The Effect of Edu-IFA on Knowledge and Compliance with Fe Tablet Consumption in Pregnant Women in Makassar City

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ABSTRACT
Anemia in pregnancy is still a serious problem in Indonesia, with a prevalence of 48.9%. Iron supplementation is widely considered an important strategy to reduce the incidence. The aim of the study is to analyze the effect of educational videos on the knowledge and compliance of pregnant women with Fe tablet consumption and to compare the impact of knowledge and compliance with the consumption of Fe tablets on pregnant women between the intervention group and the control group. The methods used in this study were quasi-experimental with a nonequivalent control group design. Sampling by the exhaustive sampling technique consisted of 64 respondents, with the intervention group of 32 people and the control group of 32 people. This study was carried out at the Dahlia Health Center and the Pertiwi Health Center in Makassar City for 5 months, with an intervention of 90 tablets or 3 months. Data were analyzed using the Chi-Square, Wilcoxon, McNemar, and Mann-Whitney tests. The result shows the intervention group showed a 100.0% increase in knowledge and 59.4% in compliance, while the control group experienced a 90.6% increase in knowledge and 56.2% in compliance. The educational video on the importance of blood supplement tablets during pregnancy effectively increases knowledge and compliance with Fe tablet consumption in pregnant women, so it is hoped that health workers can use educational video media as an alternative method in counseling.
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Keywords: Health education; video media; knowledge, compliance, Fe tablets, pregnant women

INTRODUCTION

Pregnancy is the period when the fetus begins to experience growth and development in the mother's womb until it is ready to be born (1–4). Pregnant women are at high risk of iron and folic acid deficiency due to increased nutrient needs during pregnancy (5–7). Anemia in pregnancy is diagnosed with hemoglobin levels and hematocrit concentrations in the first and third trimesters below 11 g/dL and 33% and in the second trimester below 10.5 g/dL and 32% (8–12)

Worldwide, anemia is one of the major global health problems, the prevalence of anemia in pregnant women is 41.8% of the incidence of anemia caused by iron deficiency. The prevalence of anemia in pregnant women in Africa is 57.1%, Asia 48.2%, Europe 25.1%, and America 24.1% (13–15). The significant implications of anemia can affect the health of the mother and child with consequences that vary according to the type and severity. This condition will increase the risk of bleeding, sepsis during childbirth, low birth weight, a weakened immune system, and some cases of conditions that can lead to death (16,17). The number of maternal deaths from the Ministry of Health's records in 2021 showed that 7,389 deaths in Indonesia increased compared to 4,627 deaths in 2020. According to data from the South Sulawesi Provincial Health Office in 2020, it was reported that there were 133 people or 85.95 per 100,000 live births. From the data of 20-34 years old, there are 90 people, and the age of >35 years is 35 people (18).

According to Basic Health Research (Riskesdas), in 2018, it shows that anemia in pregnant women in Indonesia increased by 48.9%, an increase of 11% compared to Riskesdas data in 2013 of 37.1% and based on this data, it proves that anemia cases in Indonesia are still relatively high. According to the maternal age group, at the age of 15-24 years, the incidence of anemia is 84.6% of pregnant women, followed by 25-34 years old by 33.7%, 35-44 years old by 33.6%, and 45-54 years old by 24% (19). To prevent anemia, every pregnant woman is expected to get at least 90 blood supplement tablets during pregnancy; the coverage of giving blood supplement tablets to pregnant women in Indonesia in 2021 is 84.2%; this figure increased compared to 2020 by 83.6%. South Sulawesi is in 5th place, with the lowest coverage of 69.1% (18).

Anemia in pregnant women is still a serious health problem in Indonesia, with a prevalence of 48.9% in 2018. Low adherence to the consumption of blood supplement tablets and lack of knowledge of pregnant women are the main factors for high cases of anemia. Education through video media is considered effective in increasing pregnant women's understanding and compliance with taking Fe tablets during pregnancy.

It is interesting to see that the incidence of anemia in pregnant women increases from year to year, which is directly proportional to the proportion of the history of blood supplement tablets received and consumed during pregnancy, the number of blood supplement tablets obtained <90 tablets is 65.39% while >90 tablets is 34.61% and the number of blood supplement tablets taken <90 tablets is 80.75%

and >90 tablets 19.25%. So, the problem of anemia in pregnant women still needs serious attention from all parties involved in health services (20).

Iron supplementation is widely considered an important strategy to reduce the prevalence of anemia in pregnant women. The program faces many challenges, such as poor knowledge of anemia, low iron tablet consumption compliance, low antenatal care visits, micronutrient deficiencies, and poor health education (21). The delivery of health education must be supported by education that can facilitate the delivery of messages and information. Efforts that have been made include the administration of Fe tablets during pregnancy, which are given at least 90 tablets. Health workers have also emphasized the importance of counseling, information, and education (22,23).

In the era of globalization, the use of smartphones as a medium of communication technology has played an essential role in human life. One example is using technology to make educational videos. In this case, videos can display moving images and sound to create attraction and more easily convey messages/information using more than one human five senses (24,25). An information system is needed to help pregnant women get information about anemia in pregnant women that all mothers can easily access via desktop or mobile phones. Then, a program in the form of a video was designed to educate pregnant women because effective media in delivering health promotion is through video, which is the result of a combination of audio, visual, and animation. This proves that a learning process that is repeated in a short period will be more effective than a learning process that is only once in a longer period.

This study aims to analyze the influence of educational videos on pregnant women's knowledge about Fe tablets and compliance with Fe tablet consumption and compare the influence of knowledge and compliance with Fe tablet consumption on pregnant women between groups.

METHOD

The method used in this study was quasi-experimental with an unequal control group design. This research was conducted at the Dahlia Health Center and the Pertiwi Health Center because data from the City Health Office that the two Public Health Centers have the highest prevalence of anemia in the city of Makassar and research by assessing compliance with Fe tablet consumption has never been carried out. The study was carried out for 5 months from January – May 2023 with the administration of 90 tablets or a 3-month intervention. The treatment group was given an intervention in the form of an educational video while the control group received education from health workers. The population of all pregnant women who visited the health center that met the inclusion criteria were mothers with a gestational age of ≥12 weeks and ≤32 weeks with *exhaustive sampling techniques.*

The number of samples for each group was 32 people. Data collection was carried out 2 times, namely during the pretest and posttest with a questionnaire to find out the difference in mother's knowledge. The data analysis used in this study gradually includes: Univariate analysis to describe the

characteristics of respondents using *the Chi-Square* test. The bivariate analyses of the tests used are the Wilcoxon test, McNemar test, and Mann-Whitney test.

This research has received ethical approval from the Health Research Ethics Commission of the Ministry of Research, and Technology, Hasanuddin University, Faculty of Public Health with number: 15638/UN4.14.1/TP.01.02/2022 and Protocol No. 201222092378 15638/UN4.14.1/TP.01.02/2022 and Protocol No.201222092378.

RESULTS

Table 1. Results of Educational Video Media Validation

Validator	%	Credentials
Media Expert	96%	Eligible
Material Expert	94,4%	Eligible
Pregnant women trials	94,6%	Eligible

Table 1 shows the results of the feasibility test of educational video instruments for media experts, material experts, and pregnant women. The results, according to the validators of this instrument, are very suitable for use in this study.

Table 2. Distribution of Respondent Characteristics in the Intervention and Control Groups

Karateristic	Intervension		Control		P value
	n	%	n	%	
Age					
No Risk	29	90.6	22	68.0	0.030
Risky	3	10.0	10	31.3	
Gestational Age					
<20 weeks	14	46.7	19	59.4	0.211
>20 weeks	18	56.3	13	40.6	
Education					
Low	9	28.1	10	31.3	0.784
High	23	71.9	22	68.8	
Job					
Not Working	25	78.1	24	75.0	0.768
Work	7	21.9	8	25.0	
ANC Visit					
1-3 times	23	71.9	28	87.5	0.120
>4 times	9	28.1	4	12.5	
Information Exposure					
Electronic Media	3	9.4	0	0.0	0.038
Health Workers	29	90.6	32	100	

Uji Chi-Square

In Table 2, the characteristics of pregnant women sampled in this study from 64 respondents based on the age of most pregnant women, both control and intervention are in the non-risk category, namely in the intervention group, which is 29 people (90.6%) and the control group is 22 people (68.0%). Based on the mother's gestational age, both intervention and control were almost the same in the <20-week category; the intervention group was 14 people (46.7%), and the control group was 19 people (59.4%). Based on maternal education, both intervention and control were almost the same in the higher education category, namely in the intervention group, as many as 23 people (71.9%), and in the control group, as many as 22 people (68.8%). Based on the mother's work, both the intervention group and the control group in the non-working category were the same, namely in the intervention group as many as 25 people (78.1%) and the control group as many as 24 people (75.0%). Based on ANC visits, most mothers, both intervention and control, in the 1-3 visits category, namely in the intervention group, as many as 23 people (76.7%), and in the control group, as many as 28 people (87.5%). Based on the exposure of pregnant women's information, both intervention and control were almost the same in the health worker category, namely in the intervention group, as many as 29 people (90.6%), and the control group, as many as 32 people (100%).

Table 3. Differences in Pregnant Women's Knowledge About Fe Tablets in the Intervention and Control Groups after 3 Months of Intervention

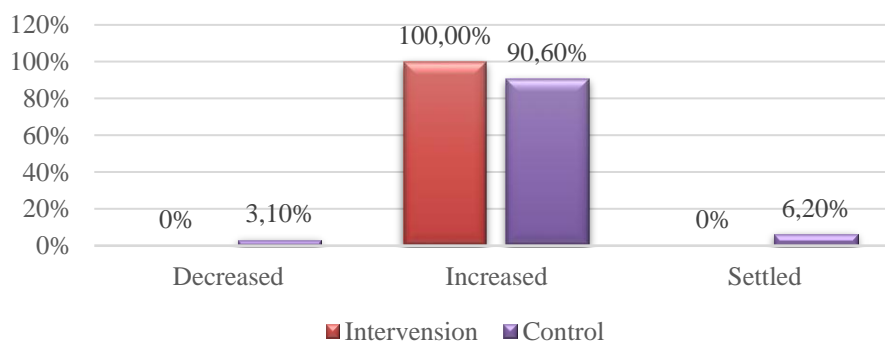| Knowledge	Intervention		Control		P value**
	n	%	n	%	
Pretest					
Less	15	46.9	18	56.3	0.377
Enough	13	40.6	12	37.5	
Good	4	12.5	2	6.3	
Posttest					
Less	4	12.5	10	31.3	0,021
Enough	12	37.5	14	43.8	
Good	16	50.0	8	25.0	
P Value*	0.000		0.000		

Uji Wilcoxon , **Uji Mann Whitney*

Figure 1. Graph of Knowledge Differences between Intervention and Control Groups

Based on table 3, most pregnant women with poor pretest knowledge and good posttest knowledge of 50.0% were based on table 3. In the control group, most pregnant women had insufficient pretest knowledge, at 56.3%, and posttest knowledge was sufficient at 43.8%.

Figure 1 explains that in the intervention group of 32 pregnant women, there was an increase in knowledge (100.0%), and there were no pregnant women with sedentary or decreased knowledge. In the control group of 32 pregnant women, there was 1 person (3.1%) with a decrease, 29 people (90.6%) with an increase, and 2 people (6.2%) with sedentary knowledge.

Table 4. Differences in Compliance with Fe Tablet Consumption in Pregnant Women between the Intervention and Control Groups after 3 Months of Intervention

Compliance	Intervention		Control		P value**
	n	%	n	%	
Pre-Compliance					
Non-Compliance	10	31.2	18	56.2	0.046
Obedient	22	68.7	14	43.7	
Post Compliance					
Non-Compliance	5	15.6	7	21.9	0.525
Obedient	27	84.4	25	78.1	
P Value*	0.000		0.541		

Uji McNemar
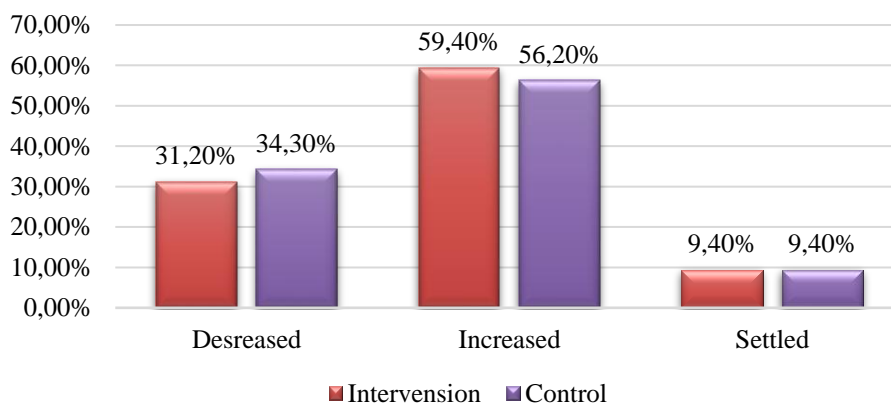**Uji Mann-Whitney*

Figure 2: Graph of Compliance Differences between Intervention and Control Groups

Based on Table 4, compliance with consuming 3-month intervention blood supplement tablets in the intervention group, most pregnant women were compliant by 84.4% in post-compliance monitoring and non-compliant by 31.2% in pre-compliance monitoring. In the control group, most pregnant women were compliant, with 78.1% in post-compliance monitoring and 56.2% in pre-compliance monitoring.

In this study, the difference in compliance of the intervention group decreased by 11 people (31.2%), compliance increased by 19 people (59.4%), and persistent compliance increased by 3 people (9.4%). In the control group, it decreased by 10 people (34.3%), increased by 18 people (56.2%), and remained unchanged by 3 people (9.4%).

DISCUSSION

1. **Differences in Pregnant Women's Knowledge About Fe Tablets in the Intervention and Control Groups after 3 Months of Intervention**

Table 3 shows that the results of the Mann-Whitney test showed that there was no difference between the intervention group and the control group, with a pretest knowledge *p value* of 0.377 (p>0.05). This means that respondents in the intervention and control groups have the same knowledge before being given treatment. At the time of the knowledge posttest, there was a relationship between the intervention group and the control group with *a p value* of 0.021 (p<0.05). This shows that health education in the form of videos is useful for increasing the knowledge of pregnant women about the importance of blood booster tablets during pregnancy. The results of the Wilcoxon test analysis in the intervention group with *p value* = 0.000 (p<0.05) which means there is a significant increase in knowledge in the pretest and posttest results, as well as in the control group with *p value* = 0.000 (p<0.05) which means there is a significant increase in knowledge in the pretest and posttest results.

The intervention group and the control group both received education about blood supplement tablets and assistance for pregnant women in consuming blood supplement tablets although the media and methods used were different, but the results in both groups experienced increased knowledge after receiving education about the importance of blood supplement tablets during pregnancy. This education was focused on respondents' knowledge about the benefits, side effects, and symptoms felt by mothers from consuming Fe tablets.

Knowledge is closely related to health education, which functions as a medium or guide that provides socio-psychological conditions in such a way that individuals or communities behave in accordance with healthy living norms. Before adopting a new behavior, a person must first know what the meaning or benefit of the behavior is or what benefits to him (26,27).

From this theory, pregnant women will routinely carry out pregnancy checks and comply with the consumption of blood supplement tablets if the mother knows what the purpose of the examination is and the benefits and dangers posed if she does not do so. When pregnant women already know information about blood supplement tablets correctly and appropriately so that they can make mothers motivated to be obedient in consuming blood supplement tablets (28,29).

This research is in line with the research conducted (30) It showed the results of the Wilcoxon test of 0.000 <0.05 which means that there was a significant increase in the results of the pretest and posttest of knowledge. Without knowledge of iron tablets, it is difficult for mothers to instill the habit of consuming foods that are important for the health of pregnant women. Knowledge can be gained from direct experience or the experience of others conveyed to people (31). This is also in line with research (32) With the results of the study using the Wilcoxon test obtained a value of p = 0.000 (p<0.05), the results of this test show that there is a significant difference between before and after being given

audiovisual media on the knowledge of pregnant women at the Putri Ayu Health Center, Jambi City in 2021.

Increasing knowledge about mass media and electronic media, using the right media, can draw attention to issues and increase the absorption of information conveyed (Krismawati et al., 2022). Which is finally expected to change health behavior for the better. One of them is the use of audio-visuals in health education which has the advantage of being able to display moving images, display certain learning processes and skills, and can change user desires through dramatization in videos (33). The use of audiovisual media can avoid misperceptions, clarify information, and make it easier to understand (34).

Based on the results of the study, theories and related research, the researcher assumes that pregnant women who have high knowledge and good knowledge will obey in consuming Fe tablets because they already know about the impact of maternal non-compliance and the importance of Fe tablets so that mothers are willing to implement preventive behaviors of developing anemia during pregnancy.

2. Difference in Adherence to Fe Tablet Consumption in Pregnant Women between the Intervention Group and Kotrol after 3 Months of Intervention

The results of the analysis in table 4 showed that there was no difference in monitoring compliance with the consumption of blood supplement tablets for 3 months or 90 tablets in the intervention group with *p value* = 0.000 (p<0.05) which means there was a difference in monitoring compliance with consuming Fe tablets for 3 months or 90 tablets, in the control group with *p value* = 0.541 (p<0.05) which means there was no difference in compliance monitoring of Fe tablets for 3 months or 90 tablets.

In this study, there are still pregnant women who do not comply in consuming blood supplement tablets. Although pregnant women consume 90 tablets but in a longer time bracket is caused by pregnant women forgetting; mothers experience complaints of nausea, and worries about side effects that mothers will feel are other factors. Therefore, the knowledge of pregnant women about the accuracy of dosage, how to drink, and the time needs to be increased so that mothers can consume Fe tablets regularly according to the recommendations. The results of the Mann Whitney test obtained *a p value* = 0.046 (p<0.05) which means that there is a difference between the intervention group and the control group in monitoring the consumption of pre-compliance blood supplement tablets, in the post compliance with *p value* = 0.525 (p<0.05) means that there is no difference between the intervention group and the control group.

Efforts that can be made to increase the compliance of pregnant women in consuming Fe tablets are by providing pregnant women with education, encouraging each pregnant woman to make examination visits, and reminding pregnant women or explaining again how to consume Fe tablets properly. As well as the delivery of information during pregnancy on the importance of Fe tablet consumption, which is expected to change the behavior of pregnant women. Non-compliance of pregnant women in consuming Fe tablets according to the recommendations of health workers is a result

of their ignorance about the importance of adequate iron intake during pregnancy (35). The provision of health education using video media is an educational activity that is carried out by spreading messages, instilling beliefs, so that pregnant women are not only aware, know, and understand, but also willing and able to act on the recommendations conveyed through the video media (36).

Compliance with taking blood supplement tablets is mainly influenced by the mother's awareness of the importance of maintaining health during pregnancy. Maternal behavior, by realizing the importance of consuming blood supplement tablets every day, can reduce pregnant women's non-compliance with taking blood supplement tablets (37). The results of this study are in line with the research conducted (38) This shows that most respondents consume blood-boosting tablets by 63.4%. Judging from the results of the observation of the remaining blood supplement tablet consumption in the respondents, most of the respondents used the blood supplement tablets given and returned to the control to get the blood supplement tablets according to the schedule that had been determined by the health worker.

If a person has a higher perception of a health threat or problem, then they will take into account the possible health alerts that may occur, thereby taking action to prevent health problems or health threats and make a major change in the attitude and behavior of the brand (39). Based on the results of the study as well as related theories and studies, the researcher assumes that being accompanied by good knowledge in pregnant women can also improve the attitude of mothers to be obedient in consuming Fe tablets. A good attitude will affect positive health behaviors, such as the behavior of consuming Fe tablets in order to prevent anemia.

CONCLUSIONS AND RECOMMENDATIONS

The educational video on the importance of blood supplement tablets during pregnancy is effective in increasing knowledge and compliance with Fe tablet consumption in pregnant women, so it is hoped that health workers can use educational video media as an alternative method in counseling.

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