

DEVELOPMENT OF EDUCATIONAL GAME MEDIA TO PREVENT ADOLESCENT ANEMIA

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ABSTRACT

Background: The incidence of adolescent anemia in Indonesia is still often found. Nutritional problems in adolescents are caused by adolescents starting to adopt the wrong diet due to wrong information. Providing nutrition education can optimize the delivery of messages to adolescents to prevent nutritional problems. The recommended method of providing education for adolescents is participatory activities. In order to attract and increase adolescents attention in learning activities, it is necessary to develop game-based educational media, such as the snakes and ladders educational game media. This research was conducted to create an educational game snakes and ladders to prevent adolescent anemia as a media for adolescent nutrition education.

Method: The type of research used in this research is development research or Research and Development (R&D). The model used is ADDIE which includes analysis, design, development, implementation and evaluation stages. The data collection process used primary data by conducting interviews and administering questionnaires.

Result: The results of material validation and media validation were declared good and suitable for use.

Conclusion: The conclusion of this research is that the educational game media snakes and ladders to prevent anemia in adolescents has gone through all the media development processes so that it is suitable to be used as an educational media to prevent anemia in adolescents.

Keywords: anemia; education; nutrition; adolescents; snakes and ladders

INTRODUCTION

Adolescents are in the transition period from children to adults. Therefore, at this time quite complex problems arise in their lives that require the attention of all parties. Nowadays, non-communicable diseases are found in teenagers, the prevalence of which increases with age. According to data, the prevalence of cancer for the age group under 24 years is 1.16%, diabetes mellitus 0.05%, heart disease 0.66, hypertension 0.79 based on a doctor's diagnosis and 0.85 with a drug diagnosis of stroke 0.6, chronic kidney failure 0.13 joint disease 1.23 The incidence of anemia in Indonesia is still quite high. Based on 2018 Riskesdas data, the prevalence of anemia in teenagers is 32%, meaning that 3-4 out of 10 teenagers suffer from anemia. This is

influenced by suboptimal nutritional intake habits and lack of physical activity ((Kemenkes RI, 2019).

Many problems in adolescent are caused by adolescent starting to adopt wrong eating patterns because of wrong information. During adolescence, individuals begin to make lifestyle and diet changes to maintain their body image. The results of the research found that the factor that causes there to still be adolescent with a thin nutritional status category is due to insufficient nutritional intake. This could be due to environmental influences, young school children want to have a perfect and ideal body. This feeling causes adolescent to want to try to change their bodies by manipulating their diet. Meanwhile, the factors that cause adolescent to have poor nutritional status are due to consuming too

many carbohydrates, fats and proteins, as well as a lack of physical activity (Baja & Rismayanthi, 2019).

Anemia in female adolescents was an indicator of nutritional status. Nutrition education affected the risk of anemia in adolescent girls divided into two groups of 10-19 and 15-49 years. Therefore, as a policymaker, the government should pay close attention to the importance of nutrition education for young women to raise nutrition knowledge and avoid anemia (Rahmiwati et al., 2023).

To increase adolescent knowledge, the learning methods used must also be supportive, so that the information can be received by the target audience. Participatory learning is a learning process where students are actively involved in the learning process. The Games and Quiz method aims to develop a comfortable and enjoyable learning atmosphere that can develop aspects of knowledge (Dirjen Kemas Kemenkes RI, 2022). According to research, games can increase motivation to learn (Bawa et al., 2018).

Research conducted by Salam (2019) shows that the effectiveness of the snakes and ladders game learning media on nervous system material resulted in a learning completion percentage of above 93.33%. Media is categorized as effective because the achievement of completeness is far above the completeness limit for classical learning, namely 80% (Salam et al., 2019). The snakes and ladders game is a game that can be played by two players (individuals) or two groups. For small games, each person has a pawn, and he or she takes turns rolling the dice. If the game is played by two teams with a large playing medium, the pawn is replaced by a child and the other child acts as the dice thrower. For every number that comes out of the dice that is rolled, the player is allowed to move forward by that number.

This research aims to develop educational media in the form of games to introduce adolescent about anemia, causes of

anemia, symptoms of anemia, so that they can make efforts to prevent and avoid anemia. If adolescent prevent anemia, Indonesian adolescent will be anemia-free and become healthy adolescent as the next generation of a strong nation.

METHOD

The research carried out is a type of research and development (R&D). The research aims to produce a product in the form of an educational game media snakes and ladders and test the feasibility of the product. The development of this educational game media uses the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model, a development model popularized by Reiser and Molenda in the 1990s. The subjects in this research consisted of one media expert and a youth material expert as user validation. Snakes and ladders game.











































The technique used in collecting data is by conducting interviews. The instrument used in the research was a media feasibility observation sheet with a Likert scale.

RESULT AND DISCUSSION

The development procedure used in making educational game media in this research uses the ADDIE model approach (Analyze, Design, Development, Implementation, and Evaluation). The ADDIE model is a systematic learning design. The steps taken in the ADDIE model are as follows, the first is the analysis stage (Analyze), at this stage the researcher has carried out an assessment of educational media needs at youth posyandu. From the results of the study at the youth posyandu, there are still limited educational media that are of interest to teenagers. The problem found among teenage posyandu participants was that many teenagers had BMIs on the border between

The second stage, namely planning, is an activity in designing the media that has been chosen. The process of designing educational media is carried out systematically. The activity begins with determining the media concept and material, determining the size and shape of the media, determining the parties who will be asked to collaborate in making the media, determining the finishing of the media and determining the instruments for media evaluation. At the stage of determining the concept, media images are designed according to the material that teenagers must master regarding adolescent nutrition, especially the prevention of anemia. Material includes general growth during adolescence, determining nutritional status, nutrition in adolescents and its problems, anemia including causes, signs and symptoms, prevention and control, and the impact of anemia.

The size of the media developed is 6 x 6, this modifies the existing media as explained by Sheth (2014) that snakes and ladders is an ancient game that has its roots in Indian culture. this game was known as the Spear Game in the Kingdom of Italy on a 10 x 10 board. Participants have dice that have a probability equal to 1/6 of each dice die (Sheth, 2014).

<p>Berapa Sahaja Gembira Indonesia Kaki!</p> 	<p>Berapa Partisipasi Masyarakat dalam Tindakan Tindakan (Partisipasi Tindakan)</p> 	<p>Berapa orang yang akan datang ke acara ini?</p> 	<p>Berapa orang yang akan datang ke acara ini?</p> 	<p>Berapa orang yang akan datang ke acara ini?</p> 	<p>Berapa orang yang akan datang ke acara ini?</p> 
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The material presented in the snakes and ladders game is in accordance with the needs and circumstances of teenagers so that the scope of the material and the correctness of the content of the material can be accounted for.

Media creation is addressed to introduce teenagers to anemia, the causes of anemia, the symptoms of anemia, so that they can make prevention efforts and avoid anemia. If teenagers prevent anemia, Indonesian teenagers will be anemia-free and become healthy teenagers as the next generation of a strong nation. For this reason, the last image of this media is the goal or hope of creating this media which is presented in figure 3.



Figure 3. Image of educational media Snakes and Ladders

The technique for playing snakes and ladders is the same as the technique for playing snakes and ladders in general. The winner is the first player to reach the last square. Each player starts with his piece on the first square and takes turns rolling the dice. Pieces are executed according to the number of dice that appear. If a player lands at the bottom of a ladder, they can immediately go to the other end of the ladder. When they land on a box with a snake, they must climb down to the box at the bottom end of the snake. The tail of the snake contains images of negative or unfavorable behavior.

In this educational media, it is demonstrated that bad behavior has bad impacts. When young women do not want to regularly consume blood supplement tablets, as information for teenagers, this is behavior that is not good for their health. So in this media, part of the snake's tail is embedded in this position with box number 35. So when you are in this position (teens don't want to

consume blood supplement tablets) the level will drop, this bad behavior is as exemplified in Figure 4.



Figure 4. Image of educational media connected to the snake

The snake's tail lowers through the snake's body until it ends at the snake's head. In this medium, it is the longest snake, which means a fairly large drop in level. The position of the snake's head is in box 15. This design is intended so that players really pay attention to the points whose levels have dropped drastically. The message to be conveyed is that not wanting to consume blood supplement tablets will have an impact on the risk of anemia. Teenagers should know the symptoms or signs of anemia. Physical signs that are easily recognized in adolescents who suffer from nutritional anemia due to iron deficiency are better known as 5L, namely tiredness, weakness, lethargy, tiredness, inattention. Apart from these symptoms, it is often accompanied by complaints of fireflies in the eyes. Further consequences of anemia are decreased body abilities, decreased concentration in learning, decreased body fitness, decreased body resistance to disease, and inhibited growth and development (Kemenkes RI, 2016, 2018).

Adolescence is an important period in the human life cycle. During this period, the process of maturation of the reproductive organs occurs, so it is also known as puberty. Where puberece, which is the origin of the word puberty, means becoming mature. Adolescence is a transition period from childhood to adulthood. During this period, both physical and psychological changes occur. These changes can disturb the inner mind of teenagers, this condition causes teenagers to be vulnerable to undergoing the

process of growth and development (Kemenkes RI, 2016).

What is specific to the physical growth of male and female adolescents is the speed of growth (growth spurt). At this time height growth (linear) occurs very quickly. Girls begin to grow rapidly physically at the age of 10 years and most rapidly at the age of 12 years. Whereas for boys, it starts two years later but after that it increases in height by 12-15 cm within 1 year, namely at the age of 13 years to 14 years old (Kemenkes RI, 2016).

The problem of lack or excess nutrition in teenagers is an important problem, because it carries the risk of impaired growth and development, experiencing certain diseases can also affect the fitness and concentration of teenagers. For this reason, it is important for teenagers to monitor their nutritional status at least once every 6 months. Teenagers who monitor their health status will grow into healthy teenagers (Direktorat Kesga Kemenkes, 2018; Dirjen Kemas Kemenkes RI, 2018). When you find a box with behavior that is potentially good for your health, there is a ladder that connects the box to the next box by jumping. An illustration of a ladder in the form of monitoring nutritional status every 6 months in box 22 with the potential for teenagers to become healthy without anemia in box 26 is presented in figure 5.



Figure 5. Image of educational media connected by ladder

Providing learning experiences that are only verbal through lectures to teenagers can make it difficult for students to understand the material, especially if they only use limited media. The appearance of images on the media can help teenagers understand the material being studied. The addition of pictures and information packaged in an attractive

appearance can make it easier for teenagers to understand adolescent nutrition material, especially about anemia.

Learning experiences have levels that Edgar Dale describes as cones. The cone shows the sequence of learning experiences from the concrete level to the abstract level of experience. Direct experience occupies the lowest level of the cone while symbols of words (verbal) are at the tip of the cone (Lee & Reeves, 2017). Game learning media allows for a greater role for the senses because games present direct experiences that can be experienced by teenagers, involving the visual, auditory and kinesthetic senses. This allows teenagers to be actively involved in learning. Apart from that, it also allows the application of concepts in real life in society.

Creative educational media is one strategy for increasing teenagers' knowledge. Other media that are effective in increasing knowledge are booklets and leaflets. There was a significant increase in knowledge, attitudes, and behavior after the use of booklet media and modules on prevention of anemia in peer education in teenagers girls the use of media leaflets and booklets (Riyanti, 2018). The snakes and ladders game has characteristics similar to booklets and leaflets, namely providing information through pictures and words.

The fourth stage is Implementation, the Implementation stage is carried out with two activities, namely validation and revision tests. The snake and ladder game media validation test will be carried out by media experts and material experts with small groups. The instrument used for the validation test is a validation assessment questionnaire. Validation tests are carried out to determine the suitability of the media as well as suggestions and input provided by media experts and material experts. The feasibility test was carried out by 1 media expert and 1 material expert. Media validity tests include: media design, quality of images displayed, classiness of text displayed, media appearance, layout, quality of language use, ease of use of

media. Material validity tests include: quality of language use, clarity and completeness of media for adolescent nutrition, relevance of material to preventing anemia, relevance of material to signs and symptoms of anemia, relevance of material to the impact of anemia. To get the best results in creating media, the images used are related closely related to the material and the size used is quite large so it is easy observed and more realistic. The pictures that students like are colored because coloring the image will create a realistic impression (Rahmawati & Widiyawati, 2019). These suggestions and input are used as a reference for improvement. The results of material validation and media validation stated that the media was good and suitable for use.

The final research activity in the fifth stage is evaluation. The evaluation stage of educational media for the Snakes and Ladders game was carried out by testing the acceptability of the media to teenagers using a product assessment questionnaire instrument. Teenagers are very happy and enthusiastic about being given media game snakes and ladders as an educational medium for preventing anemia, this is because teenagers can learn together with their peers. Know the behavior that needs to be maintained and the wrong behavior that needs to be corrected. This is important for independent learning as research examines the effects of play-based assessment training on children's assessment skills and intrinsic motivation. In playing, children will carry out activities that are appropriate to the cognitive development that the child is currently undergoing (Li, 2019).

CONCLUSION

The development of learning media in this research uses the ADDIE model which consists of analysis, design, development, implementation and evaluation stages. Media appropriateness is measured from the validity of media content and materials.

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CONFLICT OF INTEREST

The researcher stated that in preparing the manuscript and carrying out research on the development of educational game media to prevent anemic (cheerful) adolescent through the snakes and ladders game, there was no conflict of interest with any party.

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