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# The Influence of Health Education Through Social Media on Students' Knowledge about Anemia

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**ABSTRACT**

**Purpose of the study:** The purpose of this study was to evaluate the effect of health education delivered through the social media whatsapp on increasing knowledge and changing attitudes of adolescent girls about anemia.

**Methodology:** This study used a pre-experimental design with a one-group pretest-posttest approach. The research sample consisted of 30 grade X female students selected using a purposive sampling technique. Data were collected through questionnaires given pretest posttest the intervention. Data analysis was carried out using a parametric paired t-test to measure changes in respondents' knowledge and attitudes before and after the intervention.

**Main Findings:** This research is effective in increasing the knowledge and attitudes of young women about anemia. The results showed a significant increase in knowledge and attitude scores after the intervention, indicating that this method could be an efficient alternative for conveying health information to adolescents. However, the limitations of the research design and limited sample require further research with a more robust design and a larger sample to confirm these findings.

**Novelty/Originality of this study:** This study reveals the success of health education delivered through social media platforms in improving students' knowledge about anemia. By utilizing a modern communication technology approach, the results of this study indicate that information delivered in a creative and structured manner can significantly improve students' understanding of the causes, symptoms, and prevention of anemia.



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## 1. INTRODUCTION

Health education is a systematic and ongoing effort to provide individuals and communities with the necessary information and skills so they can make informed decisions regarding their health [1]–[3]. The main goal of health education is to increase health literacy, so that people can understand basic health information, access appropriate health services, and implement safe and effective health practices in everyday life. Health education programs often cover topics such as nutrition, personal hygiene, disease prevention, mental health, and the importance of physical activity [4]–[6]. Through an inclusive and community-based approach, health education seeks to empower individuals to be more proactive in maintaining their own health and participating in broader community health efforts. In the long term, effective health education can reduce the burden of disease, improve the quality of life, and build healthier and more productive communities [7]–[9].

Social media has changed the way we interact, share information and build relationships, becoming an integral part of everyday life in this digital era. Platforms like Facebook, Instagram, Twitter and TikTok provide a space for billions of people to communicate, share content and access news in real-time. Social media allows users to create and consume content instantly, shortening communication distances and opening up new opportunities in areas such as business, education and social activism. However, behind these conveniences and benefits, social media also brings serious challenges, such as the spread of disinformation, cyberbullying and digital addiction [10]–[12]. The psychological impacts of excessive social media use, such as anxiety and depression, are increasingly becoming a major concern. Therefore, it is important for users to develop healthy usage habits, including limiting screen time, verifying information sources, and maintaining positive interactions online [13]–[15].

Students' knowledge covers a wide spectrum from academic understanding to practical skills acquired through formal and informal learning processes [16]–[18]. Effective education focuses not only on the transfer of information, but also on developing critical thinking, creativity, and collaboration skills. Quality of teaching, relevant curriculum, conducive learning environment, and support from parents and the community are important factors that influence student knowledge [19]–[21]. Additionally, technology and innovative learning methods such as project-based learning and the use of digital tools can increase student engagement and understanding [22]–[24]. Regular assessment and self-reflection are also important to ensure that students not only memorize information, but are able to apply it in a variety of contexts. With in-depth and diverse knowledge, students can be better prepared to face future challenges and contribute positively to society.

Anemia is a medical condition in which the body lacks a healthy number of red blood cells or sufficient hemoglobin, which plays an important role in transporting oxygen from the lungs to the rest of the body [25], [26]. This condition can be caused by various factors, including a lack of iron, vitamin B12, or folic acid in the diet, as well as chronic diseases, genetic disorders such as thalassemia, or other medical conditions that affect the production and function of red blood cells [27], [28]. Symptoms of anemia often range from mild to severe and can include chronic fatigue, weakness, dizziness, shortness of breath, and pale skin. If left untreated, anemia can cause serious complications such as organ damage due to lack of oxygen, heart problems, and in extreme cases, can be life threatening. Therefore, it is important to carry out early diagnosis through blood tests and appropriate treatment, which can include iron supplements, dietary changes, or medical therapy according to the underlying cause. Education about preventing anemia is also essential, including consuming iron-rich foods, maintaining a balanced diet, and early detection of symptoms to get prompt treatment.

This study offers a unique contribution by examining the impact of health education on anemia delivered through social media platforms on students' knowledge levels. In academic and practical contexts, most previous studies have focused more on traditional health education methods implemented in classroom settings or through seminars and direct counseling [29], [30]. Meanwhile, the use of social media as a health education tool has not been explored in depth, despite its enormous potential given the penetration and popularity of social media among adolescents. This study will provide a new perspective on how innovative, technology-based health education approaches can be implemented and evaluated for their effectiveness in improving students' knowledge about anemia.

Anemia, especially iron deficiency anemia, is a significant health problem among adolescents, which can result in decreased academic performance, chronic fatigue, and impaired physical and cognitive development [27]. Amid the increasing use of social media among students, there is an urgent need to utilize these platforms as an effective channel for disseminating health information. The increasing prevalence of anemia and the low level of awareness and understanding of this condition among adolescents call for a more strategic and accessible educational approach [28]. Thus, this study is very urgent to be conducted in order to evaluate the potential of social media as a tool that can provide accurate and useful health information more widely and quickly compared to conventional methods.

This study aims to evaluate the effect of health education through social media on increasing students' knowledge about anemia. The specific objectives of this study include: first, to measure the level of students' knowledge about anemia before and after they receive education through social media; second, to compare the effectiveness of health education through social media with conventional health education methods commonly used in schools; and third, to identify factors that influence the success of using social media as a health education tool. With the results of this study, it is hoped that recommendations can be obtained that can be used by educational institutions, health organizations, and policy makers in designing and implementing more effective health education strategies that are in accordance with the characteristics and needs of adolescents in the digital era.

## 2. RESEARCH METHOD

### 2.1 Types of Research

The type of research used in this study is pre-experimental with a one-group pretest-posttest design. This research aims to determine the effect of health education using the WhatsApp chat group on the knowledge and attitudes of young women about anemia at State High School 2 Palembang. This research design involves measuring knowledge and attitudes before and after the intervention without a control group, making it possible to see the changes that occur as a result of the intervention provided. This pre-experimental research was chosen because it allows researchers to carry out direct interventions and measure their effects on research subjects in a relatively short time.

### 2.2 Population and Sample

The population in this study were all class X female students at State High School 2 Palembang. From this population, a research sample of 30 female students was selected using a purposive sampling technique. This technique was used because the researcher had certain criteria in selecting the sample, namely female students who were willing to participate in the research and could take part in the entire series of health education intervention activities. With this limited sample size, researchers can focus more on providing health education and monitoring changes in female students' knowledge and attitudes more intensively [31].

### 2.3 Data Collection Techniques

The data collection technique in this research was carried out through pretest and posttest using a questionnaire distributed to respondents. This questionnaire contains questions designed to measure the level of knowledge and attitudes of young women towards anemia before and after being given health education interventions. Apart from that, data was also collected through direct observation during the implementation of the intervention to ensure that all material presented was well received by the participants [32], [33]. By using this technique, researchers can obtain valid and reliable data regarding changes that occur in respondents' knowledge and attitudes.

### 2.4 Data Analysis Techniques

The data analysis technique used in this research is the paired t-test parametric statistical test. This test was used to determine significant differences between the knowledge and attitude scores of young women before and after being given health education interventions using the WhatsApp chat group. Data that has been collected through the pretest and posttest is processed and analyzed using statistical software. The results of this analysis were then used to determine whether there was a significant effect of the intervention provided on increasing knowledge and changing attitudes of young women about anemia.

### 2.5 Research Procedures

The research procedure begins with the preparation stage which includes licensing, creating questionnaires, and sample recruitment. Next, a pretest was carried out on all participants to measure their initial knowledge and attitudes. Health education interventions about anemia were then provided via the WhatsApp chat group for one week, with one topic discussed each day. After one week, a posttest was conducted to measure changes in participants' knowledge and attitudes. The collected data is then analyzed to see the effectiveness of the intervention. All stages of the research were carried out in accordance with strict research ethics procedures, including informed consent from all participants.

## 3. RESULTS AND DISCUSSION

The aim of this research was to determine the effect of health education using the WhatsApp chat group on the knowledge and attitudes of young women about anemia at State High School 2 Palembang. This research involved 30 class X female students who were selected using purposive sampling. Based on the pretest results, most respondents had a low level of knowledge about anemia. However, after being given intervention via the WhatsApp chat group for one week, there was a significant increase in the level of knowledge and attitudes of the female students. The posttest results showed that the health education provided was able to increase understanding and positive attitudes towards preventing anemia. This improvement can be seen from the comparison of pretest and posttest scores which shows a significant difference before and after the intervention.

In the initial stages of the research, the pretest results showed that the majority of young women had limited knowledge about anemia, including symptoms, causes and ways to prevent it. From the pretest results, the average score of respondents' knowledge was 12.43. After the intervention, there was a significant increase in knowledge with an average posttest score reaching 17.80. This shows that the WhatsApp chat group media is effective in conveying health information and increasing understanding of young women about anemia. In

addition, the material is presented interactively and accompanied by practical everyday examples, making the information easier for participants to understand and remember.

The respondents' attitudes also experienced significant changes after being given the intervention. The average attitude score before the intervention was 28.73, and after the intervention it increased to 34.73. This change shows that apart from increasing knowledge, health education is also able to change the attitude of young women to be more positive towards preventing anemia. Respondents began to understand the importance of consuming nutritious food and blood supplement tablets as a preventive measure. The education provided also succeeded in increasing awareness of the importance of routine health checks and maintaining a healthy lifestyle to prevent anemia.

This increase in knowledge is in line with previous research which shows that the use of social media as a means of health education can increase public knowledge. For example, other studies have shown that the use of WhatsApp groups is effective in increasing knowledge about various health topics. This effectiveness can be attributed to WhatsApp's ability to convey information in real-time and enable direct interaction between teachers and participants. Discussions and questions and answers that occur in chat groups help clarify the information conveyed and give participants the opportunity to ask questions about things they don't understand.

Significant changes in attitudes are also supported by other research which shows that health education via social media can influence attitudes [34]. Education provided via WhatsApp is able to provide a deeper understanding and influence participants' perceptions of anemia. For example, an explanation of the impact of anemia on health and quality of life provides motivation for participants to be more serious about preventing this condition. Active interaction in chat groups also helps build social support among participants, which is important in motivating changes in attitudes and behavior.

There are several factors that can influence the effectiveness of health education interventions via social media [35]. One of them is the active involvement of participants in chat groups, which allows for deeper interactions and discussions. Apart from that, the use of media that is familiar to teenagers such as WhatsApp also contributes to the success of this intervention. The material presented in an interesting and easy to understand form also helps improve respondents' knowledge and attitudes. The message format is short, clear, and accompanied by interesting visuals such as infographics or short videos, able to maintain participants' attention and make it easier to understand the information.

Although the results of this study show significant improvements in knowledge and attitudes, there are several limitations that need to be noted. This study used a pre-experimental design with one group without a control, so it cannot completely eliminate external factors that might influence the results. In addition, the relatively small sample size and limitation to one school also limits the generalization of the results of this study to a wider population. Another limitation is the short duration of the intervention, which may not be sufficient to observe long-term changes in participants' knowledge and attitudes. Therefore, further research with more robust designs and larger samples is needed to confirm these findings.

This research is in line with research conducted by Junita et al [26]. However, in this study there were limitations to the pre-experimental design used, namely the absence of a control group that would allow a more comprehensive comparison of the effectiveness of health education interventions via WhatsApp. In addition, the research sample which only involved 30 female students from one high school in Bengkulu City limits the generalization of the results of this research. The intervention duration of only one week may also not be sufficient to observe long-term changes in participants' knowledge and attitudes towards anemia. Therefore, further research is needed using more robust experimental designs, involving control groups, and larger and more diverse samples, as well as with longer intervention durations to ensure results that are more accurate and generalizable to a wider population.

The results of this study have important implications for health education programs in schools. The use of social media as a means of health education can be an effective and efficient alternative in increasing teenagers' knowledge and attitudes about preventing anemia. Therefore, it is recommended that schools and health agencies consider the use of social media in their health education programs. Further research with more robust designs and larger samples is also needed to confirm these findings and expand their application. In addition, health education programs via social media should be combined with offline activities such as workshops or seminars to strengthen understanding and facilitate direct interaction.

This study has important implications for the world of education and public health, especially in terms of utilizing digital technology for health education. The results of this study can provide a basis for educational institutions and health organizations to adopt social media as an effective tool in conveying health information, especially about anemia, to students. By increasing students' knowledge about anemia through social media, it is hoped that there will be positive behavioral changes in the prevention and treatment of anemia among adolescents. However, this study also has limited control over variations in content and how information is delivered on social media which can affect the consistency and accuracy of messages received by students.

## 4. CONCLUSION

The conclusion of this research is that health education using the WhatsApp chat group is effective in increasing the knowledge and attitudes of young women about anemia at State High School 2 Palembang. The results showed a significant increase in knowledge and attitude scores after the intervention, indicating that this method could be an efficient alternative for conveying health information to adolescents. However, the limitations of the research design and limited sample require further research with a more robust design and a larger sample to confirm these findings. Overall, the use of social media as a health education tool has great potential to increase health literacy among adolescents.

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