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Pre-Implementation of the SIKLO Website Innovation (Reproductive Organ Health Information and Literacy System) as a Media for Adolescent Reproductive Health Literacy and Screening

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Abstract

Adolescent reproductive health is one of the key pillars in public health development, as adolescence represents a transitional phase characterized by highly complex biological, psychological, and social changes. Low levels of reproductive health literacy among adolescents remain a major issue contributing to various health problems, such as anemia in adolescent girls, poor reproductive organ hygiene, limited understanding of puberty, and delayed detection of reproductive health risks. The limited availability of adolescent-friendly, engaging, and easily accessible educational media further exacerbates these conditions. Along with the rapid advancement of information technology, the utilization of website-based digital media has emerged as a strategic alternative for health promotion and education. This article aims to comprehensively describe the pre-activity stage involving the design of the SIKLO Website (Health Information and Reproductive Organ Literacy System) as an educational medium and an initial screening platform for adolescent reproductive health. The method used was descriptive research with a developmental research approach, which included problem identification, user needs analysis, system and interface design, preparation of educational content, and website prototype development. The pre-activity results indicate that the SIKLO Website was systematically designed with features such as gender-based login access, structured reproductive health education modules, interactive educational games, reproductive health and anemia screening, a body mass index (BMI) calculator, and menstrual cycle monitoring. The design of the SIKLO Website is expected to provide a strong foundation for the implementation and evaluation stages of adolescent reproductive health education activities in the future.

Keywords: adolescents, reproductive health, health literacy, educational website, initial screening

1. INTRODUCTION

Adolescence is a highly crucial transitional period in the human life cycle. During this phase, individuals experience various significant changes in biological, psychological, and social aspects. Biological changes are marked by the maturation of reproductive organs and the emergence of signs of puberty, while psychological and social changes include identity exploration, self-concept formation, and the increasing influence of the social environment and peer groups. These conditions require adolescents to be prepared to understand and manage the changes they experience, particularly those related to reproductive health.

Adolescent reproductive health remains an important issue in public health, especially in developing countries. Various studies have shown that low reproductive health literacy among adolescents contributes to an increased risk of various health problems, both in the short and long term. Adolescents with limited

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reproductive health knowledge tend to have a poor understanding of how to maintain reproductive organ hygiene, fail to recognize early signs of health disorders, and experience delays in seeking appropriate healthcare assistance.

The low level of reproductive health literacy among adolescents is closely related to limited access to accurate and easily understandable information sources. Reproductive health information is often obtained from peers, social media, or online sources whose credibility cannot always be guaranteed. In addition, the lack of open communication between adolescents, parents, and healthcare professionals also becomes a barrier to delivering comprehensive reproductive health information that meets adolescents' needs.

The World Health Organization defines reproductive health as a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity. This definition emphasizes that adolescent reproductive health should be viewed holistically and addressed through promotive and preventive approaches. Therefore, improving reproductive health literacy from adolescence is a strategic step in preventing various reproductive health problems.

The development of information and communication technology provides significant opportunities for innovation in health promotion. Today's adolescents belong to a digital generation that is highly familiar with the use of gadgets and the internet in daily life. The utilization of digital media, particularly websites, is considered effective as a medium for health education due to its advantages in accessibility, flexibility, and the ability to deliver interactive and sustainable information.

Nevertheless, there are still limited website-based reproductive health education media specifically designed for adolescents, user-friendly, and equipped with early health screening features. Based on these conditions, the SIKLO Website (Reproductive Organ Health and Literacy Information System) was developed as a medium for education and early screening of adolescent reproductive health. This article focuses on the pre-activity stage, namely the process of designing and developing the SIKLO Website as the foundation for implementing reproductive health education activities in the subsequent implementation stage.

2. METHODOLOGY

2.1 Research Design and Type

This study employed a descriptive research design with a developmental research approach focusing on the pre-activity stage. This approach was used to systematically describe the process of designing and developing a website-based reproductive health education media for adolescents prior to field implementation. At this stage, the study did not aim to measure the effectiveness of the intervention, but rather to ensure the readiness of the developed media.

3.2 Pre-Activity Stages

The pre-activity stage in the development of the SIKLO Website was carried out through several structured and interconnected procedures, including:

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3.3 Problem Identification

Problem identification was conducted through a literature review related to adolescent reproductive health, analysis of secondary data, and evaluation of previous activity reports. This stage aimed to understand the main problems faced by adolescents, particularly the low level of reproductive health literacy and the limited availability of educational media suited to adolescent characteristics.

3.4 User Needs Analysis

The needs analysis was conducted to determine the types of information, features, and website design appropriate for adolescents' needs. At this stage, the main educational content was identified, including puberty, reproductive organ hygiene, menstruation, anemia, and clean and healthy lifestyle behaviors. In addition, the need for early health screening features and interactive educational games was also determined.

3.5 Website System Design

The system design included the preparation of the menu structure, navigation flow, and content categorization based on gender. A gender-based login system was designed to ensure that educational materials were tailored to the needs of both male and female adolescents.

3.6 User Interface Design

The website interface was designed by considering adolescent-friendly principles, including the use of simple language, attractive layouts, and easy-to-understand visuals. The interface design aimed to increase adolescents' interest in accessing and utilizing the website as an educational medium.

3.7 Educational Content Development

The educational content was developed based on the results of the needs analysis and relevant scientific references. The materials were presented concisely, systematically, and adapted to adolescents' level of understanding. Content preparation also considered cultural aspects and the local context.

3.8 Website Prototype Development

The final stage of the pre-activity phase was the development of the SIKLO Website prototype, which integrated all designed features and content. This prototype served as the initial product ready to be tested and implemented in the subsequent stages of the program.

3.9 Time and Location

The pre-activity stage of the SIKLO Website development was conducted from December 2025 to January 2026 in Pekanbaru. This study did not involve respondents directly because the primary focus was on the media development process.

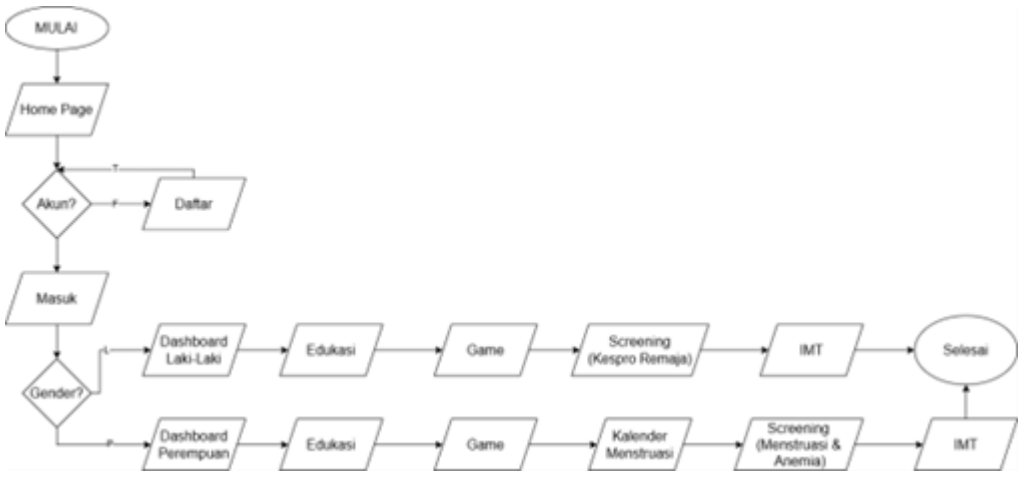
3.10 Development Procedure and Production Stages of the SIKLO Website

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The development procedure of the SIKLO Website during the pre-activity stage was carried out gradually and systematically. The media production flow was designed to ensure that the resulting website met user needs and the objectives of adolescent reproductive health education. The production stages of the SIKLO Website included problem identification, needs analysis, system design, interface design, content development, and prototype development.

Visually, the production stages of the SIKLO Website can be illustrated in the form of a flowchart as follows:

Figure 1. Sitemap Prototype of the Website



The production stage flowchart illustrates that each stage is interconnected and serves as the foundation for the subsequent stage. Problem identification and needs analysis become the primary basis for system design and educational content development. The interface design was carried out to ensure the website's ease of use for adolescents, while the prototype development served as the final outcome of the pre-activity stage, ready to be utilized in the implementation phase.

3. RESULTS AND DISCUSSION

4.1 Input and Output Design

The pre-activity stage in the development of the SIKLO Website resulted in a prototype of an adolescent reproductive health education media systematically designed based on user needs. The outcomes at this stage were not in the form of changes in knowledge or behavior, but rather in the form of media development outputs, including system design, educational content, supporting features, and website readiness for implementation. Therefore, the pre-activity results focused on the quality of the design, feature completeness, and the suitability of the website for adolescent reproductive health education objectives.

4.2 Results of Website Structure and System Design

The SIKLO Website was designed with a simple and adolescent-friendly menu structure. A gender-based login system became one of the main outcomes of the system design stage. This feature allows the delivery

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of educational content that is more relevant to the needs of male and female adolescents. The website structure design included the homepage, educational menu, educational game menu, early health screening menu, and other supporting menus.

The website system design considered aspects of navigation convenience, information readability, and efficiency of user flow. The simple system structure is expected to improve user comfort and encourage adolescents to access the website independently.

4.3 Results of Reproductive Health Educational Content Development

Educational content is the main component of the SIKLO Website. During the pre-activity stage, the educational materials were developed based on the results of needs analysis and literature review related to adolescent reproductive health. The educational materials covered topics such as puberty, reproductive organ hygiene, reproductive health for male and female adolescents, menstruation, anemia in adolescent girls, and clean and healthy living behaviors.

The content was developed using simple, non-judgmental language that was appropriate to adolescents' level of understanding. In addition, the materials were presented systematically and supported with illustrations and content summaries to facilitate comprehension. The development of this educational content is expected to provide adolescents with valid and easily accessible reproductive health information.

4.4 Results of Interactive Educational Game Development

As an effort to increase adolescent engagement in the learning process, the SIKLO Website was equipped with interactive educational games. The results of the educational game development demonstrated that learning media were not only presented in textual form but also through participatory activities.

The educational games were designed to reinforce the materials presented in the educational modules while simultaneously increasing adolescents' interest in learning reproductive health topics. The inclusion of educational games at this pre-activity stage reflects an innovative approach to health education, where adolescents are positioned not only as recipients of information but also as active users of learning media.

4.5 Results of Early Reproductive Health Screening Feature Design

The early reproductive health screening feature is one of the main innovations of the SIKLO Website. During the pre-activity stage, the screening feature was developed in the form of a set of simple questions designed to help adolescents independently recognize their reproductive health conditions. The screening covered aspects of general reproductive health, menstruation, and anemia.

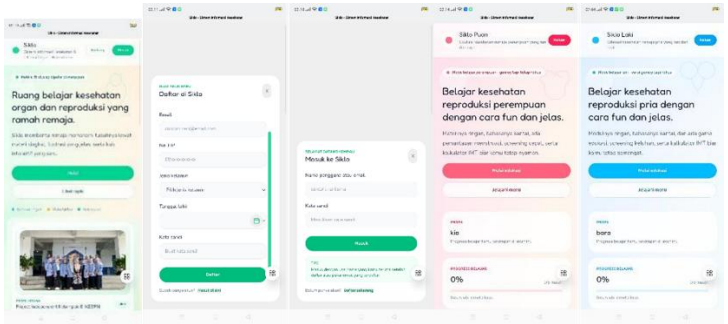
It should be emphasized that this screening feature was not intended as a diagnostic tool, but rather as a means of early detection and increasing adolescents' self-awareness. The design results of this screening feature became an important foundation for the implementation stage, where the screening data will be further analyzed.

1. **SIKLO Website**
   The main product developed in this project is the SIKLO website (Health Information and Reproductive Organ Literacy System). This website has been fully developed and provides various reproductive health education features tailored to the user's gender. The main features include:
   a. Login & Home Page

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Users create an account using their phone number and select either a male or female profile so that the content provided is relevant to their needs. The home page displays an overview of the website, program objectives, and access to educational menus, games, screening features, a BMI calculator, and menstrual monitoring.

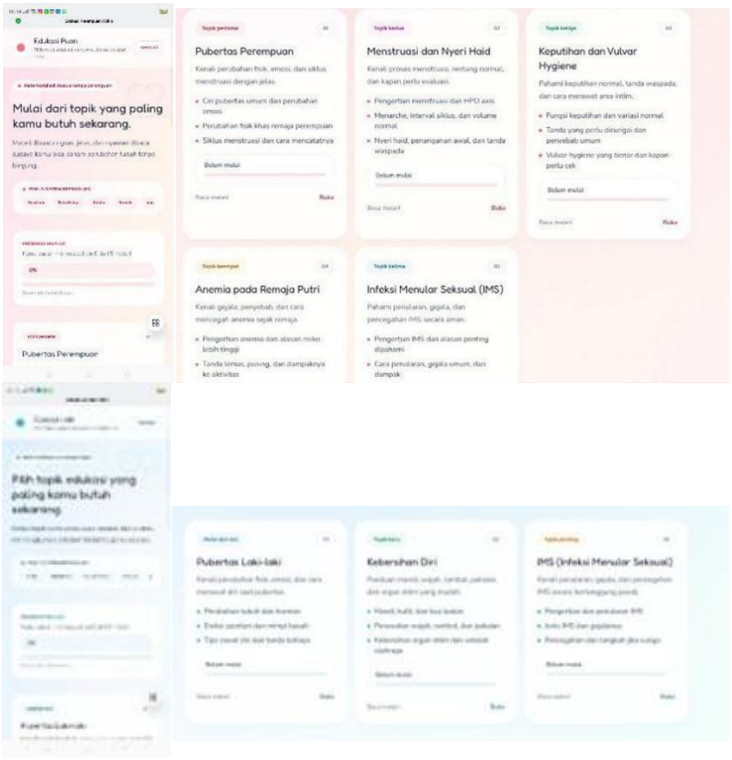
Figure 2. Login and Home Page



b. Educational Modules

The educational materials are differentiated based on gender. For male users, the available topics include Male Puberty, Personal Hygiene, and Sexually Transmitted Infections (STIs). For female users, the topics include Puberty, Menstruation & Menstrual Pain, Vaginal Discharge & Vulva Hygiene, Anemia, and STIs. This categorization ensures that each adolescent receives information that is relevant to their needs.

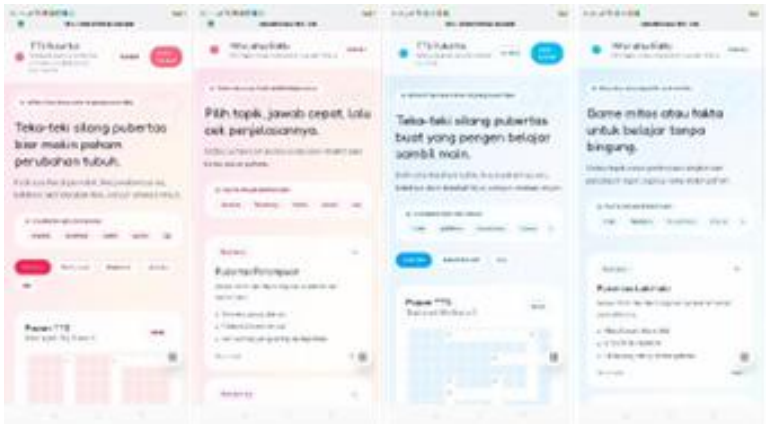
Figure 3. Educational Modules



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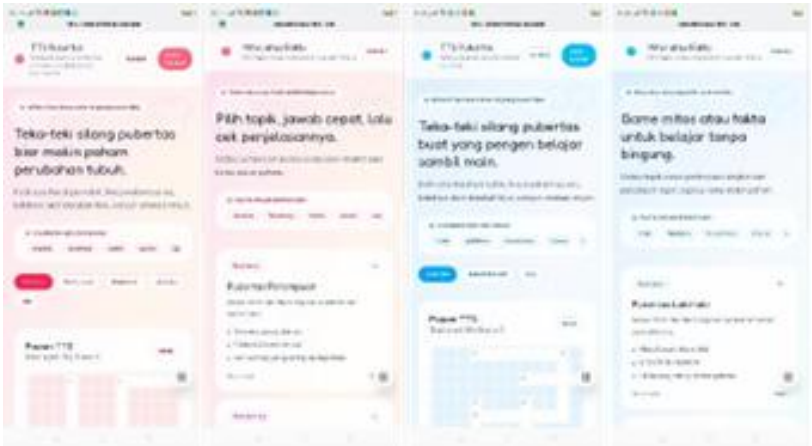
c. Educational Games
Both male and female adolescents can play Crossword Puzzle and Myth or Fact games. These games contain questions related to puberty, personal hygiene, menstruation, STIs, and other topics to test users' understanding interactively.

Figure 4. Educational Games



d. Health Screening
This feature is also tailored to the user's profile. Male users receive a Reproductive Health Screening questionnaire that assesses hygiene habits and symptoms related to reproductive organs. Female users have access to two questionnaires, namely Reproductive Health Screening and Anemia Screening, enabling them to evaluate symptoms of anemia in addition to reproductive health conditions. Each screening categorizes the results into safe, needs education/maintenance, needs attention, or needs consultation.

Figure 5. Health Screening



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e. Body Mass Index (BMI) Calculator
This feature is available to all users. By entering their height and weight, adolescents can obtain their BMI value along with the corresponding category, such as underweight, normal, overweight, or obese, as well as recommendations for improvement.

Figure 6. IMT Test



f. Menstrual Monitoring
This additional feature is specifically designed for female users to record menstrual dates, duration, and symptoms experienced during menstruation. The data are useful for monitoring menstrual cycle health and providing alerts if irregularities are detected.

Figure 7. Menstrual Monitoring



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4. DISCUSSION

The results of the pre-implementation stage of the SIKLO Website development indicate that a website-based reproductive health education medium has great potential to address the challenge of low reproductive health literacy among adolescents. The design of a user-friendly system, relevant educational content, and the integration of early screening features demonstrate a comprehensive approach to health promotion. Conceptually, the SIKLO Website is aligned with promotive and preventive approaches in public health, particularly for adolescents. The integration of educational materials and early screening enables the website to function not only as a source of information but also as a tool to increase self-awareness regarding health conditions.

At the pre-implementation stage, the success of the SIKLO Website development was measured based on the readiness of the media for use, rather than on changes in user outcomes. Therefore, the results at this stage serve as an important foundation for the implementation process and the evaluation of effectiveness in the post-implementation stage. With the presence of the SIKLO Website, it is expected that reproductive health education for adolescents can be delivered in a more innovative, sustainable, and digitally appropriate manner in accordance with the characteristics of the digital generation. This pre-implementation stage emphasizes the importance of careful planning and well-developed media before health interventions are implemented on a wider scale.

5. CONCLUSION

The pre-implementation stage of the SIKLO Website development successfully produced a comprehensive, systematic, and user-friendly design and prototype for adolescent reproductive health education and early screening media. The SIKLO Website has the potential to become a digital health promotion medium that supports the improvement of adolescents' reproductive health literacy and serves as the foundation for implementing health education activities in the subsequent implementation stage.

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