Evaluation of The Poedji Rochjati Score Card (PRSC) on Digital Platform @hamilku.id Based on The Delphi Method

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Abstract

The number of cases and deaths of mothers and babies in Indonesia is increasing, which is mediated by low-risk detection in early pregnancy, and a lack of knowledge resulting in the dissemination of pregnancy-related information tends to be poorly understood. As a solution to this problem, the purpose of this study was to analyze the effectiveness and usability of the Poedji Rochjati Score Card (PRSC) feature on the @hamilku.id Digital Platform based on the Delphi method. Qualitative research methods with technical observations were carried out online by obstetricians and gynecologists. The main focus of this research was usability testing involving 46 pregnant women who used the application and 9 randomly selected respondents. The assessment and evaluation were guided by the Delphi method, which involved two rounds of testing by six obstetricians and gynecologists. The results were descriptively analyzed. The findings showed that pregnant female respondents aged between 17 and 34 years had a higher education level, were dominated by people without jobs/housewives, were domiciled in Sidoarjo, had undergone antenatal care (ANC) ≤ 6 times, and had undergone ≥ 5 pregnancies. According to the PRS, 52.2% of pregnant women were classified as having high-risk pregnancies (HRPs). Based on the evaluation of the application from the usability aspect, 83.3% of the participants stated that the information was comprehensive and that the medical terminology was easy to understand. However, only half of them considered visualization in the form of images or animations to be very helpful in illustrating pregnancy risks. Delphi testing with obstetricians and gynecologists revealed that the digital PRSC features generated positive ratings, indicating that the tool is accurate, informative, easy to understand, and effective at improving the quality of health services. The second round showed an improvement in the quality and relevance of the digital PRSC features, with more diverse feedback from the respondents providing a broader perspective for future research and feature development. As a result, the digital PRSC feature can help individuals precisely and accurately identify pregnancy risks.

Keywords: *poedji rochjati score card, delphi method, pregnancy risk, @hamilku.id*.

1. Introduction

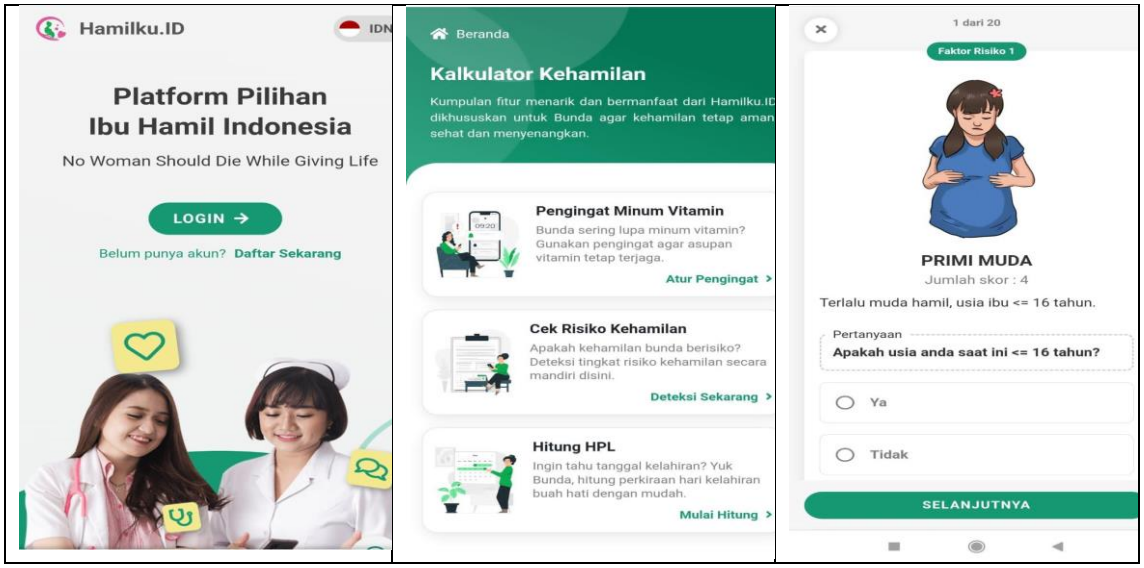
Pregnancy is a crucial period that involves significant physiological changes to support fetal development and prepare mothers for labor. These changes, which involve the hematologic, cardiovascular, renal, and metabolic systems, are important for understanding prenatal care [1]. In addition, assessing the quality of antenatal care and addressing maternal mortality, which remains a global challenge, are important parts of prenatal care [2], [3]. Maternal mortality and morbidity are major issues, especially in low- and middle-income countries, with 2020 data showing approximately 800 preventable deaths per day. Approximately 75% of deaths are related to major complications, such as severe bleeding, infections, pregnancy hypertension, labor complications, and unsafe abortions [4], [5]. This situation has been exacerbated by the COVID-19 pandemic, and coordinated efforts at various levels are needed to achieve the Sustainable Development Goals (SDGs), which predict a global maternal mortality ratio of < 70 per 100,000 live births by 2030 [5], [6].

Therefore, a holistic approach is required to address this issue [7]. One effective tool for evaluating access to and relevance of emergency obstetric and neonatal care (EmONC) is the three-stage delay model introduced by Thaddeus and Maine in 1994. The model identifies barriers and intervention points during a

woman's journey from home to a health facility. First-phase delays occur at the household and community levels, reflecting delays in the decision to seek help when pregnancy and delivery complications occur [8]. Second-phase delays refer to delays in reaching a facility, and third-phase delays refer to delays in receiving treatment at a health facility [9].

Management of pregnancy risk factors is central to efforts to prevent maternal and infant mortality in Indonesia. In this context, two concepts that have long been recognized and applied are the concepts of "*4 terlalu*" and "*3 terlambat*". The "*4 terlalu*" concept refers to the risk of pregnancy at a very young or old age, high parity (many children), or too short an interval between births, while the "*3 terlambat*" concept refers to delays in decision-making, delays in reaching health facilities, and delays in obtaining health services [2], [10]. The use of the Poedji Rochjati scorecard (PRSC) in antenatal care (ANC) by health workers and PKK cadres has been shown to contribute to a reduction in the maternal mortality rate (MMR) and infant mortality rate (IMR) in Indonesia and is effective at detecting high-risk pregnant women, as shown in a study by Puskesmas Ngumpak Dalem, Bojonegoro Regency [11].

However, to improve pregnancy risk detection, innovation has been proposed in the form of creating a PRSC in the form of a digital platform that will be part of @hamilku.id digital platform features (Figure 1). The methodology used to identify PRSC innovations was developed in the form of a digital platform using the Delphi test administered to obstetricians and gynecologists. The aim of this study was to analyze the effectiveness and usability of the PRSC feature on the @hamilku.id digital platform based on the Delphi method. It is expected that this research will lead to an innovation that allows pregnant women to independently detect pregnancy risks. These results can be used as a basic reference for the independent early detection of pregnancy risks in pregnant women. This study has the potential to have a positive impact on efforts to prevent maternal and infant mortality in Indonesia, and further research can be conducted with a wider and more heterogeneous population sample.



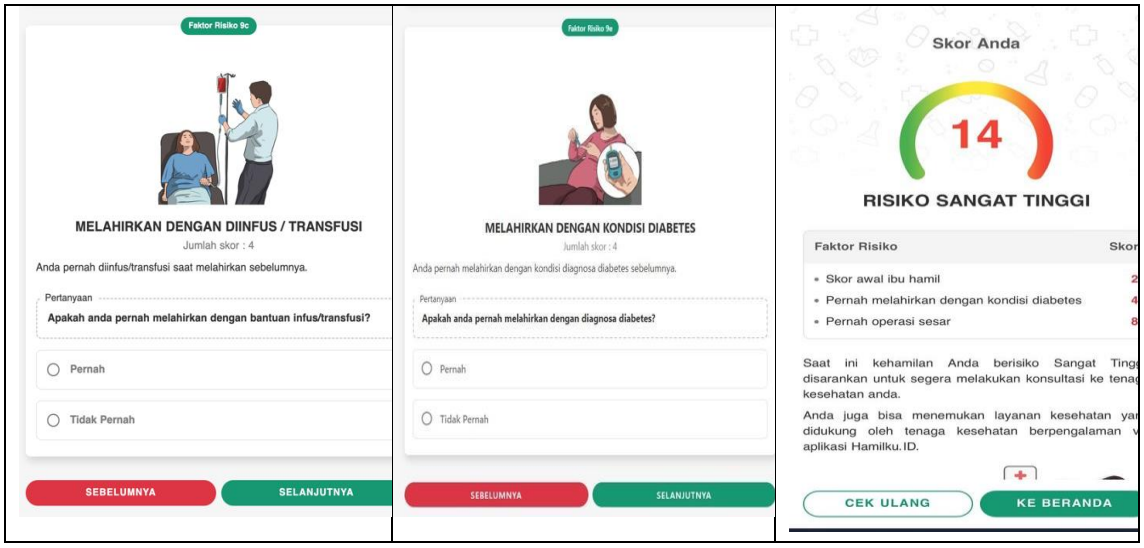


Figure 1. Features contained in the @hamilku.id application. Description: The @hamilku.id application has a pregnancy risk check feature that contains all pregnancy risk factors in the printed version of the PRSC; this feature has been modified into a digital platform and presented in a language that is easily understood by users (pregnant women) equipped with images or animations that are easy to understand, questions that match the client's condition and questions about the degree of risk from the calculation results.

2. Research Methodology

A mixed-methods research design was used in this study [12]. A qualitative analysis was conducted by conducting in-depth interviews with @hamilku.id users, while quantitative analysis was carried out by obstetricians and gynecologists using Delphi testing to review the features of the @hamilku.id. This research was conducted online in several stages, including literature studies, device selection, and the development of the innovation features of the Poedji Rochjati scorecard (PRSC) in the form of digital platforms and product dissemination and evaluation. The development of @hamilku.id application features is guided by the progressive website application (PWA) using the Blazor Net programming language [11]. Considerations using this digital platform can be accessed and installed directly using the website without having to rely on the appstore or playstore. In addition, this digital platform can be used on a cellphone or laptop with only a small amount of data storage memory. The study sample included 46 pregnant women who had used @hamilku.id to review the usability of @hamilku.id features, as did 12 expert panels, namely, obstetricians and gynecologists in Indonesia. The information collected from the respondents was on the ease of use of features and the understanding of digital PRSC features on @hamilku.id. Before conducting the research, all the respondents and experts provided informed consent to ensure the confidentiality of the respondent data and the answers given. The Delphi method was adopted through two rounds to confirm the usability of the test and the completeness of the information contained in the @hamilku.id feature. This Delphi test involved two rounds in which the selection of the sample was performed by a research moderator by a general practitioner. The first round involved 6 respondents who specialize in obstetrics and gynecology. The second round involved 6 different obstetrician and gynecologist respondents from the first round. The process of applying the Delphi method is presented in Figures 2 and 3. The results are presented descriptively in the form of tables and narratives. The statistical data were analyzed using SPSS, Inc. version 25.0 [13].

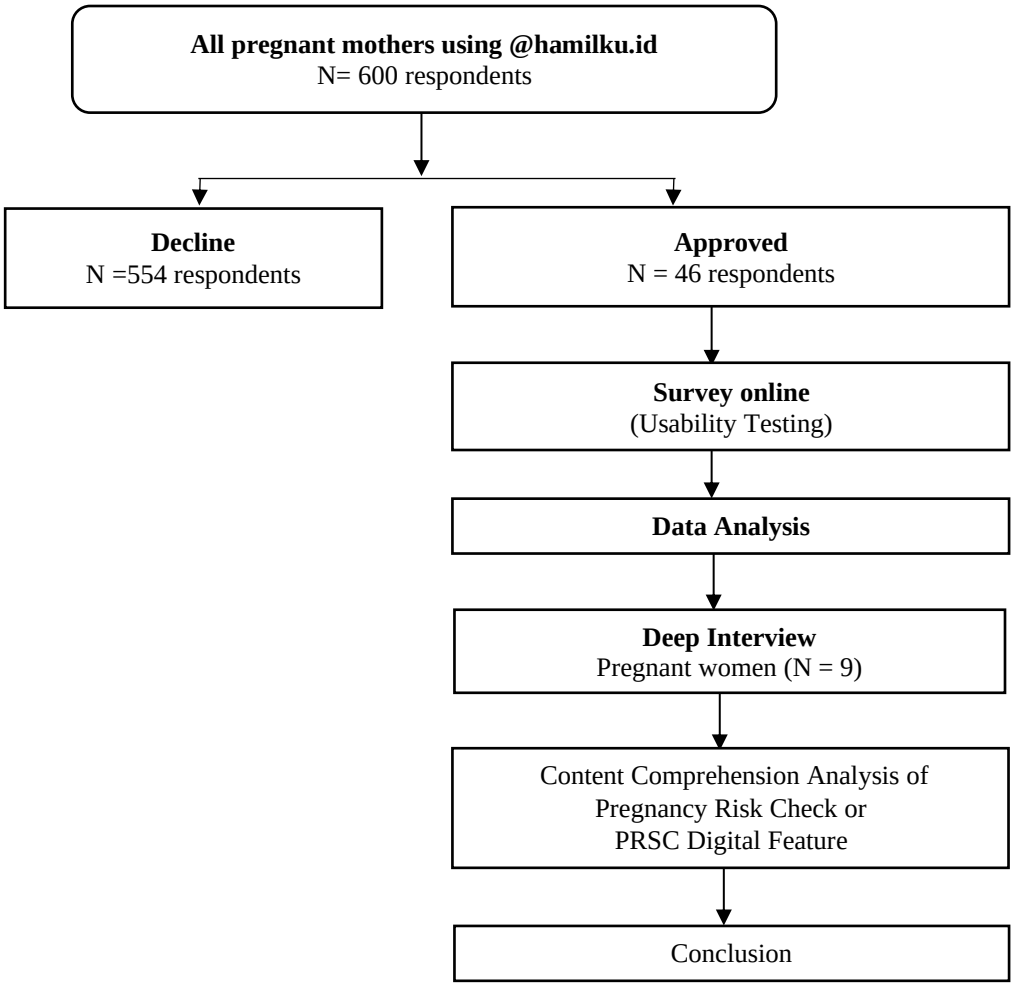


Figure 2. Workflow of respondent selection and data collection.

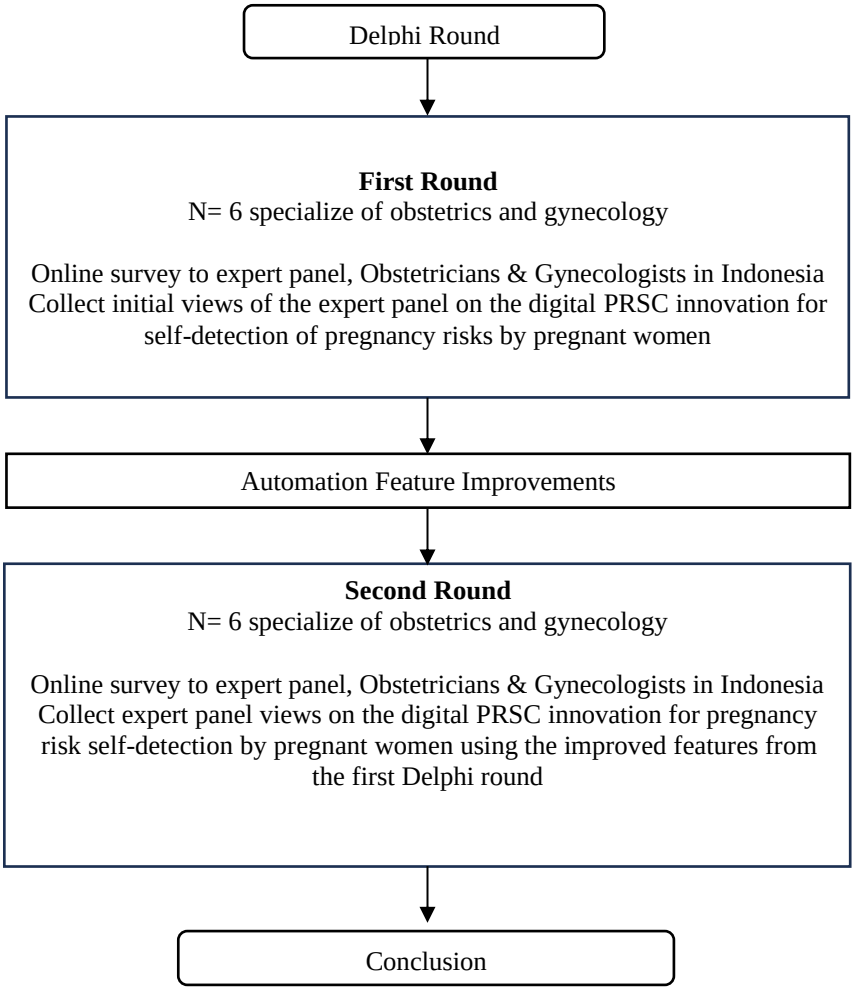


Figure 3. Delphi round one and two flow.

3. Results and Discussion

3.1. Respondent Characteristics

In this study, the characteristics of the pregnant women were statistically analyzed using univariate analysis. There were 46 pregnant women who were @hamilku.id users who completed the online survey, and nine of these respondents were successfully interviewed. The results confirmed the age characteristics of the majority of respondents aged between 17 and 34 years. Based on educational characteristics, most respondents had a higher education, and the majority of them were not working/school/housewives and had a residence (domicile) in the Sidoarjo district. Analysis of the frequency of antenatal care (ANC) completion revealed that 63% of the patients had ANC visits < 6 times, and most of the respondents had undergone ≥ 5 pregnancies. Finally, confirmation of PRSC was dominated by respondents who had high-risk pregnancies (HRPs). The characteristics of the participants are listed in Table 1.

Table 1. Characteristics of the pregnant women respondents.

Characteristics	Frecuency (n= 46)	Percentage (%)	Confiden Interval (%)
Age (years)			
≤ 16 year	-	-	-
17 – 34 year	41	89,1	89,1
≥ 35 year	5	10,9	100
Education			
Basic education	9	19,6	19,6
Secondary education	17	37,0	56,5
Higher education	20	43,5	100

Characteristics	Frecuency (n= 46)	Percentage (%)	Confiden Interval (%)
Employment			
Not working/school/housewife	22	47,8	47,8
TNI/POLRI/PNS/BUMN/Retired	3	6,5	54,3
Private employee	15	32,6	87,0
Self-employed/trade/services	6	13,0	100
Farmer/fisherman	-	-	-
Laborers/drivers and others	-	-	-
Domicile			
Surabaya city	15	32,6	32,6
Sidoarjo district	24	52,2	84,8
Outside Surabaya and Sidoarjo	7	15,2	100
Number of ANC			
< 6 kali	29	63,0	63,0
≥ 6 kali	17	37,0	100
Number of Pregnancies			
1	18	39,1	39,1
2-4	27	58,7	97,8
≥ 5	46	2,2	100
PRSC Score			
Low risk pregnancy (LRP)	14	30,4	30,4
High risk pregnancy (HRP)	24	52,2	82,6
Very high-risk pregnancy (VHRP)	8	17,4	100

3.2. Ease of Use Survey @hamilku.id

A survey conducted online showed that 46 respondents completed an online survey to confirm the usability of the @hamilku.id application. The results show that 47.8% of the users find it very easy to access @hamilku.id on their devices, and 26.1% stated that @hamilku.id is easy to use. Regarding installation characteristics, 52.2% of the users stated that it was very easy to add or install @hamilku.id. Furthermore, 52.2% of users found it very easy to use @hamilku.id features. This is supported by the ease of use that has been added to the information and instructions on @hamilku.id (Table 2). As a follow-up, in-depth interviews were conducted with eight users regarding the ease with which the feature items were described.

Respondent 11: "*I was confused at first when I downloaded the app, but eventually I was able to use it well. The questions in the app were easy to understand and were helpful in determining the risk of pregnancy. Respondents suggested adding recommendations to do checks that have not been done, such as Hb checks*". Respondent 23: "*The information in the app is easy to understand, and the pictures are helpful. The respondents stated that the registration process was difficult. Respondents trusted the risk tests in the app and suggested that the enrollment process be improved*". Respondent 28: "*The questions in the app are helpful in pregnancy risk detection and easy to understand. The animations in the app were helpful and easy to understand. Respondents suggested using a design that makes it easier for users to scroll down*".

Respondent 29: "*There are no problems using the app, and the language is very helpful. The visual field of application was good and clear. Respondents trust the information presented and suggest that the articles be updated*". Respondent 30: "*The app is easy to use, and pregnancy risk information is easy to understand. The animations in the app were appropriate and helped with comprehension. Respondents trust the information presented and rate the app as good*". Respondent 32: "*The app is easy to use and helps to know the risks of pregnancy. Animation helps with understanding. Respondents trust the information created by the doctor and have no further suggestions*". Respondent 33: "*The app is good enough to help with pregnancy risk detection. The animation is good and helps with the understanding. Respondents suggested that there should be advanced features to manage pregnant women with their respective risks*". Respondent 36: "*Rated the app as very good and not confusing. The images are very helpful for understanding*'.

Table 2. Usability testing@hamilku.id users.

Variables	Category	Frequency (n= 46)	Percentage (%)	Confiden Interval (%)
How easy is it for you to access @hamilku.id on the browser on your gadget?	**Very difficult**	**-**	**-**	**-**
	Difficult	**4**	**8,7**	**8,7**
	Normal	**8**	**17,4**	**26,1**
	Easy	**12**	**26,1**	**52,2**
	Very easy	**22**	**47,8**	**100**
How easy was it for you to add @hamilku.id to your gadget?	**Very difficult**	**-**	**-**	**-**
	Difficult	**2**	**4,3**	**4,3**
	Normal	**8**	**17,4**	**21,7**
	Easy	**12**	**26,1**	**47,8**
	Very easy	**24**	**52,2**	**100**
How easy is it for you to use the features on @hamilku.id?	**Very difficult**	**-**	**-**	**-**
	Difficult	**1**	**2,2**	**2,2**
	Normal	**6**	**13,0**	**15,2**
	Easy	**15**	**32,6**	**47,8**
	Very easy	**24**	**52,2**	**100**
Do the instructions given on @hamilku.id confuse you?	**Very difficult**	**1**	**2,2**	**2,2**
	Difficult	**2**	**4,3**	**6,5**
	Normal	**7**	**15,2**	**21,7**
	Easy	**10**	**21,7**	**43,5**
	Very easy	**26**	**56,5**	**100**

3.3. Evaluation of The PRSC Based on The Delphi Method

The evaluation of obstetricians and gynecologists using the Delphi method yielded two main results: rounds one and two. The results of the first and second rounds showed the characteristics of the respondents and their assessment of the PRSC @hamilku.id features and changes in respondent participation between the first and second rounds. The first-round evaluation showed that the majority of respondents were ≥ 35 years old, had graduated from a specialist doctor ≥ 2–3 years with a length of work (experience) majority of ≥ 2–3 years, and were domiciled outside of Surabaya and Sidoarjo. Moreover, in the second round, six obstetricians and gynecologists who were different from those in the first round participated as respondents. At this stage, there were changes in the survey profiles between the two rounds. The findings showed that 66.7% of the respondents were < 35 years old, 50% had graduated from a specialist doctor < 1 year old, 50% had ≤ 1 year of work experience, and 66.7% came from outside Surabaya city and Sidoarjo Regency. The results of the respondent characteristics in the evaluation of the PRSC based on the Delphi method are presented in Table 3.

Table 3. Characteristics of the Delphi test respondents in rounds one and two.

Respondent Characteristics	First Round			Second round		
	N	%	CI%	N	%	CI%
Age						
< 35 year	1	16.7	16.7	2	33.3	33.3
≥ 35 year	5	83.3	100	4	66.7	100.0
Year of specialist graduation						
≤ 1 year	1	16.7	16.7	3	50.0	50.0
≥ 2-3 year	5	83.3	100	3	50.0	100
Employment						
≤ 1 year	1	16.7	16.7	3	50.0	50.0
≥ 2-3 year	5	83.3	100	3	50.0	100
Domicile						
Surabaya city	2	33.3	33.3	1	16.7	16.7
Sidoarjo district	0	0	0	1	16.7	33.3
Outside Surabaya and Sidoarjo	4	66.7	100	4	66.7	100

Furthermore, the Delphi method was used to evaluate pregnancy risk status, and according to obstetricians and gynecologists, the PRSC was used in the first round. In total, 66.7% of the participants stated that the feature was very accurate in identifying pregnancy risks. Similarly, 83.3% of the participants stated that the information provided was very complete, the language and media terminology used were very easy for pregnant women to understand (83.3%), and the use of images or animations was very helpful in explaining pregnancy risks (83.3%). This feature was very effective in improving the quality of health

services for pregnant women (60%). In terms of medical data security and privacy standards, 66.7% of the respondents stated that this platform and its features met medical data security and privacy standards, and 66.7% stated that there was a need for improvement or additional features to improve accuracy and efficiency.

Furthermore, in the second round of the Delphi test, the digital PRSC feature was considered very accurate by respondents when identifying pregnancy risks; the information provided by the feature was considered very complete by respondents when detecting pregnancy risks; 83.3% of respondents considered the language and medical terminology used to be very easy for pregnant women to understand; images or animations were considered only casually helpful by 50% of respondents; 83.3% of respondents stated that the digital PRSC feature was very effective at improving the quality of ANC services; 83.3% of respondents stated that the platform and features met the standards of medical data security and privacy; and 83.3% felt that the features did not require additional feature improvements on @hamilku.id. Overall, the second-round survey results reflect the high satisfaction of specialists with the PRSC feature of @hamilku.id, which is considered to contribute positively to the health services of pregnant women. It is suggested that additional information be added to the nearest health facility from the patient's home. The assessment of the Digital PRSC features in the hamilku.id used in each round is presented in Table 4.

Table 4. Assessment of digital PRSC features on @hamilku.id.

Question	Category	Respondent's response					
		Round 1			Round 2		
		N	%	CF%	N	%	CF%
To what extent do you think the digital pregnancy risk check or PRSC feature on the @hamilku.id platform is able to accurately identify pregnancy risks?	Very inaccurate	-	-	-	-	-	-
	Inaccurate	1	16.7	16.7	-	-	-
	Regular	-	-	-	-	-	-
	Accurate	1	6.7	33.3	1	16.7	16.7
	Very accurate	4	66.7	100	5	83.3	100
In your opinion, is the information provided by the digital pregnancy risk check or PRSC feature on the @hamilku.id digital platform complete enough to detect pregnancy risks?	Very incomplete	-	-	-	-	-	-
	Incomplete	1	16.7	16.7	-	-	-
	Regular	-	-	-	-	-	-
	Complete	-	-	-	-	-	-
	Very complete	5	83.3	100	6	100	100
To what extent would you rate the language and medical terminology used in the pregnancy risk check feature as easy for pregnant women to understand?	Not very easy	-	-	-	-	-	-
	Not easy	-	-	-	-	-	-
	Regular	-	-	-	-	-	-
	Easy	1	16.7	16.7	1	16.7	16.7
	Very easy	5	83.3	100	5	83.3	100
According to your assessment, to what extent do the images or animations used in the digital pregnancy risk check or PRSC feature help in explaining pregnancy risks to pregnant women?	Not very helpful	-	-	-	-	-	-
	Not helpful	-	-	-	-	-	-
	Regular	1	16.7	16.7	-	-	-
	Helpful	3	50.0	66.7	3	50	50
	Very helpful	2	33.3	100.0	3	50	100
Based on your experience and knowledge, how effective is the digital pregnancy risk check or PRSC feature on the @hamilku.id digital platform in improving the quality of health services for pregnant women?	Very ineffective	-	-	-	-	-	-
	Ineffective	-	-	-	-	-	-
	Regular	-	-	-	-	-	-
	Effective	2	33.3	33.3	1	16.7	16.7
	Very effective	4	60	100	5	83.3	100
Do you feel that the digital platform @hamilku.id and the digital pregnancy risk check or PRSC feature have met the security and privacy standards of patient medical data?	Very much not up to standard	-	-	-	-	-	-
	Does not meet the standard	-	-	-	-	-	-
	Regular	2	33.3	33.3	-	-	-
	Meets the standard	2	33.3	66.7	1	16.7	16.7
	Highly compliant	2	33.3	100	5	83.3	100
Do you think there are certain aspects of the digital pregnancy risk check or PRSC feature that need to be improved or added to increase accuracy and efficiency in detecting pregnancy risks? If yes, please explain	Strongly need to improve	-	-	-	-	-	-
	Need to improve	4	66.7	66.7	1	16.7	16.7
	Regular	-	-	-	-	-	-
	No need for improvement	-	-	-	-	-	-
	Absolutely no need to improve	2	33.3	100	5	83.3	100

Usability testing is defined as the ability of a product to be used by specific users to achieve specific goals with effectiveness, efficiency, and satisfaction in a defined context [14]. The usability of a mobile

app can be measured by the completeness and success of users completing specific tasks that focus on its main features. Conversely, systems with poor usability can result in low goal achievement efficiency or lack of technology for use [15]. In this study, usability testing was conducted on pregnant female respondents of the PRSC @hamilku.id feature, which is a website-based application developed for pregnant women. The method used was to collect comprehensive data through an online survey of pregnant women, followed by interviews showing the maximum effort to understand the experiences of users from various backgrounds. The usability testing results revealed variations in respondents' responses to questions related to the accessibility and use of platform features. This approach provided a more complete picture of the level of user comfort and satisfaction. Another important finding was the effective use of images or animations, and the majority of respondents responded positively to the use of images and animations in the PRSC feature on @hamilku.id. These findings indicate that visual elements can facilitate the understanding and enrichment of the @hamilku.id user experience.

Although all survey respondents were contacted for interviews, only eight agreed to participate. This could lead to potential bias, as those who were willing to participate may have had different experiences or views than those who refused [16], [17], [18]. Similar studies have evaluated the use of the Poedji Rochjati scorecard in pregnant women. Research conducted by Ismayanty et al. on the application of early detection of pregnancy risk (DDILAN) has shown that this approach has a significant effect on increasing the knowledge and attitudes of pregnant women regarding pregnancy risk [19]. However, in this application, there is no usability testing method or other method for modifying or innovating the PRSC to increase its suitability for pregnant women before conducting research on pregnant women's knowledge of the PRSC in the form of digital applications.

An overview of the advantages of the PRSC @hamilku.id feature is obtained from the results of this study. The advantages of the digital features of the PRSC are reflected in the high level of user engagement revealed in this study. A positive response to the PRSC feature indicates that users are actively engaged in understanding their pregnancy risks, reflecting pregnant women's sense of responsibility and awareness of their health and that of their fetuses. Furthermore, this study validated the effectiveness of pregnancy risk visualization strategies through the use of images and animations, in line with the findings in the literature that highlight the benefits of visual approaches in clarifying pregnancy risks, especially for individuals with diverse health literacy [20], [21], [22]. In this context, another study evaluated the contribution of images to health communication, focusing on attention, comprehension, recall, and adherence.

The results showed that images closely associated with text were able to significantly improve attention and recall of health information compared with text alone [23], [24]. The use of images was also found to be effective at improving comprehension, especially when depicting relationships between ideas or spatial representations [25]. In addition, the role of images in influencing adherence to health instructions has been highlighted, with emotional responses to images playing a key role in determining their impact on intended behavior [26], [27]. The benefits are not only general but also more significant for patients with low literacy skills, who can be empowered by verbal instructions plus pictures or pictures together with very simple captions [28]. This study has strong practical implications, as it includes strategies for incorporating images to support key points, minimize distracting details, and involve the audience in image design. In addition, encouraging the active role of healthcare professionals in the planning and evaluation of their effects is important [23].

Most respondents reported feeling that the PRSC feature of @hamilku.id provides relevant and complete information. These findings suggest that digital platforms can serve as a reliable source of information to help pregnant women understand their pregnancy conditions. The majority of respondents expressed trust and confidence in the information provided by the PRSC. This trust is important in motivating pregnant women to take appropriate action according to their pregnancy risk status, such as low-risk pregnancy (LRP), high-risk pregnancy (HRP), or very high-risk pregnancy (VHRP) [6], [29], [30]. However, some participants experienced difficulties in the registration process. Improvements in the registration interface could increase the affordability of @hamilku.id, ensuring that all pregnant women can easily access and use the PRSC feature. Some respondents expressed uncertainty regarding the next steps after learning about the risk status of their pregnancy. There is a need to provide additional information on the next actions or steps that pregnant women should take after learning that they have low pregnancy risk. This approach can strengthen the platform's ability to provide health guidance during pregnancy [18]. Based on feedback from respondents, the need for advanced risk management features could be a development direction. This may require integration with other features or modules that can help pregnant women manage their pregnancy risks more effectively.

3.4. First Round of Delphi Method Evaluation

The first round of Delphi research involved six obstetricians and gynecologists as respondents. In this phase, research was conducted to evaluate the digital features of the Poedji Rochjati scorecard (PRSC) on the @hamilku.id digital platform. According to the characteristics of the respondents in the first round, the majority of the research participants were older than 35 years, had graduated as specialists for more than 2-3 years, and had work experience as specialists within the same period. In terms of geography, various regions participated, with the majority of respondents coming from outside of Surabaya and Sidoarjo. These characteristics provide an overview of the diversity and representativeness of the respondents included in the Delphi survey. The questions in the assessment of digital PRSC features in the first round involved evaluating the accuracy of the features, completeness of information provided, ease of understanding medical language, assistance from images or animations, effectiveness in improving the quality of health services, and the security and privacy of medical data.

The results of the analysis showed that the digital features of the PRSC on @hamilku.id were generally positively assessed by the respondents. The majority of respondents considered this feature to be accurate, to provide complete information, to be easy for pregnant women to understand, and to be effective at improving the quality of health services. Although some respondents stated that there were aspects that needed to be improved or added, the overall evaluation results provided a positive view of the contribution of the digital PRSC feature in supporting pregnant women's health services. The first round of analysis became the basis for the feature refinement and further development of the @hamilku.id digital platform. The conclusions from the first round provide a foundation for directing focus to certain aspects that need to be improved to meet user needs and expectations.

3.5. Second Round of Delphi Method Evaluation

After the panel of experts answered the online survey in the second round, the researchers presented a summary of their answers. To reach a consensus, it is important to identify the percentage of agreement that will be recognized. There are no fixed rules for setting these percentages in the Delphi test. Consensus tends to occur at high percentages, such as 100% (Miller, 2006). The second round of the study marked a change in the respondent group with the participation of obstetricians and gynecologists who were different from the first round. The difference in respondents between the first and second rounds provides a new perspective on the use of the digital Poedji Rochjati scorecard (PRSC) after feature improvements. Although this can lead to differences in viewpoints, the change in respondents also opens up opportunities to obtain more comprehensive insights from a variety of health experts. This variety of views can enrich the research results and produce more inclusive recommendations. According to the results of the feature assessment in the second round, 80% and 100% of the respondents were assessed. The input provided by the second round of respondents related to the improvement and addition of features added a new dimension to the development of digital PRSCs. Despite the differences among respondents, the feedback results still provide valuable guidance for developers to improve their overall features, illustrating the diversity of needs and expectations from various perspectives.

The evaluation of progress and changes in the second round remained relevant even for a different group of respondents. A serious response to feedback from medical practitioners indicates a commitment to respond to changes and ensure that digital PRSC features remain relevant in the face of evolving dynamics in maternal health. In the context of data security and privacy, additional assessments in the second round emphasized the importance of adhering to high security standards. However, with respect to different respondents, the focus on this aspect was consistent in giving serious attention to the issue of patient medical data security. Overall, the change in respondents in the second round provided a valuable new dimension for the development of the digital PRSC feature. Despite the differences in viewpoints, this inclusive approach increased the diversity of views and enriched the analysis of features. The conclusions of the second round can serve as a comprehensive guide for the ongoing development of @hamilku.id, ensuring that the digital PRSC remains relevant and useful in maternal healthcare.

3.6. Research Findings and Novelty

This study is novel because it differs from previous studies that examined the application of PRSC in digital form in adopting the original version without innovating content and limited the sample to respondents of PYR graduates and midwives. The innovation made is novel because it translates the original version of the PRSC content by making several innovations. (1) In the PRSC study, two groups of respondents, pregnant women, obstetricians and gynecologists, tested the original version of the PRSC content. (2) Risk factors in digital PRSC include the use of language that is easy for patients to understand and the use of animations that facilitate understanding. (3) Features are developed in a digital platform or

website-based application that can be accessed using cellphones and laptops. (4) This research used a mixed method, namely, the visibility testing method for pregnant women and the Delphi method for obstetrician and gynecologist respondents. The results of this study provide evidence that the digital application @hamilku.id has been successful at providing understanding to participants, especially when assessing pregnancy risks.

4. Conclusion

The use of the @hamilku.id application provides a new perspective for improving pregnancy services, especially for pregnant women. The @hamilku.id application provides information related to the Poedji Rochjati Score Card (PRSC), which evaluates the risk of pregnancy for each pregnant woman. This study concluded that digital pregnancy risk checks or PRSC features on the @hamilku.id platform were generally positively rated by respondents in terms of accuracy, completeness of information, clarity of medical language, use of images or animations, effectiveness in service, and data security and privacy. However, there is still room for improvement in the enhancement of these features. The second round showed an increase in the quality and relevance of digital PRSCs with a greater diversity of respondents, which can enrich the results of future research and development on digital PRSC features. Future research is needed on the differences in knowledge, attitudes, and practices of @hamilku.id users and nonusers related to the incidence of pregnancy disorders.

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