

Original Article

The Effect of Using E-WoHealth on Knowledge, Attitudes and Behaviors About Body Image and Anemia in Young Women

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ABSTRACT

The prevalence of anemia in adolescents in Indonesia has increased by 32%, meaning that 3-4 out of 10 adolescents suffer from anemia in the age group 15-24 years is the largest proportion who experience anemia. This research uses the Combined Method (Research and Development), and the research design uses pre-experimental. The research design develops and validates learning media, namely E-WoHealth, in several stages: analysis of learning media needs, learning media development, design, expert test validation, TAM test, and tininal product of media. The development stage starts with an analysis of the needs of students at Junior High School, Six Gorontalo City. The findings show that the pre-test and post-test values for knowledge, attitudes, and behavior of young women have increased significantly, with a p-value of 0.000 <0.05, meaning that there are differences in the knowledge, attitudes, and behavior of young women before and after being educated using E-WoHealth. In conclusion, web-based E-WoHealth has an effect on the knowledge, attitudes, and behavior of young women regarding body image and anemia. Video and e-modules can be used as alternative educational media to prevent health problems in adolescents, especially anemia. They can improve the habits or behavior of adolescents by assessing themselves by comparing themselves with others to create self-confidence or body image. Positive for teenagers. It is hoped that schools can apply various methods, one of which is the use of animated videos and e-modules that can be accessed using smartphones.

Keywords: *E-Wohealth, Knowledge, Attitude and Behavior, Body Image, Anemia.*

<https://doi.org/10.33860/jik.v17i2.2204>



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INTRODUCTION

Adolescence is a period of physical growth and psychological development that starts from puberty and ends in adulthood^{1,2,3}. Puberty is a period of physical maturation in adolescents that is related to hormonal changes in the body. The psychological aspect of puberty is that adolescents begin to pay

attention to body shape⁴. Apart from paying attention to body shape, the puberty phase for girls is the occurrence of menstruation. Anaemia is a serious global health problem affecting children, adolescents and adults⁵. Approximately one-third of the world's population is affected by anaemia⁶ making it

the second leading cause of disability in the world⁷.

Anaemia is relatively easier to occur in women (23.90%) than men (18.40%) and is prone to attack children to adolescents⁸. Adolescent girls are more susceptible to anaemia than male adolescents because female adolescents lose iron during menstruation so they need more iron intake⁷. Anaemia affects almost a third of the world's population and is still found in several countries including Indonesia, the most common type of anaemia is iron deficiency anaemia⁹.

The prevalence of anemia in adolescents in Indonesia has increased by 32%, meaning that 3-4 out of 10 adolescents suffer from anemia in the age group 15-24 years is the largest proportion who experience anemia. Micro micronutrient deficiencies in developing countries generally affect adolescents, which can cause anemia¹⁰. The nutritional needs of adolescents must be considered because they are prone to iron deficiency due to their nutritional habits that are less than optimal due to their lifestyle and diet to obtain an ideal body image according to the criteria they want^{11,12}. According to research conducted by ¹³, it was found that 23.3% of high school students aged 13-16 years were involved in poor dietary practices. Most young women think that the ideal body for a woman is to have a slim, small and thin body ¹⁴.

Body image is a subjective assessment based on self-perception of the physical body ¹⁵. Body image is important for teenagers to pay attention to ¹⁶. Based on this, it is in line with research conducted by ¹⁷ who states that there is a significant relationship between body image and nutritional status in adolescents, so adolescents are susceptible to iron deficiency anemia. This is in line with the research ¹⁸ that states that 32% of perceptions of negative body image can increase anemia in young women aged 15-18 years because body image affects nutritional status in adolescents¹⁹. Adolescent eating habits, including nutritional status, significantly impact health. Nutritional status must be sufficient to ensure the growth and development of adolescent life later ¹² because the incidence of anemia in pregnant women is closely related to the incidence of anemia in adolescence²⁰. Young women have the view

that a thin and small body image like a pencil is considered beautiful²¹. In connection with this problem, anaemia has a negative impact on the growth and development of school-age children²². This is in line with research ²³ 69.7% of adolescents experience anemia due to irregular eating patterns, causing symptoms such as fatigue due to insufficient production of red blood cells, which reduces the distribution of oxygen throughout the body.

Efforts made by the government in dealing with anemia in young girls have been running, but anemia in young women is still high²⁴. The researcher designed the learning medium in the form of e-WoHealth. E-WoHealth is an electronic learning media which contains e-modules, animated videos and video texts that students can access to gain knowledge, attitudes and behaviour about body image and anaemia in young women. The developed web-based module has received an assessment from experts and can display text, images, and animated videos that have reached the very feasible category; thus, the product developed can be used in learning ^{25,24}.

The importance of this research is done because of a problem students do not know about good body image. To achieve the desired body criteria, they consume a bad diet. Often, young women feel weak, dizzy, and lack enthusiasm for studying; they do not know what they are experiencing are signs of anemia due to irregular eating patterns. This is of particular concern; therefore, it is necessary to provide education to adolescents. The novelty of this research is that there is no previous research using web-based media to increase students' knowledge, attitudes, and behavior regarding body image and anemia. This study aims to examine the effect of e-health on knowledge, attitudes, and behavior regarding body image and anemia in young women.

METHOD

Research and development is carried out by research and data collection, planning, developing product drafts, initial field trials, revising trial results, field trials, product improvement from field tests, and field implementation trials. this is done to achieve the goals that have been targeted. This research

was conducted at Junior High School 6 Gorontalo City from February 15 to March 26, 2023, after receiving ethical recommendations from the ethical committee of the Faculty of Public Health, University of Hasanuddin Makassar (number 7001/UN4.20.1/PT.01.04/2022). This study used a Combined Method. The combined method used is Research and Development (R&D) developed by Borg and Gall, and the research design uses pre-experimental. By combining these two methods, it is expected to be able to find out in more depth the effect of using animated videos in changing behavior, knowledge and attitudes towards anemia.

The research design develops and validates learning media namely Education Woman Health (E-WoHealth) with several stages namely analysis of learning media needs, learning media development design, expert test validation, TAM test and the final product of learning media. The development stage starts by analyzing the needs of female students at Junior High School 6 Kota Gorontalo, which can be used as a basis for developing the initial product. At the initial developmental stage, the researcher conducted an initial study to measure students' knowledge of body image and anemia. From these results, the researcher compiled the material that would be included on the web.

After the web product is completed, the next step is to conduct an expert validation test conducted by four experts, involving two IT/media experts on November 30, 2022, and two material experts, conducted on December 7, 2022. After the validation test, the next step was to conduct a trial one-on-one involving two female colleagues of the Masters of Midwifery to see things that still need to be improved, including the language of instruction and the author's errors carried out on January 10, 2023, and continued with a small group trial involving 10 female students that were carried out on the 12th January 12, 2023, and a large group trial on January 24, 2023, using almost the same characteristics and carried out in different places to avoid bias.

Based on the assessment of experts and trials conducted using the TAM Test, the next step is to conduct research that will be conducted on February 15 – March 26, 2023.

The initial stage of this research is to explain the objectives and steps of the research process; if the respondent agrees to be for the research sample, informed consent will be obtained and an account will be created to access the web.

Next, we explained to students at a glance about the material to be studied on the web and how to use the web to make it easier for students later in the process of learning material on the web. Two days later, the researcher distributed user names and passwords through WhatsApp Group, after which the respondents first completed the pretest before studying the material on the web. The research lasted four 4 weeks, and respondents were given 2x a week to open the web, study the material contained in the e-module, and watch educational videos. Monitoring was carried out in the WhatsApp group and on the Web, namely E-WoHealth. After the learning was carried out, the respondents completed a posttest to obtain the results of learning using E-WoHealth.

Analysis of the differences in pretest and posttest results using the Wilcoxon Test showed that there was an effect of using web-based Education Woman Health (E-WoHealth) on the knowledge, attitudes, and behavior of young women regarding body image and anemia at Junior High School 6 Gorontalo City.

RESULTS

Table 1 Knowledge, Attitudes and Behaviors Before and After Being Given Education Using E-WoHealth.

Variable	Pre-Test		Post-Test	
	n	%	n	%
Knowledge				
Good	0	0	52	94.5
Moderate	4	7.3	3	5.5
Less	51	92.7	0	0
Total	55	100	55	100
Attitude				
Good	0	0		10.9
Moderate	2	3.6	35	63.6
Less	53	96.4	14	25.5
Total	55	100	55	100
Behaviour				
Good	0	0	6	10.9
Moderate	0	0	40	72.2
Less	55	100	9	16.4
Total	55	100	55	100

Based on the table above, the knowledge of young women before being educated using web-based E-WoHealth, namely the less category (92.7%) experienced an increase to 94% good, for the less category attitude (96.4%) increased to sufficient (63.6%) and good (10.9%), while the behavior of young women before being given the intervention (100%) was in the less category, after being educated, it changed to less (16.4), sufficient (40%), and good (10.9%).

Bivariate analysis was conducted to determine the influence of the independent and dependent variables on changes in knowledge, attitudes, and behavior regarding anemia and body image in young women.

Table 2. Analysis of the influence between variables.

Variable	N	Negatif Rank	Positive Rank	Ties	Sig.
Knowledge Pretest-posttest	55	0	55	0	0.000
Attitude Pretest-posttest		0	53	2	0.000
Behaviour Pretest-posttest		0	55	0	0.000

Based on the table above, shows that based on the pretest and posttest values for the knowledge, attitudes, and behavior of young women experienced a significant increase with a p-value of $0.000 < 0.05$, indicating that there were differences in the knowledge, attitudes, and behavior of young women before and after being educated using E-WoHealth.

DISCUSSION

The emergence of assessments among young women today's body standards is concerned with physical appearance with a proportional body shape, has made today's young women feel less confident; young women always judge themselves through the eyes of other people, namely their friends²⁶, so that with the assessment of other people, young women want a perfect assessment of their bodies so diets and irregular eating patterns and consuming drugs or herbs are a way to get an ideal body without paying attention to the intake of nutrients consumed so that things This

will have an impact on the health of the adolescents themselves, in particular, will have an impact on anemia due to a lack of iron and other vitamins and minerals that adolescents do not consume.

The social media most often used by respondents are Instagram and Tiktok, both of which are social media that highlight visual content. Research²⁷ shows that there is a negative relationship between body image and the use of social media that displays photos of peers. This means that the use of social media that displays photos of peers can negatively affect adolescents' body image.

Knowledge is the result of human curiosity regarding anything through certain methods and tools. This knowledge is of various types and nature; some are direct and some are indirect; some are variable, subjective, and specific; and some are fixed, objective and general²⁸. Therefore the researcher applied the learning process to increase adolescent knowledge through web-based E-WoHealth. The results of the study showed that all respondents experienced an increase in knowledge about body image and anemia (p-value of $0.000 < 0.05$). This is because the learning process using E-WoHealth contains e-modules that vary between images and explanatory materials to minimize boredom during the learning/education process, while the animated videos contained in E-WoHealth, apart from providing education, can also provide entertainment to students because the content contained in the video is adjusted to the age that respondents can accept. The advantages of video media include being more interesting and easier to understand, learning on your own, directly achieving goals and displaying detailed content, and comparing two different scenes at once²⁹.

This is in line with the research conducted by¹¹, who stated that education with video media can increase knowledge about balanced nutrition in young women. Audiovisual media can stimulate the senses of hearing and sight during the process of delivering educational material; the more senses are used in receiving something, the clearer the knowledge that can be received^{30,31}. In addition, the results of this study are also in line with research conducted by³², who stated

that giving e-modules had an effect on nutritional knowledge in adolescents.

Knowledge is a factor that can influence individual health behavior, but it is not the only factor that supports health behavior change. Based on the results of the study, it was found that there were differences in knowledge before and after being given education about body image and anemia in young girls; in addition to providing videos, it was also supported by providing e-modules in E-WoHealth that could provide the potential for an increase in knowledge scores to continue to increase every week with the correct answer provided by the respondent.

Information about nutritional status and factors for the occurrence of anemia can be explained through learning at school because the high prevalence of knowledge and attitudes in adolescents who lack anemia is the cause of the high incidence of anemia in adolescents². This is in line with research conducted by³³ the results ($p < 0.05$) showed that nutrition education interventions could increase knowledge, attitudes, and health practices about anemia in adolescents. Lack of knowledge of, history of not consuming iron supplements can increase the risk of anaemia so this needs to be considered in developing policies to reduce the incidence of anaemia in young women¹⁸.

Based on the results of the research data in the Wilcoxon test, it was found that web-based E-WoHealth had an effect on the attitudes of young women with a p-value of $0.000 < 0.05$, which means that there was a significant difference between the respondents' scores before and after being given education using the E-WoHealth-based web.

This is in line with previous research conducted by²⁹ that counselling using video media had a significant effect on students' knowledge and attitudes about anaemia with the results of knowledge $p = 0.000$ ($p < 0.05$) and attitude 0.001 ($p > 0.05$). There is an effect of education using video media on knowledge and attitudes about anaemia in young women

Teenagers often feel insecure about their appearance. Assessment of themselves becomes negative when adolescents see their physical appearance as not ideal or not beautiful, according to society's assessment in

general. Thus, it is an exalted physical beauty. In the past, what was popular in society as a beautiful person was someone slender, had fair skin, beautiful hair, and other physical beauty for women. People who have a beautiful physical appearance tend to be judged as having many opportunities here and there compared to people whose appearance is "mediocre." Therefore, teenagers, whose souls are still unstable, tend to see that appearance is everything. Those who will become popular are those with beautiful physical appearances³⁴.

Knowledge, thoughts, beliefs, and emotions determine attitudes. This shows that there is a relationship between the changes in knowledge and attitudes. The higher a person's knowledge, the better his attitude will be³⁵.

Furthermore, the researcher conducted a significance test on the acquisition of scores before and after being given education using E-WoHealth to adolescents and found the results of the Wilcoxon test with a p-value of $0.000 < 0.05$; therefore, it can be concluded that the use of web-based E-WoHealth for young women is significant in improving the behavior of evaluating body image so that it can foster self-confidence in adolescents and the behavior of consuming healthy food to prevent anemia. In line with Azhari's research, et al. showed that there were significant differences in changes in category vegetable consumption behavior in the group given education using video with a value ($p < 0.001$) before and after treatment³⁶. The phenomenon of physical changes that occur has the potential to affect self-confidence in adolescents because it is related to body image or body image possessed by these adolescents.

Assessment of the body in young women that focuses on appearance is the main factor that can affect their body image of young women. Young women more often desire an attractive body, following the public's perception of the ideal female body image. Teenagers have a view of themselves about who differentiates them from others. Entering the transitional stage into adolescence, if a teenager does not have the confidence to build and accept an interaction, then he will experience difficulties in forming social relations later; therefore, adolescence is the right time to provide education about body

image and anemia due to the desire to obtain an ideal body so that it affects the diet of adolescents by reducing nutritional intake will have an impact on the health of adolescents themselves, which can lead to iron deficiency anemia due to lack of iron, vitamins, and other minerals that adolescents do not consume.

In the current era of globalization, with the increasingly rapid use of information technology, the concept of organizing learning has shifted to follow modern learning. Audiovisual media is better at providing information, but this depends on the type of information provided. Information in the form of practices or sequences of procedures can have a more visible effect than other materials^{37,38}. The advantages of video media include being more interesting, easier to understand, and able to learn on your own, directly achieving goals and displaying detailed content to achieve learning goals²⁹.

CONCLUSION

Based on the results of research and data analysis conducted by researchers, it can be concluded that web-based Education Woman Health influences young women's knowledge, attitudes, and behavior regarding body image and anemia. Video and e-modules can be used as alternative educational media to prevent health problems in adolescents, especially anemia, and can improve the habits or behavior of adolescents by assessing themselves by comparing themselves with others to create self-confidence or body image. positive for teenagers. The impact of this research in the future is that it can provide knowledge to the public that using animated videos can increase knowledge about how to avoid anemia, and anemia in general more easily. For workers in the service sector, it can provide convenience in educating about the dangers of anemia and how to avoid it.

It is hoped that schools can apply various methods, one of which is the use of animated videos and e-modules that can be accessed using students' smartphones as a new medium in the learning process to increase knowledge and habits of good behavior and foster student self-confidence. In addition, it is necessary to socialize parents about good eating

patterns so that they can pay more attention to balanced nutritional intake to prevent iron deficiency anemia.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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