

# **EFFECTS OF WEB-BASED EDUCATION MODEL ON KNOWLEDGE REGARDING REPRODUCTIVE AND SEXUAL HEALTH AMONG PRE-MARITAL COUPLE IN WEST SUMATRA PROVINCE INDONESIA: A FEASIBILITY STUDY**

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**ABSTRACT:** Lack of knowledge about sexual and reproductive health is still a problem that needs to be addressed among premarital couples. The use of online education method can provide an effective option for increasing knowledge and awareness of how to maintain reproductive health and prevent the transmission of sexual diseases post-marriage. The purpose of this study is to investigate the feasibility of developing web based education model and to examine knowledge about sexual and reproductive health among premarital couple. A quasi experimental design with two group pre test-post test was conducted in the population of premarital couple in Bukittinggi City West Sumatera Province Indonesia from January to December 2021. All participant received Web-based education method named RHAPS focused on sexual and reproductive health. The participants invited to complete the intervention during the marital registration process using an individualised log-in process. A random sample of 60 persons was selected. Data collection was done in 5 stages, namely media needs analysis, expert test, small scale test, small scale test and website effectiveness test. Data were collected by a questionnaire used in two stages of pre and post program implementation. The results of the feasibility test by media and material experts showed the S-CVI score was .83. The acceptability of the RHAPS showed 85,5% of the participants were very agree to use the website model. The average pre-test and post score regarding knowledge about sexual and reproductive health of the participants in the intervention group showed significant difference after received the program ( $p < .05$ ). Premarital education program was successful in attaining its aim of positively changing the knowledge regarding sexual and reproductive health. The RHAPS model can be used as a medium in the implementation of sexual and reproductive health for future brides.

**Keywords:** Web-Based Education Model; Knowledge; Sexual And Reproductive Health; Premarital Couple.

## **INTRODUCTION**

Reproductive health refers to the physical and social well-being of a person associated with their function and reproductive processes, including the absence of diseases or disorders that may affect reproductive activities. In 2019, 36.6% of teenagers in Indonesia were married at the age of less than 15 years (Dinengsih & Hakim, 2020). This situation may increase the prevalence of Chronic Energy Deficiency (CED) among pregnant women aged 15-49 years by 24.2%, and the prevalence of anemia by 18.4%, which can exacerbate pregnancy and the safety of mothers and infants (Farsi, 2014; Riantini, 2018). One of the reasons for CED among adolescents is a lack of knowledge regarding reproductive health. Recently, the utilization of reproductive health services, such as quality to access problems and differences, remains difficult (Ninsiima et al., 2021). Amalia (2018) found that 62.5% of pregnant adolescents had low levels of knowledge about premarital reproductive health. Similarly, Irawati (2019) also found low knowledge of prospective brides (70%) and unsupportive attitudes toward reproductive health (30%) (Amalia & Siswantara, 2018).

The Indonesian Ministry of Religion mandates that prior to a wedding, insight into the meaning of a household must be provided through premarital couples. The duration of this course is 24 hours, including reproductive health, for 3 hours (Nurasiah, 2016). In 2015, the Indonesian Ministry of Health through the Directorate General of Nutrition and Maternal and Child Health launched a guideline about

Information Communication and Education (ICE) on reproductive and sexual health in pre-marital couples that are national in nature. The ICE program uses a continuum of care life cycle approach that emphasizes promotive and preventive efforts in each cycle of life. Continuum of care life cycle is the service provided in the life cycle starting from pre-conception, pregnancy, childbirth, postpartum, infants, toddlers, preschoolers, school children, adolescents, adults, and the elderly (Yap et al., 2021). Preconception services are carried out through the provision of sexual and reproductive services on ICE for pre-marriage couples to increase access and quality of reproductive and sexual health services. The quality of ICE services is supported by health human resources who are competent and comply with standards, readiness of service support facilities, operational costs, and continuous facilitative supervision. With the implementation of standardized ICE services, the bride and groom will have comprehensive knowledge about reproductive health and its problems, as well as screening efforts for diseases/complications (Lassi et al., 2014).

The utilization of current technological developments makes it possible to develop a system that replaces the role of an expert in the health sector, as the current development of Android smartphones allows them to be used as a medium for ICE. Apart from being used as a communication tool, smartphones have also become a necessity in modern society, so they are well known among the general public (Huriah et al., 2023). A

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study by Novaeni et al. (2017) found that 94.3% of the respondents had androids. An application is a program created and used by users to determine the required information processing activities for the completion of a particular task from the user (Novaeni et al., 2018). Similarly, Darmayanti et al. (2021) showed that there was an increase in respondents' knowledge after being given IEC using pocket books (16.7 to 73.3%) and videos (40% to 73.3%). In addition, there was a change in the attitude of the respondents after being given an IEC using pocket book media (23.3% to 40%) (Darmayanti et al., 2020).

Web applications are stored and executed on a web server. The web application is accessed using a web browser application, which responds to the web application stored on the server, and the results are returned to the user via the web browser application (Rotheram-Borus et al., 2012). Anggela et al. (2020) found that reproductive health information via smartphones could be used to increase the knowledge, attitudes, motivation, and self-efficacy of adolescents related to reproductive health. Providing information via smartphones may help adolescents obtain information related to their reproductive health (Anggela, Sari; Wanda, 2020). The applications contained on smartphones can be very interesting because they are designed to be efficient to use, make it easier to interact with health workers and patients, and increase patient satisfaction in receiving health services from health workers so that they can increase patient knowledge and awareness to comply with

health examinations by providing specific information (Partini, 2013).

Erni (2020) found that applications on smartphones were used by 91.3% of premarital couples to increase their understanding of something. It was found that 95.7% of catins agreed to use smartphones as a medium to increase knowledge of 1000 Android-based HPKs, and 87% of catins used Android-based smartphones. Research by Novaeni, et al (2017) shows the results of the percentage of application ratings of 85% which means very good. This shows that according to adolescent perceptions, android-based adolescent reproductive health applications can increase understanding of reproductive health, are interesting to use, easy to understand and remember the material, and increase motivation to study reproductive health, in accordance with the needs of high school youth (Novaeni et al., 2018).

The aim of this study is to determine the feasibility of online-based communication, information and education (IEC) methods on the knowledge of pre-marital couple towards sexual and reproductive health.

## **METHODS**

### **Study Design**

The feasibility study utilised a pretest posttest quasi-experimental design with a control group to evaluate the acceptability, demand, implementation and practicality (Bowen et al., 2009) of RHASP (Reproductive Health Assessment Pre Marital Screening). Data were collected in terms of demand for the intervention as to understand the factors that influence

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implementation which may ultimately impact on the feasibility of the RHASP.

A total of 60 premarital couples from different geographical locations in Bukittinggi city, West Sumatera, Indonesia were recruited to participate in this study. The participants received online education to promote knowledge on reproductive and sexual health, based on the RHAPS model and integrated with the website of the Ministry of Health. The recruitment of the participants in the study started in March 2022 and the collection of the data was completed in November 2022.

### **Recruitment and Eligibility**

Participants have been recruited through notices posted in offices of religious affairs. Prospective participants provided informed consent regarding the research aims, requirements, procedures, benefits and other information related to the study. The eligibility of potential participants was assessed prior to the baseline survey. Inclusion criteria were (1) female gender; (2) registration with the religious office at least one week before the wedding; (3) and access to computers or smartphones.

### **The RHAPS Model– Internet Based Education**

The RHAPS model was developed by the research team. It was uploaded and distributed through the website of the Religious Affairs Office. During the intervention period, we provided topics related to reproductive and sexual health for the participants to read and learn according to their ability to learn. The

forms, content, and corresponding purposes of the RHAPS model-Internet Based Education in this study are presented in Table 1.

### **Outcomes and Measurements**

The internet-based questionnaire surveys were administered at 2 time points (baseline and immediately after the intervention). Participant characteristics, including age, major in college, ethnicity, residence, parental residence, education and marital status, monthly living expenses (RMB), ever received sexual education, currently in a romantic relationship, sexual debut, and attitude toward premarital sex, were measured in this study.

The primary outcome measures knowledge about sexual and reproductive health which were designed based on the RHAPS model. The instrument to measure participant's knowledge consisted of 11 questions. The differences in outcomes are detailed in the Results section. The secondary outcome measures were the opinion of the participants regarding RHAPS model. Among them, the opinion part consisted of 12 questions by using on a 5-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree) (Cronbach  $\alpha$ =.78).

## **RESULTS AND DISCUSSION**

### **Development of the Web-based education program for Reproductive and Sexual Health among Pre-marital couple**

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The research and development stages that have been carried out refer to the Borg and Gall research and development model which has been simplified in Erni et al (2020).

### **Media Needs Analysis**

An analysis of media needs needed for the implementation of sexual and reproductive health IEC for pre-marriage couples is carried out by conducting a preliminary study to the Office of Religious Affairs. Based on this preliminary study, information was obtained that marriage screening had been carried out to equip pre-marriage couples to respond to marriage and family problems, as well as health workers regarding reproductive health. This counseling was carried out using the lecture method, and material for sexual and reproductive health was provided using a brochure issued by the Ministry of Health.

According to interviews with reproductive health program holders for prospective brides at the Community Health Center, the provision of health education on reproductive and sexual health to prospective brides is inadequate. It was felt that there were several obstacles to the program holder, namely the KIE media and the limited time for providing material.

### **Website development**

The development of RHAPS (Reproductive Health Assessment Pre Marital Screening) Website model created by information technology experts based on material and service flow which outlined by the researchers. The interface

design was equipped with seven features: Home, About, Register/Login, Flow, Service Flow, Contact and Administrator.

The RHAPS Model is equipped with a Service Flow that users can use as a guide in accessing this website: 1) The RHAPS Model website page can be accessed via the [rhapsmodel.com](http://rhapsmodel.com) link, 2) pre-marital couples register on the website by filling in personal identification, visiting plans, and choosing a public health center, 3) The religion office admins enter the RHAPS Model via the administrator page and activate the partner's account pre-marriage that has registered, and 4) pre-marital couples re-login to the RHAPS Model and download the screening introduction to the public health center and get a pin to verify the account, 5) public health center administrator verifies the account by entering the pin in the introduction to pre-marital screening, 6) Premarital couple does a pre-test and watches the video on the website, 7) Premarital couple gets health services which include health checks and vaccination for tetanus, 8) public health center administrator inputs pre-marital couples health service results to the website, 9) Catin downloads part I and part II of the pocket book material every day. Catin can do this download at home via the website, 10) Catin carries out a post test and downloads the health service certificate to then be printed and signed by the Head of the Community Health Center, 11) The prospective bride and groom then submit the health service certificate to the KUA as a marriage administration requirement.

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**Feasibility test by the experts**

At this stage, the feasibility test of the website was conducted by experts which was divided into two steps including; 1) feasibility test by media experts from Universitas Putra Indonesia who assessed the components of interface design, factors affecting vision, website content quality, website innovation and code validation and 2) feasibility test by material experts from the midwifery profession who assessed 18 test components which included material, content relevance and presentation. According to the media experts' assessment, the RHAPS model website is ready for use with some improvements, particularly in the registration and login process.

**Website Testing on a Small Scale**

Website trials on a small scale were conducted with six respondents. This trial is useful for providing an overview of the suitability of the website for potential users, namely, prospective brides and grooms. This small-scale trial was assessed with a website quality measurement instrument using Google Forms. Before the assessment, respondents were asked to log in to the RHAPS Model website and then asked to answer the questions on the Google form objectively.

**Table 1.**

Website quality	scoring		Total Score
	n	score	
Sangat Baik	9	3	27
Baik	9	2	18
Cukup	0	1	0

**Website Trial on a Large Scale**

A large-scale website trial for 60 prospective brides registered with the KUA. The large-scale media suitability test by prospective brides and grooms aims to determine the final response and assessment of suitability levels by prospective brides and grooms to the RHAPS Model website

**The Effectiveness of RHAPS**

The effectiveness of RHAPS on respondents' knowledge of reproductive and sexual health before and after using the website showed that the average pre-test knowledge score was 5.7 and the average post-test knowledge score was 7.65. There was a 1.95% increase in the average knowledge of pre-marital couples. The results of the paired sample t-test obtained a p-value of 0.000, which means that there is a significant change in the knowledge of the pre-marital couple before and after intervention.

**Table 2. The Mean of Pretest and posttest scores of Knowledge Within the Intervention Group and Comparison Group (N = 50)**

Variables	Pretest		Posttest		p
	M	SD	M	SD	
Intervention group (n=25)	13.0	1.3	14.9	2.5	.00
Comparisso n group (n=25)	0	5	6	2	*
Comparisso n group (n=25)	11.8	2.0	12.9	2.1	.03
	0	0	2	9	*

**\*p value < .05**

Darmayanti et al. (2021) studied Audio Visual Media and Pocket Books in

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the Implementation of Sexual and Reproductive Health Education Information Communication on the Knowledge and Attitudes of Prospective Brides and Grooms and found that the use of pocket book media and video media in the implementation of reproductive and sexual health IEC activities for women is different, and is significant for the knowledge variable. KIE uses effective websites and applications to increase knowledge. Anggela et al. (2020) found that reproductive health information via smartphones can be used to increase teenagers' knowledge, attitudes, motivation, and self-efficacy related to reproductive health and can motivate teenagers to be tested for HIV and STIs. In line with research conducted by Erna et al. (2014), they found that the applications found on smartphones are very interesting because they are designed to be efficient to use, and the application can make it easier to interact with health workers and patients and increase patient satisfaction in receiving health services from health workers so that it can increase patient knowledge and awareness to comply with health checks by providing specific information. Research by Erni et al. (2020) found that 91.3% of people used applications on smartphones to increase their understanding of something. It was found that 95.7% of participants agreed to use smartphones as a medium to increase their knowledge. Adolescent perceptions and android-based adolescent reproductive health applications can increase understanding of reproductive health, be interesting to use, easy to understand and remember the material,

increase motivation to learn about reproductive health, and suit the needs of high school adolescents.

### **Website development**

The website created for health services for prospective brides and grooms is called RHAPS (Reproductive Health Assessment Pre Marital Screening). The website was created by information technology experts based on the material and service flow outlined by the researchers. The service flow refers to Catin's pre-wedding service flow in Bukittinggi City. This model has seven features: Home, About, Register/Login, Flow, Service Flow, Contact and Administrator. The RHAPS model website is also equipped with a service flow that can be used as a guide by users, namely, prospective brides and grooms, KUA and Community Health Center officers as administrators in implementing IEC services. When accessing the RHAPS website, the model can be guided by a website usage manual prepared by information technology experts. The RHAPS Model website can be accessed directly via smartphones, laptops, or personal computers (PC) via the link provided ([rhapsmodel.com](http://rhapsmodel.com)).

### **Due Diligence**

The website feasibility test was divided into two parts: feasibility testing by experts, small-scale trials, and small-scale trials on prospective brides and grooms. The results of the feasibility test by experts showed a website feasibility percentage of 83.33%. The results of testing the website on a small scale

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involving six respondents revealed a website feasibility result of 90.38%. Based on the results of the formula above, it was determined that the feasibility of the website from the results of large-scale trials was 83.03%. Referring to the effectiveness measurement standards from the Ministry of Home Affairs in 1991 (Putri et al., 2021), the RHAPS Model website is considered very effective and suitable for use in implementing Communication, Information and Education on reproductive and sexual health for prospective brides and grooms.

### **Website Effectiveness**

The effectiveness of a website can be assessed by evaluating the increase in respondents' knowledge before and after using the website. Effectiveness is the relationship between output and goals; the greater the contribution (contribution) of output to achieving goals, the more effective the organization, program, or activity. The effectiveness of the website can be seen from the increase in the respondents' knowledge before and after using the program.

Based on the results of the analysis of changes in the knowledge of prospective brides and grooms before and after the implementation of IEC on reproductive and sexual health, it was found that Catin's knowledge increased by 1.95 and statistical tests obtained a p-value of 0.000, which means that the difference in knowledge before and after IEC was very significant.

This research is in line with the research by Yuliani (2020), who found that

the groom's knowledge increased before and after education by 16.3. The statistical test results showed a p-value of 0.000, which means there was a significant change in knowledge before and after education.

### **CONCLUSIONS**

Based on this, the researchers concluded that there is a need for applications in the implementation of health services for prospective brides and grooms that contain materials about reproductive and sexual health. With this application, prospective brides and grooms can study IEC material on reproductive and sexual health by repeatedly downloading pocket book material and videos. With this application, it is hoped that prospective brides' and grooms' knowledge of reproductive and sexual health can be improved.

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<https://doi.org/10.1186/s12884-022-04893-8>



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