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# The Influence of Health Education Using Media Booklets About the Importance of Hemoglobin Levels to Increase Knowledge of Pregnant Women in the Work Area of the Ngemplak Public Health Center

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***Abstract***

*Hemoglobin is a component of red blood cells or erythrocytes which functions to bind oxygen and deliver it to all the body's tissue cells. One of the health problems that develop in pregnant women is low hemoglobin (Hb) levels. Anemia is the main cause of morbidity and death in pregnant women. Anemia during pregnancy is defined as a hemoglobin level lower than 10 g/dl. Knowledge of pregnant women about anemia is one of the factors that play a role in the incidence of iron deficiency anemia in pregnant women. The purpose of this study was to determine the effect of health education using booklet media about the importance of hemoglobin levels to increase knowledge in pregnant women on knowledge before and after being given health education. This type of research is a quantitative study with a pre-experimental design through one group pre-post test design. The population of this study were all pregnant women in the first, second, and third trimesters. The research sample is 60 samples with purposive sampling technique. Data collection used a knowledge questionnaire about the importance of hemoglobin levels which had been tested for validity with a result of 0.444 and reliability with a result of 0.890 by researchers. The results of the research were carried out by the Kolmogrov-Smirnov normality test first, then the Wilcoxon Signed Rank Test was carried out. Based on the research results, it was obtained the results of hypothesis testing with a significance value of p-value 0.000 <0.05 so it can be concluded that there is an effect of health education using booklet media about the importance of hemoglobin levels to increase knowledge in pregnant women.*

***Keywords: Hemoglobin Level, Anemia in Pregnancy, Health education, Knowledge, Booklet***

## INTRODUCTION

The maternal mortality rate (MMR) is a very important benchmark for assessing the health status of women in a region. Anemia during pregnancy is defined as a hemoglobin level lower than 10 g/dL. In underdeveloped countries, anemia is a major cause of maternal morbidity and mortality. Half of all pregnant women globally suffer from anemia, which is turning into a global health crisis (Safitri, 2020). Total sufferers of anemia in pregnant women in Indonesia is 70% meaning that out of 10 pregnant women, as many as 7 people suffer from anemia (Kementrian Kesehatan, 2020).

Based on Basic Health Research data collected every five years, the prevalence of anemia in Indonesia in 2018 was 48.9%, compared to 37.15% in 2013. Therefore, it can be said that there has been an increase in anemia problems in pregnant women by 11.8 % for the past five years (Kementrian Kesehatan, 2020). The results of this study indicate that parity,

insufficient iron consumption, chronic energy deficiency status, and maternal education are factors associated with the occurrence of anemia in pregnant women (Mardiana, 2020).

Based on the health profile of Central Java 2019, it shows that the prevalence rate of causes of maternal death due to bleeding has increased, from 22.60% in 2018 to 24.5% in 2020 (Dinas Kesehatan Provinsi Jawa Tengah, 2020). The main cause of anemia during pregnancy is a lack of iron intake. For women who suffer from anemia, the maternal mortality rate is 70%, for women who are not anemic, it is 19.7%. Anemia is associated with maternal mortality by 15-20% either directly or indirectly (Sulastri et al., 2014)

Anemia during pregnancy can adversely affect pregnant women and the unborn child. Pregnant women with more anemia can result in more serious difficulties for the mother during pregnancy, childbirth and childbirth, including miscarriage (abortion), premature parturition, early birth of newborns, low birth weight babies, postpartum hemorrhage due to uterine atony, shock, infection intrapartum and postpartum (Amini et al., 2018). Cases of pregnancy-related anemia are usually caused by inadequate intake of iron in the body as a result of a poor diet (Mardiana, 2020).

Knowledge about anemia during pregnancy is very important for pregnant women. Because information can influence attitudes and actions in maintaining daily food intake patterns to prevent anemia during pregnancy, pregnant women must receive good information about anemia during pregnancy (Chandra et al., 2019)

From the results of a preliminary study conducted at the Ngemplak Health Center, data on the number of pregnant women were 164 pregnant women. Based on the results of interviews with 12 pregnant women in the work area of the Ngimplak Health Center, it was found that some of them had low knowledge about the importance of hemoglobin levels during pregnancy. This research was conducted to determine the effect of health education using booklet media on pregnant women's knowledge about the importance of hemoglobin levels in the working area of the Ngimplak Health Center.

## METHOD

This research is a type of quantitative research with a research design used is a pre experimental design using a one group pretest posttest research design. The advantage of this method is that there is a pretest before being subjected to treatment and there is a posttest after being given treatment, thus the results of the treatment can be known more accurately, because they can be compared with the conditions before being given treatment (Sugiyono, 2018).

This research was conducted in the working area of the Ngemplak Health Center from January to February 2023. The sampling technique in this study was purposive samoling. The research population totaled 150 people and obtained a research sample of 60 respondents. This study uses independent and dependent variables. The independent variable of this research is the effect of health education using booklet media. Meanwhile, the dependent variable is the level of knowledge of pregnant women about the importance of hemoglobin levels. This study has also received approval from the Health Research Ethics Commission RSUD Dr. Moewardi.

The research instrument was a knowledge questionnaire about hemoglobin levels consisting of 25 questions that had been tested for validity and reliability. The validity test was carried out by researchers 30 questions using the Guttman scale method with valid results being 25 questions as evidenced by the value of r count> 0.444. Test the reliability of the questionnaire using statistical tests Cronbach's Alpha with reliable results with a value of 0.890. The research media has been tested for feasibility by experts (Judgement Experts), namely the design expert by Mr Dedy Eka Timbul Prayoga, S.Sn., M.Sn Selaku dosen D3 DKV UNS Vocational School to assess the design and display quality of posters in general, and mothers budi setyorini, Amd., Keb to assess the contents of the poster (material in the poster). The results of the evaluation show that the media rating average of 3 experts is 80%, in conclusion the poster media by the experts is very Good/Very Feasible to be used as a means of providing health education in this study.

Data analysis in this study used univariate and bivariate analysis. Univariate analysis includes respondent characteristics, frequency distribution, statistical data, and the percentage of each research variable. While bivariate data analysis using hypothesis testing. After the results of the pretest and posttest were obtained, a normality test was performed using the Kolmogrov-Smirnov test. After that, the Wilcoxon Signed Rank Test was carried out to determine the effect of health education on the level of knowledge of respondents.

## RESULTS

### Respondent Characteristics

**Table 1. Characteristics of Respondents**

| Karakteristik | Kategori | frekuensi | Persentase (%) |
|---|---|---|---|
| Age | 17-19 years | 14 | 23,3 |
| | 20-35 years | 25 | 41,7 |
| | 35-45 years | 21 | 35,0 |
| Last education | Primary school | 5 | 8,3 |
| | Junior high school | 15 | 25,0 |
| | Senior High School | 30 | 50,0 |
| | Bachelor | 10 | 16,7 |
| Work | Housewife | 25 | 41,7 |

| | | | |
|---|---|---|---|
| | Entrepreneur | 10 | 16,7 |
| | Businessman | 5 | 8,3 |
| | Trader | 10 | 16,7 |
| | Civil Servants | 10 | 16,7 |
| Number of children | Primagravida | 25 | 41,7 |
| | Multigravida | 35 | 58,3 |

Based on table 1, it is known that the majority of respondents were aged 20-35 years, namely 25 respondents (41.7%), but this number was not much different from the ages of 36-45 years, namely 21 respondents (35%). In this study the occupations of the respondents varied from traders, housewives, to those who worked as civil servants. However, the majority of respondents were dominated by housewives, namely 25 respondents (41.7%).

The distribution of characteristics according to the last education of the respondents in the table above shows from various backgrounds. From the table above it can be seen that most of the respondents had the last high school education, namely 30 respondents (50.0%). However, there were also quite a number of respondents who had taken lectures in this study, namely 10 respondents (16.7%) ranging from D3 to S1. While the distribution of the characteristics of the respondents according to the status of childbirth in the table above shows that the majority of respondents are multigravida pregnant women with a total of 35 respondents.

**Analysis of Respondents Knowledge Level *Prettest* dan *Post Test***

**Table 2 Distribution of Respondents Based on Pretest Scores**

| **Prettest** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Less | 25 | 41,7 |
| Enough | 31 | 51,7 |
| Good | 4 | 6 |
| **Total** | **60** | **100,0** |

Based on table 2 above, it can be seen that the majority of pregnant women have a low level of knowledge (41.7%) before being given health education regarding the importance of hemoglobin levels in pregnant women.

**Table 3. Distribution of Respondents Based on Post Test Scores**

| **Post Test** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Good | 48 | 80,0 |
| Enough | 12 | 20,0 |
| **Total** | **60** | **60** |

Based on the analysis in table 3. it can be concluded that after being given health education using Booklet media, the majority of respondents had good knowledge with a percentage of 80.0%.

**Table 4. Statistical data on the level of knowledge about the importance of hemoglobin levels in the experimental group at the Ngemplak Health Center**

| Statistics | *Pre-Test* | Post- Test |
|---|---|---|
| Mean | 13,9167 | 21,9167 |
| Median | 42.5000 | 95.0000 |
| Mode | 53 | 94 |
| Standard Deviation | 3,50927 | 94406 |
| Variance | 45.690 | 14,016 |
| Minimun | 8.00 | 20.00 |
| Maxsimum | 55.00 | 99.00 |

**Analysis of the Influence of Health Education on Knowledge Level**

**Table 4. Data Normality Test Results**

| Variable | *P-value* | Conclusion |
|---|---|---|
| *Prettest* | 0,200 | Normal |
| *Post test* | 0,021 | Abnormal |

Based on the results of the normality test with the Kolmogrov-Smirnov test in table 4, the pretest results were 0.200 and the post test results were 0.021. According to these results, it can be concluded that the posttest data is normal, while the posttest data is not normally distributed. Therefore testing the data hypothesis in this study using the Wilcoxon Signed Rank Test.

**Table 5. Wilcoxon Signed Rank Test Results**

| Group | Mean | Std. Deviation | Min | *Max* | *Sig. (2-tailed)* |
|---|---|---|---|---|---|
| Pre-Test | 13,9167 | 3.50927 | 8.00 | 19.00 | 0,000 |
| Post-Test | 21.9167 | 94406 | 20.00 | 23.00 | 0,000 |

Based on table 5. the results of the Wilcoxon signed rank test, obtained a significance value of 0.000 <p value so it can be concluded that H0 is rejected and Ha is accepted, which means there is an influence of health education with booklet media about the importance of levels.

## DISCUSSION

### 1. Characteristics of Respondents

The results showed that the majority of pregnant women aged 25 (41.7%) were 20-35 years old. Pregnant women at a productive age as someone at the age of 20-35 years are a productive group where the level of productivity in the form of cognitive fan motor skills is at its peak (Mubarak, 2009). A person's age will generally be related to a person's level of knowledge. Pregnant women with birth age over 25 years, independence or maturity is better than the group of mothers who have a lower age. Research conducted by Purwaningtyas said that pregnant women are at risk, namely age <20 years and age > 35 years, and ages not at risk, namely 20-35 years (Purwaningtyas & prameswari, 2017).

The majority of respondents are housewives as many as 25 respondents (41.7%). Based on research conducted by prasetyo & Saddewisasi, (2020) stated that housewives have more time to visit health facilities, judging from the operational hours of the Maternal and Child Health polyclinic at the puskesmas, which is 08.00 – 11.00 WIB.

Based on the characteristics of the respondents, seen from their last education, the majority had high school education or the equivalent, namely 30 respondents (50.0%). From this it can be concluded that the majority of respondents have sufficient educational background. Based on research conducted by N. W. Sari (2020) states that it is easy or not for someone to receive information can be seen from their level of education.

As many as 35 respondents were multigravida pregnant women. Based on research Widiyati et al,, (2020) data obtained that pregnant women who have given birth have more experience, so they have more information to examine their pregnancies in health care facilities.

**2. Knowledge Level of Respondents Before and After Being Given Health Education**

After health education, the majority of respondents had sufficient knowledge of 12 respondents (20.0%), 48 respondents had good knowledge (80.0%). Sufficient knowledge of respondents due to health education with media booklets provided by researchers. The lowest knowledge was shown by respondents regarding the administration of Fe tablets during pregnancy. Supplementation of iron tablets with a daily dose of 1 item (60 mg of iron and 0.400 mg of folic acid) consecutively for at least 90 days during pregnancy (Sari et al., 2020).

The average level of knowledge of respondents increased after being given health education using the media module. Based on research conducted by (Yulianingsiih et al., 2020) states that by conducting health education with booklet media, a person's knowledge increases, the increase in knowledge shows a positive impact in efforts to improve health status.

**3. The Effect of Health Education Using Booklet Media About the Importance of Hemoglobin Levels in Pregnant Women to Increase Knowledge in the Work Area of the Ngemplak Health Center**

The results of the Wilcoxon Signed Rank Test found that the significance value was 0.000 <p-value, so it could be concluded that there was a significant influence on the level of knowledge of pregnant women before and after carrying out health education using booklet media. This was proven when before carrying out health education using booklet media, the majority of respondents had less knowledge, namely 25 respondents (41.7%). However, after health education was carried out, the majority of respondents had good knowledge of 48

respondents (80.0%). This is consistent with research, which shows that H0 is rejected and Ha is accepted in the Wilcoxon Signed Rank Test.

The data collection process was carried out using the lecture method with booklet media which aims to make it easier for pregnant women to receive material. According to research (Listyarini & Fatmawati, 2020) Booklets have two advantages compared to other media, namely they can be studied at any time because they are designed in book form and contain more information. Booklet media was chosen as a media for health education because it is able to disseminate information in a relatively short time, so that it can increase the knowledge of pregnant women. Based on the research conducted (Suryani et al., 2022) states that booklet media is more effective in increasing respondents' knowledge compared to audiovisual media, this can be seen from the results of the Kruskal wallis test obtained <0.05, and from the mean rank value obtained it shows that the mean rank value of booklet media has a higher value than with audiovisual media.

## CONCLUSION

The conclusion from the results of this study namely:

1. The results of the Wilcoxon Signed Rank Test show that the significance value is 0.000 <p-value, so it can be concluded that there is a significant influence on the level of knowledge of pregnant women before and after health education is carried out using booklet media.
2. The level of knowledge of respondents before being given health education using booklets about the importance of hemoglobin levels was lacking.
3. The level of knowledge of the respondents after being given health education using booklets about the importance of hemoglobin levels was good.

It is suggested to health services or health workers to provide health education related to hemoglobin levels during pregnancy can be given at every class meeting of pregnant women by health workers to improve health and increase knowledge. Pregnant women are expected to make the best use of the booklet on the importance of the hemoglobin level they receive. An understanding of pregnant women about hemoglobin levels is expected to be able to increase awareness to maintain their health so that the incidence of anemia can be prevented and for future researchers this research can be used as a reference for similar research using different learning media and different locations.

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