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Validity and Reliability Test New Questionnaire of Knowledge, Perception, Family Support, and Adherence of Pregnant Women with Anemia Using TTD Supplement

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Anemia according to WHO (World Health Organization) is defined as crucial incidence during pregnancy. In adult groups, it is common in women of reproductive age, especially in pregnant women due to iron deficiency. Pregnant women need to consume Iron Folic Acid Supplement/Tablet Tambah Darah (TTD) regularly to prevent and overcome anemia. Several factors are important to be studied in anemic pregnant women. Therefore, researchers wanted to examine the validity and reliability of the new questionnaire. The purpose of this study was to determine the validity and reliability of the questionnaire on the level of knowledge, perceived barriers, perceived benefits, and adherence in anemic pregnant women in the use of TTD. This study uses quantitative research in the form of descriptive research and uses a cross-sectional design. Using non- probability sampling with purposive sampling technique and 100 mothers. In research conducted in September 2023 showed that the validity and reliability test questionnaire on the questionnaire level of knowledge, perceived barriers, perceived benefits, family support and adherence questions are valid and also reliable with Cronbach alpha above 0.6.

Keywords: Anemia, TTD, Validity, Reliability, Questionnaire

INTRODUCTION

Pregnancy for productive women is a normal event. In pregnancy, the high maternal mortality rate (MMR) is caused by anemia. Anemia is a condition where hemoglobin is less than 10gr/dL, causing the inability to carry oxygen to all body tissues. Groups that are prone to anemia are women of childbearing age and pregnant women. Anemia in pregnancy is defined as hemoglobin levels less than 11g/dL (WHO, 2020). Anemia in pregnant women in Indonesia reaches 70% which means 7 out of 10 pregnant women suffer from anemia. The most common anemia in pregnancy is anemia caused by iron deficiency. Another cause of anemia is a combination of lack of iron in the blood, vitamin B12 and folic acid (Edison et al., 2019). There are two factors that can cause anemia, namely internal factors and external factors. Internal factors include age, parity, pregnancy spacing, nutritional status, education, family income, type of employment, bleeding, infection or disease, and history of anemia. External factors of anemia include blood supplement tablets, frequency of antenatal care (ANC), and environment (Windari et al., 2018).

Anemia is still an international health problem due to the high population rate. According to WHO worldwide, it is estimated that as much as 40% of the pregnant female population is anemic. According to WHO (2019) the prevalence of anemia in pregnant women is 36.5%. The prevalence rate of anemia in pregnant women in Indonesia is 48.9% (Indonesian Ministry of Health, 2020). According to Riskesdas (Basic Health Research) in 2018, almost 50% of pregnant women experience anemia (Kemenkes RI, 2018). In 2021 in Malang city, the number of pregnant women who had their hemoglobin levels checked was 8,483, through this examination there were 1,886 pregnant women who were anemic from 8-11dr/dL and 91 pregnant women who were anemic <8g/dl. Thus, as many as 1,977 pregnant women experienced anemia or 23.3% (Malang City Health Office, 2022). In response to the high prevalence of anemia among pregnant women, the Indonesian government has implemented several intervention strategies to overcome the anemia of pregnant women, including giving iron tablets to pregnant women routinely. One of the methods used by the Indonesian government to overcome the problem of anemia is to give pregnant women at least 90 blood supplement tablets (TTD) during pregnancy. Each blood supplement tablet contains iron in the form of Ferrous Sulfate, Ferrous Fumarate, or Ferrous Gluconate, as well as 0.400 mg3 of Folic Acid. Taking blood supplement tablets daily can help reduce the prevalence of anemia and prevent anemia in pregnant women (Shofiana et al., 2018). Anemia in pregnant women can be prevented by eating foods rich in iron, such as red meat, green vegetables, and beans, and taking iron supplements recommended by a doctor. Treatment of anemia in pregnant women usually includes iron supplementation and dietary adjustments.

TTD supplements programs face difficulties in ensuring that pregnant women have access to TTD

supplement supplements not ensuring that they will take them. People's inability to comply is often the result of a lack of understanding of the benefits or harms of the supplements. Poor adherence has adverse effects on energy levels and productivity, as well as on the physical, mental and immunological systems. However, a key strategy to lower the risk of unfavorable pregnancy outcomes is to maintain adherence to such supplements. The importance of this issue demands the need to identify factors that occur in these pregnant patients. Adherence to TTD is also an important factor that must be looked at to review the success of TTD therapy. Other factors such as Level of knowledge, perceived benefits, perceived barriers, family support are also factors that are often associated with TTD adherence.

Measurement of the level of knowledge, perceived benefits, perceived barriers, family support, and adherence in anemic pregnant women using TTD can be done by administering a questionnaire. A questionnaire is one of the instruments used to collect data on a population by providing a series of questions on a specific topic to individuals. The validity test is a measurement test to determine whether the measuring instrument actually measures what is being measured. The importance of conducting validity and reliability tests on questionnaires is because this can affect the data that will be obtained by researchers when conducting a study, where the greater the validity and reliability values obtained on an instrument, the more valid the data obtained from a study (Pramestutie et al., 2021). Validity and reliability tests were carried out on questionnaires that accessed supporting factors, barriers, family support, and adherence of pregnant women taking blood supplement tablets. The importance of conducting validity and reliability tests on questionnaires is because this can affect the data that will be obtained by researchers when conducting a study, where the greater the validity and reliability values obtained on an instrument, the more valid the data obtained from a study. However, there is a lack of systematically validated instruments to comprehensively assess these factors, especially among urban pregnant populations such as in Malang City. Therefore, this study aims to examine the validity and reliability of a questionnaire designed to measure knowledge, perceived benefits, perceived barriers, family support, and adherence to iron supplementation among anemic pregnant women.

METHODOLOGY

Type of Research

The type of research is a design in the form of a strategy for proving or testing variables in the research scope. This study applied a quantitative, cross-sectional, analytic observational design to assess the validity and reliability of questionnaires on pregnant women who experience anemia and are conducted at the Puskesmas.

Time and Location

This study was conducted at five health centers in Malang in August-September 2023. Primary data from this study is by filling out questionnaires from pregnant women respondents who experience anemia who are treated with Blood Addition Tablet supplements from the Puskesmas. This study was conducted at Puskesmas Mulyorejo, Janti, Kedungkandang, Mojolangu and Polowijen Malang City.

Sampling Technique, Sample Size, and Inclusion Criteria

A non-probability purposive sampling technique was used to select 100 pregnant women diagnosed with anemia from five community health centers in Malang City who met the inclusion criteria. Purposive sampling technique was also used in this study, purposive sampling is a sampling technique with certain considerations (Haribowo et al., 2022). The consideration in this case is anemic pregnant women at Puskesmas Mulyorejo, Janti, Kedungkandang, Mojolangu and Polowijen Malang City who experience anemia. In this study, the sampling procedure was carried out in Malang City by selecting respondents according to the inclusion criteria and then collecting sample data directly at Puskesmas Mulyorejo, Janti, Kedungkandang, Mojolangu and Polowijen Malang City. The inclusion criteria in this study are: pregnant women who experience anemia and consume TTD; pregnant women who do ANC at least 2 times; pregnant women who are able to understand and communicate with good Indonesian; pregnant women who are willing to become respondents and fill out informed consent.

Data analysis

The validity test of the questionnaire in this study used the Pearson product moment correlation test. Item-total correlation using the Pearson Product Moment was conducted to assess construct validity. Items were considered valid if the correlation coefficient (r) exceeded the r-table value. Internal consistency reliability was measured using Cronbach's Alpha, with $\alpha \geq 0.60$ considered acceptable. Data were analyzed using SPSS Statistical Package Version 25.

Ethical Consideration

Ethical approval for this study was obtained through the Health Research Ethics Committee of FK Muhammadiyah University of Malang with ethical number E.5.a/229/KEPKUMM/VIII/2023 and an informed consent form that would be signed by the respondent before data collection was carried out.

RESULT AND DISCUSSION

Characteristic of Respondents

Based on the results of research that has been conducted at the Puskesmas Kedungkandang, Janti, Mulyorejo, Mojolangu, Polowijen, Malang City during August-September 2023 on 100 respondents of pregnant women who are pregnant. Data on the socio-demographic characteristics of patients consisting of age, latest education, and occupation were obtained. The results of this study showed that out of 100 respondents, the age of anemic pregnant women was dominated by the age of 26-33 years as many as 47 patients (47%), had an elementary-high school education background as many as 75 respondents (75%), and the majority did not work as many as 63 respondents (63%). Respondent data can be seen in table 1 below.

Table 1. Characteristic distribution of the study's respondents

Characteristics	Total (N=100) N (%)
Age	
18-25	26 (26)
26-33	47 (47)
34-42	26 (26)
More than 42	1 (1)
Education	
Elementary School-High School	75 (75)
Higher Education	25(25)
Occupation	
Not working	63 (63)
Work	37 (37)

In table 1, the characteristics of respondents based on age show that the most respondents are respondents aged between 26 to 33 years as many as 47 respondents (47.0%). Pregnant women aged < 20 years and > 35 years are high-risk ages while ages between 20 - 35 years are low-risk ages. Pregnant women aged < 20 years still have to meet the needs of iron for their growth so that iron intake is divided between themselves and the fetus. Meanwhile, pregnant women aged> 35 years will experience a decrease in health conditions so that they are vulnerable to health problems (Atmadani et al., 2020). At the education level, it was found that the majority of respondents were at the high school level. This is in line with research on (Debora Gebby, 2021) regarding the level of adherence with drug use at the Kema Health Center, North Minahasa Regency, that the majority of respondents in her study had a high school education level. According to (Meha et al., 2019) the level of education has an effect on improving thinking skills, in other

words, a person with higher education can make more reasoned judgments and is more open to accepting new changes compared to individuals with lower education. The majority of job types are not working,

Validity Test Results

The initial stage of the research was carried out by preparing a list of questionnaire questions that would be used based on some previous literature (Fuady & Bangun, 2013; Kusumawardani et al., 2019; Sendeku et al., 2020; Tegodan et al., 2021). The knowledge questionnaire used in the study consisted of 8 questions regarding knowledge about anemia and blood supplement tablets. The validation test of each questionnaire item used the product moment correlation method between the score of each questionnaire item and the total score (the sum of each questionnaire score). Then proceed with conducting a reliability test using the Cronbach's alpa method.

Table 2. Knowledge Level Validity Test Results

No.	Statement Item	r-table	r-count	Conclusion
1.	Anemia is a condition where the hemoglobin (Hb) level in red blood cells is lower than the standard.	0.195	0.711	Valid
2.	Blood supplement tablets should not be taken with tea, coffee, milk, heartburn medication and calcium tablets, as they may accelerate iron absorption.	0.195	0.728	Valid
3.	Low birth weight is the impact that occurs on the fetus if you are pregnant with anemia	0.195	0.705	Valid
4.	Vitamin C is a type of vitamin that can speed up the absorption of blood supplement tablets taken during pregnancy.	0.195	0.828	Valid
5.	Black stool is one of the side effects after taking blood supplement tablets	0.195	0.726	Valid
6.	The risk of anemia in pregnancy can be minimized/reduced if pregnant women consume foods that are high in iron.	0.195	0.797	Valid
7.	Among the foods that are rich in iron are beef, chicken liver, shellfish, chicken meat, and green vegetables.	0.195	0.843	Valid
8.	Anemia is caused by iron deficiency vitamin B12 deficiency, folic acid deficiency, infectious diseases, congenital factors and bleeding.	0.195	0.110	Invalid

Based on Table 2, it can be seen the results of the Pearson product moment validity test which is used to ensure that the instrument (questionnaire) used can measure the level of knowledge in anemic pregnant women in the use of blood supplement tablets. The knowledge questionnaire used in this test has a total of 8 question items with 4 questions related to anemia and 4 questions related to blood supplement tablets, of the 8 question items that meet the requirements of r count> r table, namely 7 question items (items 1- 7), while for 1 question item (8) which has a value of r count < r table, it is deleted because it does not meet the requirements of the value of r count. The validity test also aims to determine whether there are

statements that must be discarded or replaced because they are considered irrelevant. The Cronbanc'h Alpha value is 0.879 (Table 6) which is said to be reliable. These results are in line with research conducted by (Maulidyanti et al., 2023) related to anemia knowledge in pregnant women in the consumption of blood supplement tablets, the validity and reliability test of the knowledge questionnaire in the study showed valid and reliable results (0.811) using the same formula, namely the Pearson product moment (PPM) formula and Cronbanch's Alpha.

The perceived barriers and benefits questionnaire in this study was designed using six statement items for perceived barriers and five statement items for perceived benefits. The preparation of the items in it is based on previous research (Triharini et al., 2018).

Table 3. Validity Test Results of Perceived Barriers and Benefits

No.	Statement Item	r-table	r-count	Conclusion
Perception of Barriers				
1.	I feel that iron supplements (blood supplement tablets) are not important during pregnancy.	0.195	0.703	Valid
2.	I don't take the supplement if I feel nauseous.	0.195	0.856	Valid
3.	The side effects of the blood supplement tablets make me not want to take the supplement regularly.	0.195	0.862	Valid
4.	The bad taste of the blood supplement tablets makes me not want to take the supplement regularly.	0.195	0.869	Valid
5.	I feel bored taking the blood supplement tablets regularly every day.	0.195	0.860	Valid
6.	I feel afraid that my blood pressure will rise if I regularly take my blood supplement.	0.195	0.753	Valid
Perceived Benefits				
1.	Taking blood supplement tablets regularly will make the fetus grow and develop normally.	0.195	0.848	Valid
2.	Taking blood supplement tablets regularly will make my pregnancy	0.195	0.880	Valid
3.	Taking blood supplement tablets on a regular basis will not make you tired and .	0.195	0.830	Valid
4.	Taking blood supplement tablets regularly will not make it easier for you to give birth	0.195	0.758	Valid
5.	Taking blood supplement tablets regularly will prevent severe bleeding that can occur during childbirth.	0.195	0.783	Valid

In the validity test results using Pearson product moment for perception (Table 3) the calculated r score for perceived obstacles for items number 1 to 6 was obtained from 0.703 to 0.753 and the perceived benefit score, namely items number 1 to 5, namely 0.848 to 0.783, which means it is said to be valid because the calculated r value is more than r table.

The items on the family support questionnaire were made as many as five statement items based on previously published literature (Triharini et al., 2018). Indicators on the family support questionnaire contain items related to the role of support from the surrounding family for pregnant women.

Table 4. Family Support Validity Test Results

No.	Statement Item	r-table	r-count	Conclusion
1.	My family supports me to do ANC (AntenatalCare)/pregnancy check-ups regularly.	0.195	0.848	Valid
2.	My family supports me financially to be able to afford nutritious food intake.	0.195	0.880	Valid
3.	My family helps me with my homework	0.195	0.830	Valid
4.	My family gives me support or praises me for taking the supplement regularly.	0.195	0.758	Valid
5.	My family gave me advice about the complaints I felt while taking the blood enhancement tablet supplement	0.195	0.783	Valid

Based on Table 4, the r count of the five items is 0.848 to 0.783 for the fifth item. This is declared valid because the value of r count is greater than r table.

The initial stage in the preparation of the questionnaire was carried out by preparing a list of questionnaire questions that would be used based on some previous literature for items on the level of adherence with taking blood supplement tablets. Some literature (Abby et al., 2023; Kripalani et al., 2009) became the basis for the preparation of this questionnaire.

Table 5. Validity Test Results of Adherence to Taking TTD

No.	Question Item	r-table	r-count	Conclusion
1.	How often do you forget to take your blood supplement tablets?	0.195	0.746	Valid
2.	How often do you decide not to take tablet supplements increase your blood?	0.195	0.840	Valid
3.	How often do you forget to fill the prescription for blood supplement tablets prescribed to you from the health center?	0.195	0.722	Valid
4.	How often do you run out of blood supplement tablets at home?	0.195	0.763	Valid
5.	How often do you miss taking your blood supplement tablets?	0.195	0.816	Valid
6.	How often do you decide not to take your blood supplement tablets because you feel bored?	0.195	0.834	Valid
7.	How often do you plan to go to the puskesmas (ANC) before running out of your blood supplement tablets?	0.195	0.665	Valid
8.	How often do you not get your blood supplement tablets from the puskesmas (and do not buy them outside the puskesmas)?	0.195	0.582	Valid

The validity test in this study was carried out using the correlation between the score of each question and the total score of all questions using the Pearson product moment statistical test. Based on the results of the Pearson Correlation test, the questions on the questionnaire are considered valid if the R value is greater than the r table. If the R value is lower than r table, the question is considered invalid and cannot be used Alfian & Putra (2017).

Questionnaire Reliability Test Results

Reliability test is an index test by showing that a measuring instrument can be trusted. A measuring instrument is said to be reliable if it produces consistent or stable results if repeated measurements are made. If the Cronbach's alpha value ≥ 0.60, it can be concluded that the variable can be said to be reliable or consistent in measurement (S. K. Dewi & Sudaryanto, 2020). The results of the reliability test for indicators of adherence with the use of blood supplement tablets can be seen in table 6 below.

Table 6. Reliability Test Results

Variable Domain	*Cronbach's alpha value*	Conclusion
Knowledge Level	0.879	Reliable
Perception of Barriers	0.898	Reliable
Perceived Benefits	0.871	Reliable
Family Support	0.863	Reliable
Adherence	0.883	Reliable

Based on Table 6 on indicators of knowledge level, perceived barriers, perceived benefits, family support, and adherence using Cronbach's alpha 0.879; 0.898; 0.871; 0.863; and 0.883 respectively. The reliability test is used to determine whether each questionnaire question item is reliable or not. The instrument is said to be reliable and acceptable if the Cronbach alpha coefficient value is ≥ 0.6 (S. K. Dewi & Sudaryanto, 2020).

CONCLUSION

The results of the validity and reliability tests showed that the questionnaires of knowledge, perceived barriers, perceived benefits, family support, and adherence were valid and reliable to measure each of these indicators in anemic pregnant women who used blood supplement tablets.

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