

## Conference Paper

# Benefits of Adolescent Women's Reproductive Health Records as a Basis for Screening Preconception Care: A Research and Development Study

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**Abstract.**

The health status of women is one of the factors that can affect the status of pregnancy. To avoid risky pregnancies and produce healthy babies, it is very important for a woman to take care of her reproductive health. One of the efforts is to conduct early detection on a regular basis starting from the age of teenagers. This developmental research was carried out using the Four-D model, to obtain a simple early detection medium in preconception care. Sixty selected young women participated in a limited trial. Respondents who participate in a limited-scale trial will go through 3 stages. The data obtained were analyzed descriptively. The success of using the application as a function of simple screening media for preconception care reached 96.67%. It was identified that 57% of adolescent girls were detected to have health problems such as poor nutritional status and anemia. A total of 71.7% stated that this application applies very well on adolescent girls in order to keep them healthy as an initial step in preparation for pregnancy. As many as 73.3% of respondents stated that the developed application provided new knowledge related to preconception preparation. There is strong evidence that the resulting media performs well as a simple early detection tool for preconception care. Therefore, it needs to be refined to provide more optimal results.

**Keywords:** screening, preconception, adolescent

## 1. Introduction

Preconception care is an important agenda in planning pregnancy in the reproductive age range. The current phenomenon is 90.2% of women do not have a reproductive health plan [1]. This condition is supported by the high number of unwanted pregnancies that end in abortion reaching 61% in 2015 – 2019 [2]. In Indonesia, unplanned reproductive health is illustrated by high fertilization at an early age. In 2017 the fertility rate at the age of 15-19 years reached 48 births per 1000 births [3]. This condition is exacerbated by accompanying health problems. It was reported that adolescents aged

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15-19 years experienced chronic energy deficiency reaching 36.3% [4]. In addition, 32% of adolescent girls are anemic [5]. Teenagers themselves, if experiencing pregnancy has become a risk factor for getting problems during pregnancy. Especially if it is added with other risk factors such as anemia and KEK. Unplanned pregnancy will provide a greater risk and opportunity to give birth to premature babies and babies with low birth weight [6]. If a woman becomes pregnant in this condition, she will be very vulnerable to the risk of gestational diabetes mellitus or hypertension triggered by pregnancy. To overcome this, several screening procedures are needed that are carried out as early as possible before pregnancy.

The main programs of preconception care are early detection, health promotion, and intervention [7]. Through preconception care, it is expected to increase knowledge [8] and healthy behavior for prospective mothers so that they can realize a healthy pregnancy for mothers and produce healthy babies [9]. The low utilization of preconception care is due to the fact that this program is not yet familiar to women and their partners. The causative factor is the low awareness of the use of preconception care by prospective mothers [10]. This condition is supported by low knowledge [11], unsupportive attitude [12], high financing so they do not have access to services [13], do not have enough time [14], and lack of socialization about the use of preconception care [15]. Another cause that is the main cause of the low utilization of preconception services is unplanned pregnancy [10,16]. On the other hand, empirically, pre conceptional care has an impact on good pregnancy outcomes, including a reduction in congenital abnormalities [17]. At least preconception care through educational interventions can delay the age of the first pregnancy and regulate the spacing of pregnancies [9]. Based on the causal factors and the benefits provided, an effective solution is needed to increase the use of preconception care.

The era of digitization provides opportunities for the use of digital media. Its use can help increase public access to health information and health services. Digital media can also function as an intermediary in promoting positive behavior change, personal health records for users, and at the same time as part of health promotion activities [18,19,20]. Previous research stated that the use of *mHealth* was very effective in improving medication adherence and controlling a disease [21]. In addition, application-based media in *smartphones* can reach more targets, and can cut space and time [22]. This proves that applications designed as health media have great potential to disseminate health behavior interventions [23]. The basis of this study, this study aims

to obtain a simple early detection media for preconception care. It is hoped that the developed media will be able to function as simple detection media and personal health records, increase knowledge, and reduce time and costs to increase the utilization of preconception care.

## 2. Methods

### 2.1. Study design

This research is a development study using the *Four-D model* and is currently entering the limited trial phase. The research was conducted in Metro Indonesia, from November 2021 to January 2022.

### 2.2. Sample

The subjects in this study were young women aged 15-19 years. The sample size was determined based on Rescou's opinion, namely for a simple trial design it took 10–20 respondents from each group [24]. So that in this study it was determined as many as 60 teenagers participated voluntarily.

### 2.3. Data collection procedur

The use of the application is applied to all respondents. The goal is to use the application as a medium for simple early detection and obtaining personal health records. At this stage. Utilization of the application through 3 stages which are illustrated in the following Figure 1.

### 2.4. Instrument

The screening instrument was designed based on the results of a literature study which was then tested for validity by a team of experts consisting of 12 midwifery practitioners who have experience managing reproductive health programs. The validity test used *Aiken's V index*, with a result of 0.81. This value is greater than the minimum required value of 0.69 based on table V [25], so it can be concluded that the validity of the application developed is substantially fulfilled. Reliability test using *Intraclass*

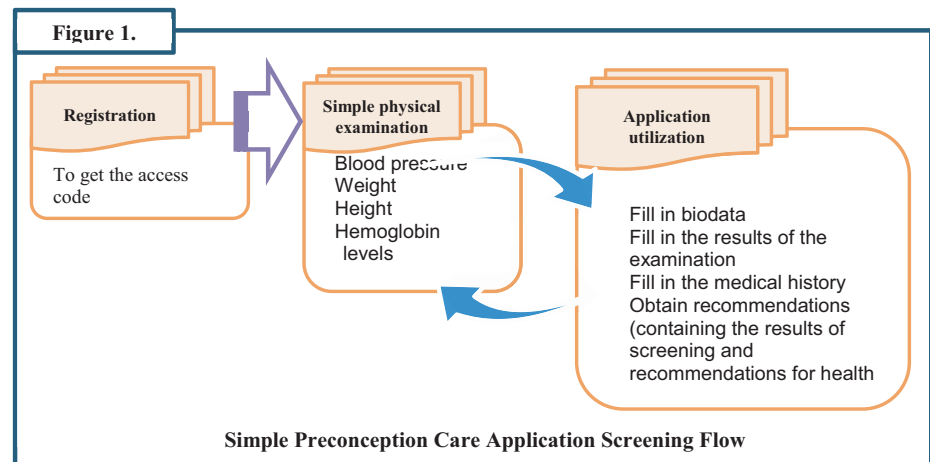


Figure 1

*Correlation Coefficients (ICC)*. The test criteria used a two-way random effects model, type of relationship absolute agreement unit single rater. The test results concluded, the application has adequate stability ( $> 0.50$ ) with an ICC value of 0.766 [26].

## 2.5. Data analysis

Statistical analysis was performed using SPSS software version 25.0. Descriptive statistics were conducted to describe the results of the screening and assessment of applications by respondents.

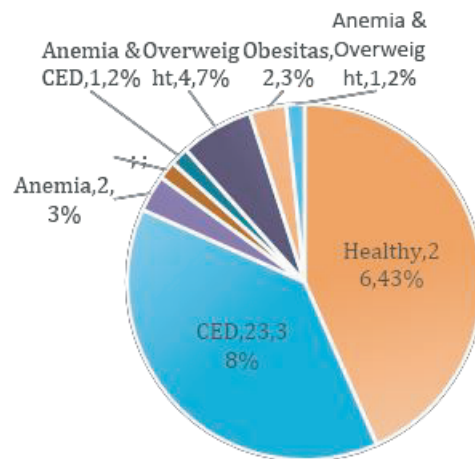
## 2.6. Ethical clearance

The ethical approval was obtained from the Health Polytechnic Ethics Commission of the Tanjung Karang Ministry of Health number 260/KEPK-TJK/XI/2021. The official letter for conducting the research was obtained by the Metro City Badan Kesatuan Bangsa dan Politik Office number 800/279/B-6/2021 and the Metro City Health Office number 074/9341/D-02/05/2021. Consent to participate was obtained from the respondents.

## 3. Results

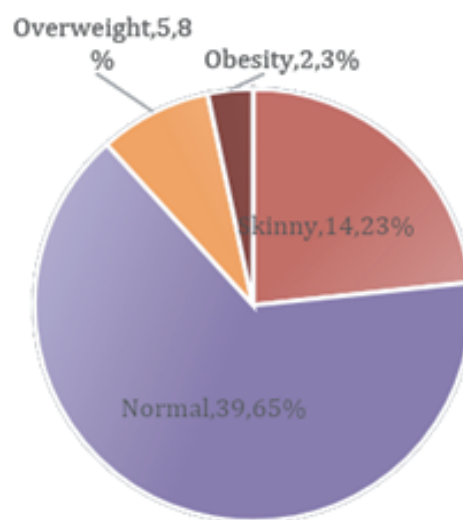
The success of using the application as a media function and early detection reached 96.67%. A total of 2 respondents from 60 respondents experienced errors when using the application. Further reported, the simple early detection function for preconception

preparation in the application works quite well. A total of 56.66% of adolescent girls were detected as having health problems. Detected adolescents who experienced CED 38%, nutritional problems (thin, overweight and obese) 33.33%, anemia 6.66% and a history of thyroid 1.67%. Shown in the following pie chart.



### Health status of adolescent girls

Figure 2: Health Status of Adolescent Girls.



### Body Mass Inde

Figure 3: Body Mass Index Status of adolescent girls.

The results of the respondent's assessment after using the application were obtained, as many as 71.7% stated that this application was very well applied to young women to keep them healthy as an initial step in preparation for pregnancy. As many as 73.3% of

respondents stated that the developed application provided a new experience related to preconception preparation.

## 4. Discussion

The development of a health application that is intended as a simple screening medium for preconception care has entered the stage of a limited-scale trial. The results of this development prove that the developed application has a fairly good performance. Through the preconception preparation feature, this application can serve as a simple initial screening medium. In addition, this application can also function as a personal health record, especially reproductive health for users.

Currently, quite many cellular health programs are being developed. The health application functions as a health promotion media that can be accessed via a smartphone [27]. Health applications can be interpreted as medical practices that can be accessed remotely by the public through information technology and telecommunications [28,29]. Utilization of this health application provides advantages such as the absence of space and time restrictions because it can be accessed wherever and whenever needed [30], can function as a tool in compliance with treatment schedule management, visit schedule reminder aids, and health information media [31] and can be used as a user's health record [32]. When a health application is used as an information medium, the application can also function as an educational medium to increase user knowledge [33].

The utilization of technology today allows the dissemination of information widely to the public to improve health services. Empirical evidence states that the use of information technology can increase the absorption of care services [34]. In addition, cellular application-based health interventions can be an effective alternative to improve health promotion behavior, especially in the general population without the disease [35]. In this era, young adults and adolescents have a high affinity for applications that can help change behavior, especially about health [36]. Previous research stated, the main search in the use of health mobile applications related to health status, motivation, knowledge, and fitness [37]. This is one of the considerations of the application development carried out. It is hoped that the application developed can serve as a simple initial screening medium and also as a medium for preconception care information for users.

## 5. Conclusion

The resulting media has good performance as a simple early detection tool for preconception care and health information media. In addition, the developed application can function as a personal health record. Therefore, this application needs to be refined to provide more optimal results.

## 6. Funding

This research was carried out independently by the researcher.

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## Conflict of Interest

The authors have no conflict of interest to declare.

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