3 shows that before the audiovisual media intervention, 2 respondents (4.8%) had poor knowledge, while 17 respondents (45.9%) had adequate knowledge. In addition, 18 respondents (48.6%) already had good knowledge before the intervention. After receiving education through audiovisual media, there was an increase in knowledge levels among all respondents, with 37 respondents (100.0%) falling into the good knowledge category. None of the respondents reported a decrease in their knowledge after receiving the intervention.

Table 2. Knowledge of pregnant women after intervention in the Ciwaruga Community Health Center area

Post-test knowledge	n	%
Insufficient knowledge	0	0
Adequate knowledge	0	0
Good knowledge	37	100.0
Total	37	100.0

Based on the post-test results, 2 respondents (4.8%) who had received the intervention experienced an increase in the good knowledge category. Furthermore, 17 respondents (45.9%) who were in the adequate category before the intervention also moved to the good knowledge category. In addition, 18 respondents (48.6%) who had good knowledge levels before the intervention using audiovisual media remained in the good knowledge category after the intervention. The analysis of differences in respondents' knowledge levels showed a change in knowledge levels before and after the intervention. Based on the results of the Wilcoxon Signed Rank Test, the post-test yielded a p-value < 0.001, indicating a difference in the level of knowledge of pregnant women about anemia prevention.

4. DISCUSSION

The results of this study's data analysis, with 37 respondents, show that before the intervention, only 2 respondents (4.8%) had insufficient knowledge, while 17 respondents (45.9%) had sufficient knowledge. In addition, 18 respondents (48.6%) already had good knowledge before the intervention. Thus, it can be concluded that respondents' knowledge of anemia prevention in pregnant women before the intervention, using audiovisual media, was mostly at a sufficient or good level.

Based on the pre-test analysis results, 2 respondents (4.8%) with an elementary school education background had insufficient knowledge, but after the

Table 3. Differences in knowledge of pregnant women before and after intervention

		Knowledge after intervention	Total	*p*-values
		Good		
Knowledge before intervention	Insufficient	2 (5.4)	2 (5.4)	<0.001
	Adequate	17 (45.9)	17 (45.9)	
	Good	18 (48.6)	18 (48.6)	

intervention using audiovisual media, they gained good knowledge. The increase in knowledge among these respondents shows that audiovisual media can overcome initial limitations in understanding anemia prevention. Audiovisual media proved effective because they engage all the senses, are easier to understand, and are more engaging due to the presence of sound, images, and movement.[12]

Two respondents were multiparous pregnant women with limited knowledge before receiving education. Their level of education may influence this, as may the quality of antenatal care education received and previous pregnancies that were not accompanied by formal health education. In addition, older age and lower participation in prenatal classes were associated with lower levels of knowledge. Multiparous women rely on their previous experiences without updating their knowledge in line with the latest developments in health science, so their knowledge is not aligned with current health service standards. According to theory mentioned by Notoatmodjo (2018), knowledge is influenced by education, information or mass media, experience, and age.[13]

The results of this study showed that 18 respondents had a good level of knowledge, which can be attributed to the field situation: the provision of health education on the same day by local officials before the respondents completed the pre-test questionnaire and before the researchers provided the intervention through audiovisual media. The education provided by health officials was one source of information for pregnant women in understanding various factors during pregnancy. This condition explains why the pre-test results showed a good level of knowledge among some respondents.

However, most of the increase in knowledge occurred after the intervention was delivered through audiovisual media, which helped patients understand hemoglobin (Hb) levels in cases of anemia in pregnant women. For example, in question number 9, "Hb 9 g/dl is mild anemia," 30 respondents answered incorrectly before the intervention was delivered, and still considered Hb 9 g/dl to be mild anemia. In fact, Hb 9 g/dl is moderate anemia. After the intervention using audiovisual media, 17 respondents answered the statement correctly. It can be concluded that audiovisual media increases pregnant women's knowledge in Ciwaruga Village, Ciwaruga Health Center Area.

The results of the study after the intervention using audiovisual media showed that the level of knowledge among pregnant women increased to 100% in the good knowledge category, with no respondents in the sufficient knowledge category (0%) and none in the poor knowledge category (0%). Increased knowledge from an intervention delivered through audiovisual media helps patients understand various signs and symptoms of anemia, such as fatigue, paleness, dizziness, nausea, and vomiting, which were previously often considered normal during pregnancy. With this increased knowledge, it is hoped that pregnant women will be able to recognize the difference between normal pregnancy complaints and signs and symptoms of anemia.

The higher the level of education, the easier it is to accept new information, leading to greater knowledge, whereas lower levels of education hinder its acceptance. Someone with higher education will be more open to new information and more receptive to new ideas, which will increase their knowledge and influence positive behavior.[14]

The results of this study are in line with the findings of Maratun et al. (2024), which showed that the use of motion-video educational media about anemia in pregnant women's classes significantly improved pregnant women's knowledge and attitudes.[15] The study reported a *p*-value of 0.000, indicating a significant difference in the knowledge and attitudes of pregnant women before and after receiving the educational intervention. Furthermore, research by Sembiring et al. (2026) demonstrated a significant increase in knowledge, showing that education delivered through animated videos and brochures is effective in improving mothers' knowledge about anemia during pregnancy in the

working area of the Kereng Bangkirai UPTD Health Center, Palangka Raya City.[16]

Analysis results from Ethiopia indicate that maternal Hb concentrations prior to delivery increased significantly, with a mean difference of 0.22 g/dL. It can be concluded that video-based interventions reduce the prevalence of anemia in pregnant women, showing a difference with an average percentage of −0.08% (−0.12, −0.04, $p = 0.0003$).[17]

Based on the discussion, there was a difference between the results before and after education was provided through audiovisual media, indicating an increase in pregnant women's knowledge of anemia in Ciwaruga Village, Ciwaruga Health Center area. It can be concluded that audiovisual media can help respondents understand information on anemia prevention, signs and symptoms, and its effects, thereby making education delivery more effective after the intervention.

5. CONCLUSION

Based on the study results, there were differences in the level of knowledge of pregnant women about anemia prevention before and after the intervention using audiovisual media in the Ciwaruga Community Health Center area, with a p-value < 0.001. Future researchers may develop studies with different designs, such as using a control group with different educational media. In addition, the study could also provide health education on the consequences of anemia in pregnant women.

Ethical Approval

The study received ethical approval from Research Ethics Committee of STIKes Budi Luhur Cimahi with the approval no. 004892/STIKes Budi Luhur Cimahi/2026.

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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