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Evaluation of A *Santun Sejati* Web-Based Application: Mother and Baby Care with Cognitive Behaviour Therapy Approach

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ABSTRACT

This study aims to evaluate a web-based application that uses the Cognitive Behaviour Therapy (CBT) approach in the care of baby and postpartum mother. The research method is an evaluation study with participants who are users of a *santun sejati* web-based application. It provides information, resources, and guidance based on CBT principles to help mothers in overcoming stress, postpartum depression, and developing positive mindsets related to the care of the baby and postpartum mother. At this stage, data is collected through a questionnaire that measures users' satisfaction with the application. The questionnaire is conducted to measure the satisfaction of its application. The result shows that most participants explain their satisfaction with the knowledge, usefulness of the application, clarity of information, and attractive appearance of the available application. Users provide positive feedback regarding the application's ease of use, quality of information, and available resources. Thus, webbased application with a CBT approach can be effective tool in assisting the care of baby and postpartum mother.

Keywords: *Cognitive Behaviour therapy, Perinatal, Web based Application*

1. INTRODUCTION

The development of digital technology in recent years has brought the significant changes in various aspects of human life. One area that has been massively affected is mother and baby care. Digital technologies, such as mother and baby care apps, pregnancy monitoring devices and feeding aids, have become an influential part of the daily lives of mothers and babies. However, some health literature indicates the critical gaps that need further study regarding the influence of digital technologies in the context of mother and baby care. Firstly, most of the existing studies related to the use of digital technologies in mother and baby care only involve a limited population. More extensive and representative studies are needed to gain a more comprehensive understanding of the impact of digital technologies on the care of mothers and babies. Secondly, there are few studies specifically explore the perspectives of digital technology users in the context of mother and baby care. The perspectives of digital technology users, such as their preferences for certain types of apps or devices, the barriers they face in using digital technologies, and their natural benefits, need to be better understood. This kind of the studies will provide valuable insights for technology developers and mother and baby care service providers.

In addition, there is a need to evaluate the effectiveness of digital technologies in improving the quality of mother and baby care. Several studies have reported positive benefits of using digital technologies in monitoring mother and baby health, improving understanding of appropriate baby care, and providing social support to mothers. However, there are still shortcomings in the methodology of the studies conducted and the need for more in-depth studies to evaluate the true impact of digital technology use on mother and baby care outcomes. In addition, ethical and safety aspects are also issues that need to be considered in the use of digital technology in mother and baby care. In this

context, it is important to hide data privacy, information confidentiality, and potential security risks that may arise with the use of digital technologies in mother and baby care. The study of these issues will provide practical guidance for technology developers and mother and baby care service providers in ensuring safe and ethical use.

The postpartum period is a time after childbirth when women go through many changes physically, psychologically, as well as socio-culturally and spiritually.[1] These changes include complex physical and emotional changes, which require adapting to a new lifestyle in accordance with childbirth and a new role as a mother.[2], [3] In order to prevent depression and cope with the various changes after childbirth, it is important to have adequate social support and communication. The use of digital applications can be an effective way to increase support and facilitate communication between fellow members for sharing experiences.[4], [5]

The prevalence of the mental disorder postpartum depression, also known as postpartum depression (PPD), is around 13% globally, with higher rates, reaching 20%, in developing countries. In Asian countries, the incidence of postpartum depression ranges from 26% to 85%, while in Indonesia, the rate is 50% to 70%. Women in the postpartum period are at risk of depression as they face physical limitations and have to adapt to their new role as a mother. It can lead to suicidal desire and infanticide (the act of harming or killing a baby). Some of the risk factors associated with the occurrence of postpartum depression in Southeast Asia include unplanned pregnancy, domestic violence, level of social support from family, economic conditions, and history of previous pregnancies.[6]

2. METHOD

The creation of this application begins with analyzing system requirements and previous service observations. The design utilizes observations and interviews of the needs of posyandu cadres to assist in activities. The design includes system design, use case diagram design and application design, then the last is the application testing stage.

This type of study is descriptive with a quantitative approach. The sample is people who access the *santun sejati* web-based application. The number of samples is application users and complete questionnaire takers as many as 66 people. The duration of the project is started from February to May 2023. The data collection method uses questionnaire distribution. The online questionnaire is integrated with the santun sejati web-based application service. Document link can accessed on http://ppdm.hhh.my.id/. The questionnaire is developed by modifying the Si Covid Sukoharjo Application questionnaire by Alfiyan Mustaqim in 2019. Ethical clearance is obtained by registering with the institution of Aisyiyah University Surakarta with EC: Number. 072/V/AUEC/2023.

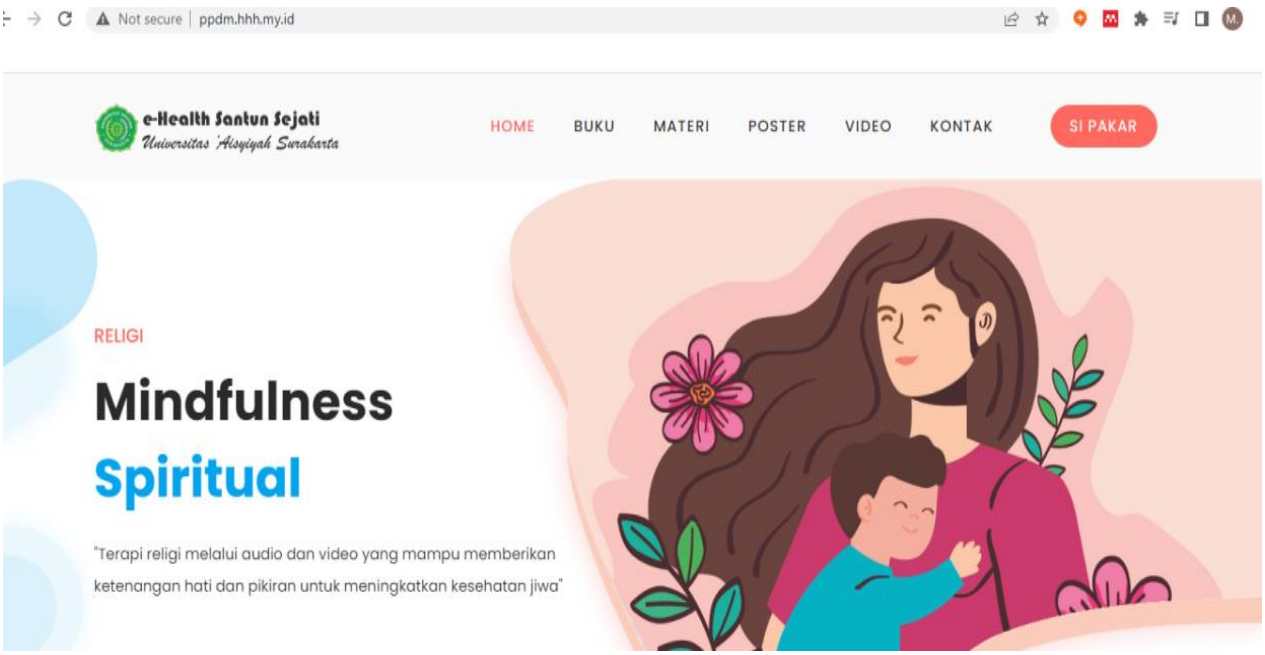

Figure 1. The homepage of the *santun sejati* web-based application on ppdm.hhh.my.id/laporan

3. RESULTS AND DISCUSSION

The result of evaluation research on the Web-based Application is presented as following:

Table 1. Evaluation of Web-based Application: *Santun Sejati*, Mother and Baby Care

No	Variable	Frequency	Percentage (%)
1	Age		
	a. ≥35	31	47
	b. 31-35	11	16.7
	c. 26-30	6	9.1
	d. 21-25	9	13.6
	e. ≤ 20	9	13.6
2	Level of Education		
	a. University	52	78.8
	b. Senior High School	9	13.5
	c. Junior High School	3	4.5
	d. Primary School	2	3.0
	ɔ.Employment Status		
	a. Employed	25	37.9
	b. Unemployed	41	62.1
3	The use of the application in helping the society in baby care		
	a. Less useful	14	21.2
	b. Useful	52	78.8
4	The wealth of baby care knowledge to be gained from this application		
	a. Less knowledge of baby care	24	36.4
	b. Lots knowledge of baby care	42	63.2
5	Ease of Use of the Application		
	a. Not Easy	19	28.8
	b. Easy	47	71.2
6	Comfort in learning to use the application		
	a.Less Comfortable	19	28.8
	b.Comfortable	47	71.2
7	Clearness of Information in the application		
	a.Unclear	31	47
	b.Clear	35	53
8	Ease of getting information on mother and baby health services		
	a.Complicated Access	23	34.8
	b.Easy Access	43	65.2
9	Information space arrangement in application		
	a.Worse	30	45.5
	b.Good	36	54.5
10	Enjoyment in Application		
	a.Less Enjoyable to use	19	28.8
	b.Enjoyable to use	47	71.2
11	Appearance of the application		
	a.Less interesting	19	28.8
	b.interesting	47	71.2
12	Satisfaction with the Use of Applications		
	a.Less Satisfying	19	28.8
	b.Satisfying	47	71.2

Perinatal depression occurs in approximately 12% to 18% of women of childbearing age. In dealing with the pandemic, when face-to-face services are significantly limited, tele-health platforms have emerged as a promising solution to provide perinatal mental healthcare (Parameswaran et al., 2022). According to the World Health Organisation's (WHO) definition, eHealth refers to the economical and secured use of information and communication technologies to support the provision of health care services, health monitoring, health education and literature, and

science and research development (WHO, 2021). Access to mass media and new technologies such as mobile phones, the internet and social media are social factors that have been shown to have a significant impact on women's health. Especially in regions of Africa, where rural women often have limited access to health care services, access to mobile phones can be an important lifeline in reducing the risk of maternal mortality and other pregnancy related diseases. The use of mobile phones as a source of information and communication in the context of health can be an influential determinant in improving women's health [2], [7].

Depression during the postpartum period is common among mothers (about 17%) and fathers (about 9%), and suicide is the leading cause of death in mothers. The impact of untreated postpartum depression has a high lifetime cost, as it can affect both babies and mothers. The study has employed digital services to collect data in an effort to improve access to treatment for postpartum depression. One method developed is the use of a smartphone application called ClinTouch DAWN-P. The advantage of this service is that it provides easy access for parents to monitor their mood changes.[8]

It should be noted that although eHealth interventions can be helpful in identifying and treating postpartum depression, they should not be used as a substitute for conventional medical care. For individuals experiencing symptoms of postpartum depression, it is important to speak to a healthcare provider for an appropriate diagnosis and treatment plan [4], [8]–[10].

A study conducted by Atallah et al. (2018) showed that participants had a high interest in using mobile apps to prevent depression and anxiety. 64% of participants showed interest in using mobile applications in an effort to prevent mental health problems. This previous study involved the use of "Happy Mom" and "Bebekviz" applications as digital service interventions. The applications aim to help postpartum mothers overcome their depression through the use of mobile applications. Through both applications, postpartum mothers can obtain information, interventions, and support needed during the postnatal period as an effort to prevent postpartum depression. The use of mobile apps in the context of health, particularly mental health, has become a common trend [3], [5], [11].

The study by Jannati et al. (2020) showed that the "Happy Mom" mobile application based on Cognitive Behavioural Therapy (CBT) had positive results in reducing the level of postpartum depression [9], [12], [13]. The inclusion criteria in that study were postpartum mothers with an EPDS score above nine or showing indications of postpartum depression. After receiving CBT-based intervention through mobile application, the EPDS score in the intervention group was 8.18 ± 1.5, while in the control group it was 15.05 ± 2.9. This shows a decrease in the level of depression in the intervention group, while the average participant in the control group still experienced postpartum depression [12]. This findings are also supported by previous research which confirm that CBT intervention based on mobile application can reduce the level of depression and anxiety in research participants [9], [14], [15].

Furthermore, the technology-based peer support intervention programme (PIP) uses telephone, email, and communication apps such as WhatsApp. [16]. PIP employs telecommunication technology that allows participants and volunteers to communicate easily and intensely. Based on the results of this study, PIP is effective in reducing the level of postpartum depression [1], [7], [17]. This finding is also in line with the results of other studies that mention the correlation between PIP intervention and the level of postpartum depression, which means that an increase in PIP intervention will reduce the level of postpartum depression [18], [19]. This intervention is also supported by Beck's theory that postpartum depression is caused by external factors that prevent mothers from expressing their feelings of distress. The PIP intervention will help mothers to express feelings of distress experienced during the postpartum period [20].

Study conducted by Jiao et al. (2019) showed the use of psychoeducation through website media. [21], [22] The results of that study proved that psychoeducational interventions in the web-based intervention group and home visits were equally effective in reducing postpartum depression scores [2], [19], [23] This finding is also in line with research by Mahayanti (2015) which showed that psychoeducation was effective in reducing the level of postpartum depression and it was a more cost-effective intervention [21]. Smart phone psychoeducation intervention is effective in reducing symptoms of postpartum depression and is an efficient intervention [19], [21], [24]. Thus, it can be concluded that psychoeducational interventions using eHealth, both through mobile and web-based applications, are effective in reducing postpartum depression and have better cost efficiency than direct interventions [25], [26]

The role of cognitive Cognitive Behavioural Therapy (CBT) is effective in helping mothers understanding about their role during postpartum care [12], [27]. CBT is a therapy that focuses on the relationship between a person's thoughts, feelings and behaviour. It can be particularly beneficial in the care of babies and postpartum mothers. In the context of postpartum care, CBT can help mothers identify and address negative thoughts or cognitive distortions that may arise after childbirth [13], [28]. Some mothers may experience high feelings of anxiety, depression or stress after giving birth, and CBT can help them manage these emotions more effectively. It can also help mothers identify unhealthy or ineffective patterns of behaviour, such as social isolation or avoiding self-care [15], [28]. Therapists apply cognitive and behavioural techniques to help mothers change negative or unhealthy thought patterns into more adaptive and positive ones. Postpartum mothers can improve disrupted sleep, manage hormonal and emotional changes associated with childbirth, and improve problem-solving skills for daily stress [18], [29], [30].

4. CONCLUSION

Based on the results of this study, it can be concluded that the *santun sejati* web-based application that employs the Cognitive Behaviour Therapy (CBT) approach in the care of babies and postpartum mothers has the potential to be an effective tool. This research undertakes an evaluation of the application using an evaluation study method that also involves participants who are users of the application. Thus, this study recommends that a web-based application with a CBT approach has the potential to be an effective tool in the care of babies and postpartum mothers. However, further refinement and development is needed to improve user adaptation to the CBT strategies taught. This evaluation provides valuable insights for the application developers and the providers of mother and baby care service to improve existing interventions.

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