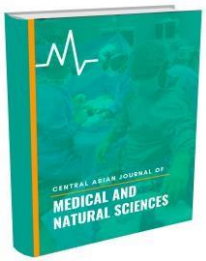

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Article

Title Designing a Mobile App for Adolescent Health as Pre-Marital Preparation to Prevent Early Stunting: A User-Centred

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Abstract: Stunting is a condition where toddlers have less length or height than their age. Premarital preparation is where men and women must prepare themselves from all physical, mental, and socio-economic aspects. This study aims to design a Mobile App for Adolescent Health as Pre-Marital Preparation to Prevent Early Stunting. This study was conducted in Posyandu (adolescent integrated service center) in Sidoarjo. A total of 22 participants were recruited through an online survey. According to several respondents who have seen the first mobile prototype, the overall UI/UX of the website already has a decent appearance and provides a good experience, in line with user expectations. The midwife interface must be added to the edit menu and the history of activities or services provided to adolescents. Teenagers say that this app fulfills all their health needs. As with most studies, this is not a perfect study, but several key questions have been studied according to the systems science methods, and some relevant results have been obtained to help solve these problems. This study takes the redesign of the user interface based on feedback from respondents after the redesign is carried out, an application ready to be used for adolescent health services created to be software usefully.

Keywords: Mobile App, Pre-Marital Preparation, Posyandu

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1. Introduction

Adolescence is a period of rapid growth and development both physically, psychologically and intellectually. Adolescents have distinctive traits, namely having a high sense of curiosity, liking adventures and challenges and daring to bear all kinds of risks for the actions they make without thinking long. If the decision taken is not correct, they will fall into risky behaviour [1]. Adolescent health is an essential thing to consider because, during this period, adolescents experience significant physical, psychological, and social changes. The Indonesian Ministry of Health emphasizes that a healthy diet, regular physical activity, and a healthy lifestyle strongly influence adolescent health. Healthy adolescents are characterized by age-appropriate weight, height, and body mass index [2].

Adolescent health efforts include positive development, accident prevention, violence prevention, reproductive health, prevention and control of infectious diseases and non-communicable diseases, nutrition and physical activity, mental health; and adolescent health in crisis situations [3].

Stunting is a condition where toddlers have less length or height compared to their age. This condition is measured by length or height that is more than minus two standard deviations of the WHO median child growth standard [4]. Stunting can occur starting from

the fetus in the womb and only appears when the child is two years old, if it is not balanced with catch-up growth (growth catch-up) resulting in decreased growth, the problem of stunting is a public health problem associated with increased risk of morbidity, mortality and obstacles to growth both motor and mental [5]. Risk factors for stunting include parenting, health service coverage and quality, environment, and food security. So, the whole community should participate in maintaining personal and environmental health, not because it is limited to obeying government rules and policies, but because the community is very aware of the importance of health. One of them is caring about healthy nutrition that must be prepared starting before marriage Field [6]. Stunting prevention aims to minimize the incidence of stunting and its risks. Premarital Preparation is one way to prevent stunting as early as possible, considering that stunting can be prevented starting from the First 1000 Days of Life (HPK). Premarital preparation is where men and women must prepare themselves from all physical, mental, and socio-economic aspects. Especially for brides-to-be, in the form of nutrition and reproductive health in preparing for pregnancy, childbirth, and childcare processes, including breastfeeding. Before marriage, individuals must prepare themselves to be responsible reproducers by preparing physically, mentally, and socio-economically properly [7]. The RPJMN 2020-2024 targets a reduction in stunting rates by 2024 of 14%, with the policy direction being integrated into sensitive and specific interventions [8]. To be able to optimize adolescent health, it is necessary to optimize adolescent health services at Posyandu (integrated service center) specifically for adolescents through digital services at health care facilities, especially at adolescent Posyandu. One of them utilizes smartphone tools. Modern smartphones integrate the well-known functions of a telephone with sophisticated computing capabilities. As a result, there has been a significant amount of interest in using mobile applications to assist healthcare and healthcare professionals. By 2018, it is anticipated that fifty percent of the world's more than 3.4 billion people who own smartphones and tablets will have downloaded mobile health applications [9]. Healthcare professionals, patients, and consumers like adolescents are included among these users. Mobile medical applications that enhance healthcare and furnish healthcare professionals and consumers with helpful health information are being encouraged to develop in other nations through the usage of mobile-based applications [10].

As these increasingly sophisticated mobile devices are now mass-market commodities, careful consideration must be given to smartphones and their apps in terms of their aesthetics, usability, and utility, as well as the emotional aspects of the user experience [11]. Novices need an interface that is easy to master and easy to use [12]. Simplicity is the most important principle of interface design [12]. To achieve simplicity, the mobile user interface (MUI) design must be consistent and avoid cognitive overload and disorientation in the user.

Adapting the mobile device's interface is crucial as it enhances the overall UX, increases consistency and coherence, addresses the challenges of the mobile form factor, and accommodates the needs of diverse user groups [13]. In fact, an adaptive interface can cater to the diverse needs and preferences of different user groups, like a midwife as a health practitioner, a cadre, and an adolescent as a subject for stunting prevention. Therefore, this study aims to design a Mobile App for Adolescent Health as Pre-Marital Preparation to Prevent Early Stunting. Furthermore, this study aims to evaluate whether the user experience of designed prototypes of a mobile or Adolescent Health as Pre-Marital Preparation meets user needs. The findings identify the potential areas for improvement, define the level of the user experience, and support further performance applications. Consumers, especially adolescents, often tend not to return to applications that do not immediately engage them, undermining interventions' potential effectiveness. It is crucial to design and develop applications using a user-centred design (UCD) approach that engages users from the start (interaction design foundation, n.d.) [14].

2. Materials and Methods

This study was conducted in Posyandu (adolescent integrated service center) in Sidoarjo. A total of 22 participants were recruited through an online survey. The 10 participants were in the first grade of junior high school, 10 were in the second grade of junior high school, and 1 participant was in the third grade of junior high school and 1 was in midwifery. We used Delone and McLean for the items in the questionnaire chosen in the Likert scale. The stages of app design follow the following flow:

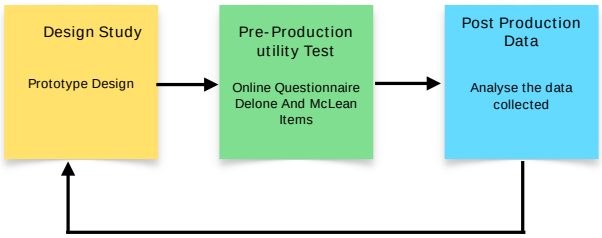

Figure 1. User Center Design Flow

3. Results and Discussion

3.1. Design Study- Prototype Design

User analysis allowed the identification of three profiles: midwife, cadre, and adolescent. There are 3 landing pages in the design for each user. Here are the design results:

Figure 2. Home Screen

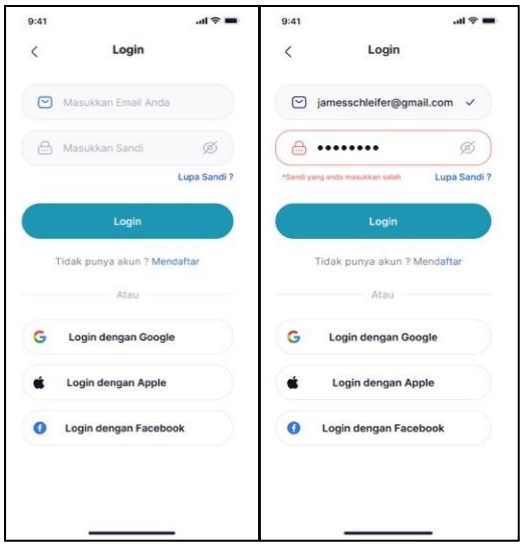

Figure 3. Landing Page

Figure 4. Landing Login Page

Figure 5. Landing Page

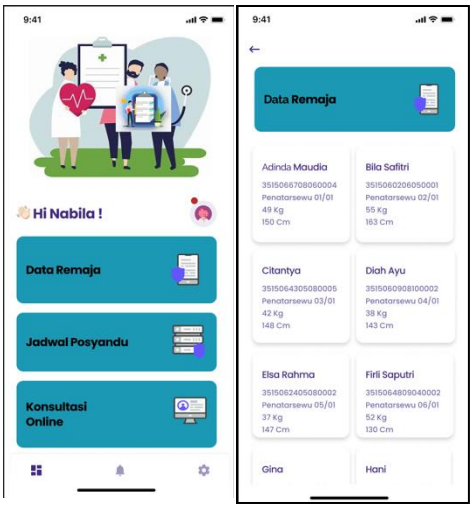

Figure 6. User Data Page

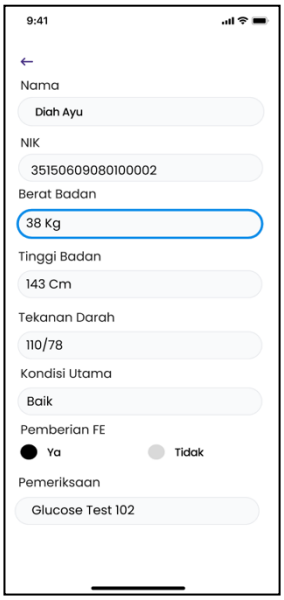

Figure 7. Data Content

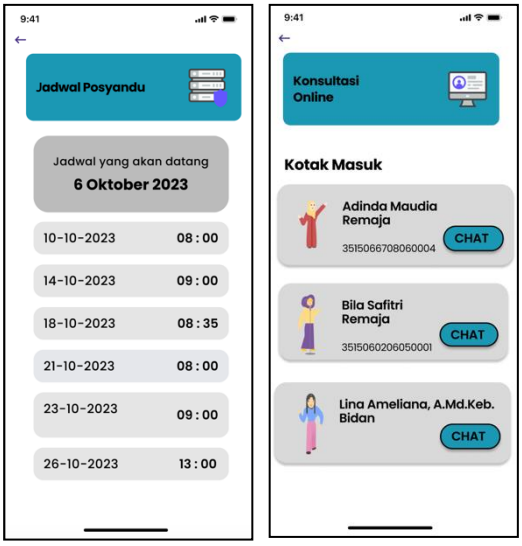

Figure 8. Schedule and Consultation Page

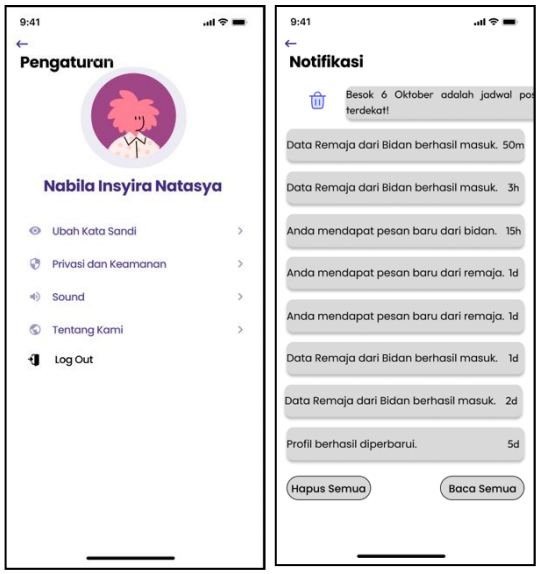

Figure 9. Setting and Notification Page

3.2. UI/UX Evaluation Results

According to several respondents who have seen the first mobile prototype, the overall UI/UX of the website already has a decent appearance and provides a good experience, in line with user expectations. Midwives gave a score of 87% that the user interface was easy to use, and the data in the application could facilitate the duties of midwives in providing health services to adolescents. Adolescents and cadres also said that the interface was easy to use, and the data content in the application also represented data that should be available related to adolescent health. This is in line with previous research that satisfaction is significantly affected by the other three dimensions, and in this influence relationship, the Ease-of-Use variable has a mediating effect, that is, Ease of Learning and Ease of Use significantly affect the impact of Ease of Use, and then Ease of Use significantly affects Satisfaction. Overall, this finding has guiding significance for researchers and designers in the practice of usability improvement [15], [16]. In addition to the ease and usefulness of the application, several things need to be improved. The midwife interface must be added to the edit menu and the history of activities or services provided to adolescents. Teenagers say that this app fulfills all their health needs. Overall, as with most studies, this is not a perfect study, but several key questions have been studied according to the systems science methods, and some relevant results have been obtained to help solve these problems. The specific conclusions and contributions of the study are presented in detail in the next section. By the same token, ease of use can be improved by improving usefulness and learning. The gradual and deep traceability also means the design can be optimized to a more specific and detailed point to create good software. Therefore, new discoveries can help designers identify specific directions to improve software usability in design practices.

4. Conclusion

This study takes the redesign of the user interface based on feedback from respondents. After the redesign is carried out, an application that is ready to be used for adolescent health services will be created. Thank you to all respondents and related parties, as well as Sidoarjo Muhammadiyah University, for providing funding for research.

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