

The Monopoly Game and its Influence on Knowledge, Attitude, and Anemia Prevention Behavior of Pregnant Women

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Abstract

Maternal Mortality Rate (MMR) remains a global problem, with a rate of 223 per 100,000 live births by 2020. Anemia, especially among pregnant women, contributes significantly to this problem. In 2023, there were 43 cases of anemia among pregnant women at the Puskesmas Martapura Timur. This research aimed to evaluate the effect of Smart Monopoly, an innovative health education medium, on the knowledge, attitudes and behaviors of pregnant women with anemia. This quantitative research used a Pre-Experimental design using a one-group pre-test and post-test approach. The research population was pregnant women with anemia at Puskesmas Martapura Timur, with purposive sampling technique used to select 15 respondents who met the research criteria. Data were collected through questionnaires to assess knowledge and attitude and observation to measure behavior. The results showed statistical analysis using Wilcoxon signed rank test showed significant improvement in knowledge ($p=0.001$), attitude ($p=0.003$), and behavior ($p=0.001$) after the intervention. These findings highlight the effectiveness of Smart Monopoly as an interactive and engaging educational tool in addressing anemia in pregnant women, with potential applications for broader health education initiatives. This research thus has implications for the development of more innovative and effective health education media to improve knowledge, attitudes, and behaviors related to anemia prevention, not only in pregnant women but also in other vulnerable groups.

Keywords: Anemia, Pregnant Women, Smart Monopoly, Knowledge, Attitudes, Behavior.

INTRODUCTION

Anemia is a significant health issue worldwide, especially among pregnant women. According to WHO, the global maternal mortality rate in 2020 is 223 per 100,000 live births (WHO, 2019b). According to United Nations Children's Fund (UNICEF) data, MMR has yet to reach the Sustainable Development Goals (SDGs) target of reducing MMR in 2030 to lower than 70 per 100,000 live births. All countries have an MMR that does not exceed 2 times the world average (UNICEF, 2019). The maternal mortality rate (MMR) in Indonesia is still relatively high, which is around 305 per 100,000 live births, and this is still far from the target (Asbar, 2021). Meanwhile, the MMR in South Kalimantan province 2022 is around 136 per 100,000 live births (Dinkes Kalsel, 2023).

The high maternal mortality rate can be caused by several factors, most of which are preventable or treatable. The following underlying problems account for about 75% of maternal deaths: severe bleeding, infection, high blood pressure (pre-eclampsia and eclampsia), chronic conditions, and obstacles to delivery. One of the factors of maternal mortality is hemorrhage during labor; hemorrhage in labor is usually caused by anemia in pregnancy (WHO, 2019a).

WHO shows that anemia cases globally reach 2.3 billion people, so anemia is a serious problem in global health. The highest prevalence is recorded in Asia and Africa, with 85% of cases experienced by women and children. The prevalence of anemia among pregnant women in Indonesia is 70%, or 7 out of 10 pregnant women suffer from anemia. Indonesia is one of the countries with the highest number of people with pregnancy anemia (Nuraprilia et al., 2023). Based on (RISKESDAS, 2018), the proportion of anemia among pregnant women in Indonesia increased from around 37.1% in 2013 to around 48.9% in 2018. Meanwhile, according to Data (South Kalimantan Health Office, 2021), the proportion of anemia among pregnant women is 19.60%, which has decreased from 20.13% in 2020.

Anemia in pregnancy is usually due to iron deficiency in all countries, malnutrition, folic acid deficiency, blood disorders, malabsorption, and chronic diseases such as pulmonary tuberculosis, malaria, and intestinal worms (de Jong et al., 2024). It can have adverse effects, especially during pregnancy, childbirth, and postpartum (Asbar, 2021). The dangers of anemia in pregnant women will have an impact on maternal and infant mortality and morbidity, including the risk of miscarriage, stillbirth, prematurity, and low birth weight (Chandra et al., 2019). Other impacts include impaired fetal growth, babies born with anemia, the occurrence of prolonged labor, as well as bleeding and postpartum depression to death (Idayu, 2021).

Particularly vulnerable to anemia are children and pregnant women. Pregnant women who experience iron deficiency show a variety of symptoms, including pallor, shortness of breath, palpitations, hair loss, headaches, vertigo, leg cramps, dizziness, and irritability (Riza, 2023). Pregnancy anemia is also called a "potential danger to mother and child," which is why it requires serious attention from all parties involved in health services (Idayu, 2021). One way to lower the prevalence of anemia is to distribute at least 90 iron tablets during pregnancy (Kemenkes RI, 2019).

In addition, one of the efforts to prevent anemia in pregnant women is to provide knowledge and motivate mothers by providing information through health education (Burayu & Degefa, 2024). In order for this health education to make mothers understand the information provided, media is needed. Media/tools can help people receive information based on their ability to receive sensory information. Acceptance of pregnant women will be better if more senses are used because one indicator of success is an increase in knowledge and better behavior (Mey et al., 2023).

Knowledge and behavior are interrelated. Knowledge, or the results of knowing pregnant women about the incidence of anemia, stimulates the realization of a pregnant woman's behavior. Maternal behavior is in the form of diet, frequency of Ante Natal Care (ANC), or maternal compliance in taking blood tablets. Behavior results from experience manifested in knowledge, attitudes, and actions regarding anemia in pregnant women (Indra et al., 2022).

In addition, attitudes towards anemia are most important in the social psychology of pregnant women. Pregnant women can reflect their liking or disliking of the incidence of anemia. Attitudes are divided into positive and negative attitudes towards the anemia they suffer from (Indra et al., 2022).

The use of monopoly media as a learning media/class for pregnant women is considered very effective in fostering their interest in improving their knowledge, attitudes, and behavior because it is easy to play, provides valuable entertainment, and can reduce anxiety about childbirth. Monopoly media is one of the interesting, fun, lively, and relaxing media that can solve existing problems (Nuria, 2021).

Based on previous research (San et al., 2022), the Monopoly Anemia Educational Game (GEMA) has an effect that affects adolescent girls' knowledge about anemia with a p-value of 0.000. Research (Nuria, 2021) found the effect of monopoly media on adolescents' knowledge and attitudes regarding anemia in adolescents. Another research also found the effect of Monopoly as a healthy snack education media on the behavior of choosing snacks for school-age children at SDN Gubeng 1 Surabaya with a p-value of 0.000 .

The difference with this research is in the media used by modifying the monopoly game by adding a behavioral domain to the card that describes how to make decisions when pregnant women experience anemia, as well as the rules for sharing knowledge and feelings with other pregnant women when interacting in the game. So, this game becomes different from educational media in other studies. The target or target subjects in this research are pregnant women who experience anemia, which, according to the researcher's knowledge, has never been used before for anemic pregnant women to overcome and prevent anemia.

The advantage of this "Smart Monopoly" is the ability to improve pregnant women's knowledge, attitudes, and behavior to prevent anemia. Monopoly media has plots that contain knowledge about the anemia of pregnant women. In addition, cards contain pictures, questions, and answers about the knowledge, attitudes, and behavior of anemic pregnant women. The appearance of the monopoly media can attract attention because there are bright colors and pictures according to the theme of anemia. The descriptions on the board and cards are simple, straightforward, and easy to understand.

The use of Smart Monopoly media is fun and involves pregnant women in playing. This media is easy to carry and move, especially in pregnant women's classes. Media maintenance only requires a little space for storage. Then, the quality game board can be folded and made of waterproof stickers and plastic boards, unlike other media, such as posters, leaflets, or flipcharts, which can be damaged if exposed to water. Using posters, leaflets, and flip sheets in pregnant women's classes is one-way, not involving mothers playing but only listening, making mothers easily bored and forgetting the information conveyed.

Based on preliminary studies at the Puskesmas Martapura Timur, data obtained in 2021 showed that 669 pregnant women were present, and 75 (11.2%) experienced anemia. In 2022, 582 pregnant women were present, and 59 (10%) were anemic. In 2023, 544 pregnant women were obtained, and 43 (8%) were anemic. The results of interviews conducted on November 3-10, 2023, with pregnant women found that 5 out of 15 pregnant women (33%) did not know the definition and standard classification of anemia, 6 out of 15 pregnant women (40%) did not know the causes and symptoms of anemia, 14 out of 15 pregnant women (93%) did not know the impact of anemia for mothers and babies, and 7 out of 15 pregnant women (47%) did not know the management of anemia for pregnant women.

In addition, it was found that 3 out of 15 mothers (20%) still had a negative attitude towards anemia, such as often forgetting to take iron tablets and considering that eating vegetables, fruits, and iron side dishes was not very important. In addition, 4 out of 15 pregnant women (27%) had good anemia prevention behavior, 8 out of 15 pregnant women (53%) had adequate anemia prevention behavior, and 3 out of 15 pregnant women

(20%) had insufficient anemia prevention behavior in the form of diet, compliance with taking blood supplement tablets, and antenatal care. Then, 11 out of 15 pregnant women (73%) did not know about Monopoly media and had never played it in the pregnant women's class.

Based on the background above, the problem can be overcome through researcher innovation using innovative monopoly media, which is expected to increase knowledge and change negative behavior and attitudes toward positive ones in pregnant women who experience anemia. The purpose of this research is to determine and analyze the effect of using intelligent monopoly media on the knowledge, attitudes, and behavior of pregnant women who experience anemia. The benefit of this research is that it will provide an alternative educational media that is interesting and interactive for pregnant women who experience anemia. Smart Monopoly media is expected to increase their knowledge about anemia and help change negative attitudes and behaviors to be more positive in maintaining personal and fetal health. In addition, this research can contribute to health workers developing innovative educational methods to be applied in various health services to improve the quality of maternal and child health services and reduce the incidence of anemia in pregnant women.

RESEARCH METHOD

This quantitative research employed a pre-experimental method using a one-group pre-test and post-test design to evaluate the effectiveness of an intervention on anemic pregnant women. The research population consisted of pregnant women with anemia at the East Martapura Health Center. A purposive sampling technique was utilized to select a sample of 15 respondents who met specific inclusion criteria relevant to the research objectives. Data collection methods included the distribution of questionnaires to assess knowledge and attitudes, as well as observational techniques to evaluate behavioral changes. The research criteria ensured that participants had comparable baseline characteristics to accurately measure the intervention's impact. Data analysis was conducted using the Wilcoxon signed-rank test in SPSS software to determine statistically significant differences between pre-intervention and post-intervention measurements..

RESULTS AND DISCUSSION

Smart Monopoly Media Design

Smart Monopoly Board Design



Figure 1. Monopoly Smart Board Game Set

General Fund Card

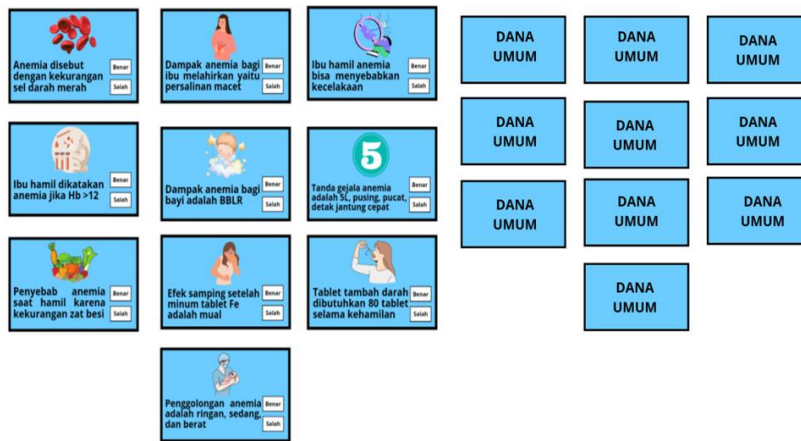


Figure 2. Educational Cards on Anemia and Pregnancy Risks

Opportunity Card



Figure 3. Health Education Opportunity Cards on Nutrition and Pregnancy SOP Smart Monopoly



Figure 4. Standard Operating Procedure Guide for Monopoli Pintar

Smart Monopoly Media Trial

Based on the validity test of media and material with experts conducted on January 9, 2024, with Dr. Waljuni Astu Rahman, S.Pd., M.Kes. obtained results:

Table 1. Feasibility Test of Smart Monopoly Media with Experts

Percentage	Interpretation	Description
90%	Very Feasible	Valid

Based on the trial of intelligent monopoly media with 15 different respondents in the sample, the results were obtained:

Table 2. Smart Monopoly Media Trial with Respondents

Percentage	Interpretation	Description
92%	Very Feasible	Valid

The Effect of Using Smart Monopoly Media on the Knowledge of Pregnant Women with Anemia

Table 3. Frequency Distribution of Knowledge Before and After given Smart Monopoly Intervention

Knowledge Pregnant Mom	Pre-test		Post-test		Wilcoxon Test Sig. (2-tailed)
	N	%	N	%	
Low	7	46,7	0	0	0.001
Medium	6	40	1	6,7	
High	2	13,3	14	93,3	
Total	15	100	15	100	

The Effect of Using Smart Monopoly Media on the Attitudes of Pregnant Women with Anemia

Table 4. Frequency Distribution of Attitudes Before and After Smart Monopoly Intervention

Attitude Pregnant Mom	Pre-test		Post-test		Wilcoxon Test Sig. (2-tailed)
	N	%	N	%	
Negative	5	33,3	0	0	0.003
Positive	10	66,7	15	100	
Total	15	100	15	100	

The Effect of Using Smart Monopoly Media on the Behavior of Pregnant Women with Anemia

Table 5. Frequency Distribution of Behavior Before and After Smart Monopoly Intervention

Behavior of Pregnant Women	Pre-test		Post-test		Wilcoxon Test Sig. (2-tailed)
	N	%	N	%	
Less	5	33,3	0	0	0.001
Simply	7	46,7	2	13,3	
Good	3	20	13	86,7	
Total	15	100	15	100	

Smart Monopoly Media Design

Monopoly comes from the Greek words Monos and Polein. Monos means alone, while Polein means seller. In 1904, Lizzie Magie created a monopoly known as The Landlord's Game. The brilliant monopoly medium is made like a typical monopoly. However, the Monopoly is modified so that it can be used as a health education medium, especially in pregnant women's classes. The difference between the intelligent monopoly

media and the previous Monopoly is that Monopoly is only used for games, not for learning, using houses and hotels by buying and selling land, toy money, game boards made of paper/wood equipped with 40 plots with pictures of countries, stations, prisons, and other information, opportunity cards, general funds, ownership (Amalia, 2020).

In contrast to the more straightforward but informative innovative monopoly media designed based on journal and book references neatly using unique pictures of pregnant women's anemia, smart Monopoly improves knowledge, attitudes, and behavior. The monopoly media has 22 plots, including 4 opportunity plots, 4 general fund plots, 4 end plots, namely start, return to the start, enter the hospital, and do a check-up at the health facility, and 10 plots regarding the knowledge of pregnant women about anemia. There are cards containing pictures, questions, and answers about anemic pregnant women's knowledge, attitudes, and behaviors. The instructions for using the media are obvious. The display of monopoly media can attract attention because there are bright colors. This media is easy to carry and move, especially in the class of pregnant women. Media maintenance only requires a little space for storage. The collapsible quality game board is made of waterproof stickers and plastic board. Additional accessories for the intelligent monopoly media consist of general fund cards for knowledge, opportunity cards for attitude and behavior, white dice, and black, blue, and white pawns.

Monopoly media is designed creatively and innovatively to increase interaction and sharing with pregnant women, especially regarding information about anemia. It can also improve their knowledge, attitudes, and behavior regarding anemia.

Smart Monopoly Media Trial

Based on Tables 1 and 2, media and material validation was carried out by media experts who found that smart monopoly media was categorized as valid with a percentage of 90% and a very feasible interpretation. Based on the trial of smart monopoly media with 15 respondents who are different from the research sample, the results show that smart monopoly media is categorized as valid with a percentage of 92% and a very feasible interpretation.

The test of intelligent monopoly media with respondents obtained the results of images on the board, opportunity cards, and general funds, which are very good and clear. The description of the pictures and cards on the smart monopoly media board is evident. The size, writing style of the board, and intelligent monopoly media cards are apparent. The neatness of the pictures on the board and cards is very good. The colors of the intelligent Monopoly media board, cards, and pawns are beautiful, and the shape of the pawns is perfect. Instructions for the use and language of smart Monopoly are straightforward to understand, and how to use intelligent Monopoly media is easy to play. The variety/diversity of game tools (dice, pawns, cards) in innovative monopoly media is fascinating. Overall, pregnant women really like Smart Monopoly as a health education media about anemia in pregnant women.

The Effect of Smart Monopoly Media on the Knowledge of Pregnant Women with Anemia

According to (Notoatmodjo, 2014), knowledge results from pregnant women knowing about anemia through their senses. Knowledge about anemia during pregnancy is essential because it affects the attitude and behavior of mothers in maintaining a lifestyle during pregnancy. Table 2 shows that before the intervention, pregnant women with low knowledge were 7 people (46.7%), moderate knowledge was 6 people (40%), and high knowledge was 2 people (13.3%). After the intervention, there was an increase in knowledge in the mother. Pregnant women with high knowledge were 14 people (93.3%), and moderate knowledge was 1 person (6.7%).

Many pregnant women still lack knowledge about anemia, so a health education media called Smart Monopoly is used to increase their knowledge. This Monopoly is informative, using pictures, text, colors, and attractive cards so that pregnant women can easily understand anemia. Based on the Wilcoxon test, the p-value is $0.001 < 0.05$, which means that the effect of using Smart Monopoly media on the knowledge of pregnant women who experience anemia or H_0 is rejected.

In line with research, (San et al., 2022) used the Monopoly Anemia Educational Game (GEMA) as one of the Health Education innovation media on adolescent girls' knowledge about anemia with a p-value of 0.000 using the concept of learning while playing so that counseling is more active, innovative, creative, effective, and fun so that it will indirectly grow higher learning motivation. In addition, in (Enjelina et al., 2023), there is an effect of Monopoly on students' knowledge and attitudes regarding the safety of food snacks with a p-value of 0.013 and 0.002.

The Effect of Smart Monopoly Media on the Attitudes of Pregnant Women with Anemia

Table 4 shows that before the intervention, a positive attitude of anemic pregnant women was 10 people (66.7%), and those who had a negative attitude towards anemia were 5 people (33.3%). After the intervention, the positive attitude of anemic pregnant women increased to 15 people (100%).

Attitude is an expression of feelings of anemic pregnant women that reflects their preference (positive attitude) or dislike (negative attitude) towards the incidence of anemia. According to (Titin, 2021), attitudes can be influenced by personal experience, other people, culture, and mass media. Innovative monopoly media is good for improving the attitude of pregnant women because it contains opportunity cards about attitudes about anemia. On the other hand, the images used are clear and bring a positive impression. The statements regarding diet, the habit of taking blood supplement tablets, and ANC are simple so pregnant women can easily understand them.

Based on the Wilcoxon test, the p-value is $0.003 < 0.05$, which means that the effect of using Smart Monopoly media on the attitude of pregnant women who experience anemia or H_0 is rejected. In line with research by (Nuria, 2021), Monomia (Monopoly Anemia) media has an effect on adolescents' knowledge and attitudes, with a p-value of 0.000. There is also an effect of anemia education using Monopoly Nutrition Anemia (MONOGIA) on the knowledge and attitudes of adolescent girls in Bengkulu City with a p-value of 0.000 (Ambar et al., 2023). This media is very effective for learning media and motivates students to learn.

The Effect of Smart Monopoly Media on the Behavior of Pregnant Women with Anemia

Based on Table 5, it is known that before the intervention, the behavior of pregnant women who were less than as many as 5 people (33.3%), behaved moderately with as many as 7 people (46.7%), and behaved well as many as 3 people (20%). After the intervention, there was an increase in maternal behavior. Pregnant women who behaved moderately were 2 people (13.3%), and those who behaved well were 13 people (86.7%).

Pregnant women who experience anemia behave to prevent and recognize anemia. Behavior is the result of their experience and interaction with their environment, manifested in the form of knowledge, attitudes, and actions (Hartiningsih, 2022). The use of intelligent monopoly media can have a significant effect on the behavior of pregnant women who experience anemia because in the media there are general fund cards that contain knowledge of anemia of pregnant women, and opportunity cards that contain attitudes and behaviors regarding anemia of pregnant women. This card has clear, straightforward statements and answers that pregnant women easily accept. This card is

used to share information about the behavior of pregnant women who experience anemia, including diet, compliance with taking blood supplement tablets, and ANC routines.

Based on the Wilcoxon test, the p-value is $0.001 < 0.05$, which means that the effect of using Smart Monopoly media on the behavior of pregnant women who are anemic or H_0 is rejected. In line with research by (Susanto, 2018), health education through healthy snacks monopoly media affects the behavior/actions of choosing snacks for school-age children at SDN Gubeng 1 Surabaya. Health education can use media, one of which is Monopoly. This media has a significant influence on behavior with a p-value of 0.000.

CONCLUSION

The conclusion of this research strongly suggests that Smart Monopoly media effectively addresses the problem of anemia among pregnant women by significantly improving their knowledge, attitude and behavior. The main objective of this research, which was to evaluate the impact of an innovative educational tool in anemia prevention, was achieved. The Smart Monopoly media, designed with an attractive design and appropriate educational content, significantly increased participants' knowledge about anemia ($p=0.001$), formed more positive attitudes ($p=0.003$), and encouraged better prevention behaviors ($p=0.001$). These results validate the hypothesis that interactive and contextualized health education media can effectively change health-related behaviors and attitudes, thereby contributing to the reduction of anemia prevalence.

In addition to providing direct benefits in health education for pregnant women, this research contributes to the development of more innovative health education media in the future. Media such as Smart Monopoly can be integrated into various public health education programs to increase the effectiveness of information delivery. Future research is expected to use a control group to provide a more comprehensive comparison, as well as apply similar media to a wider population, such as adolescent girls or other vulnerable groups. This aims to address anemia more holistically while supporting the achievement of sustainable health development targets.

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