



EFFECTIVENESS OF PREGNANCY EDUCATION APPLICATION WITH MENTAL HEALTH APPROACH (PEA-MH) ON PREGNANT WOMEN

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ABSTRACT

Maternal mental health is a crucial determinant that influences the quality of pregnancy, childbirth, and child development. Nevertheless, many pregnant women remain vulnerable to anxiety, stress, and depression due to limited access to adequate information and health services. This study aims to evaluate the effectiveness of the Pregnancy Education Application with Mental Health Approach (PEA-MH) as a digital educational medium to support maternal mental health. A descriptive qualitative design with quantitative evaluation was employed, involving 25 pregnant women selected through purposive sampling in Tanjung Morawa District, North Sumatra. Data were collected through initial observations, a digital service effectiveness questionnaire, and semi-structured interviews. The collected data were analyzed using thematic analysis for qualitative findings and descriptive statistical analysis for quantitative data. The results indicated that PEA-MH was effective in increasing knowledge, reducing anxiety, and strengthening maternal readiness for childbirth, although challenges remained, particularly regarding limited interactive features and unstable internet connectivity. In conclusion, PEA-MH demonstrates potential as a digital health innovation to support maternal health services, with further recommendations directed toward enhancing interactivity, ensuring evidence-based content, and strengthening digital infrastructure for sustainable implementation.

Keywords: digital health; maternal mental health; PEA-MH; platform effectiveness; pregnancy

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INTRODUCTION

Mental health is fundamental aspects of health in a way whole and have contribution important to quality life individuals, including Mother pregnant. Pregnancy period is period complex transition, characterized with change significant physical, hormonal, and psychological changes. This make Mother pregnant more prone to experience disturbance psychological like anxiety, stress, and depression. Disorder mental health in mothers pregnant No only impact on conditions emotional and psychological mother, but also has implications direct to health fetus, quality childbirth, as well as connection mother and child after birth. Various study show that maternal mental health pregnant play a role in determine readiness Mother face childbirth, ability breastfeeding, as well as quality pattern care provided to children. With thus, maintaining mental health during pregnancy No just individual issue, but rather become part important from effort increase degrees health public in a way wide.

Globally, disruption mental health in mothers pregnant has become attention Serious Because its multidimensional impact, both to mother, fetus, and public in a way extensive. A meta-analysis on 102 studies involving 221,974 participants from 34 countries reported prevalence anxiety in mothers pregnant reached 15.2 % (McGrath, 2023). This figure confirm that problem mental health during pregnancy is not phenomena that are local, but rather issue global health needs attention Serious from the world of medicine and health

societyConditions This often exacerbated by factors socio-economic, cultural, and limitations access service mental health in various developing countries, including Indonesia.

In Indonesia itself, the burden maternal mental health pregnant show enough numbers high. The 2019 Global Burden of Disease (GBD) data reported prevalence disturbance mental health in women reaching 2.9% of the total population, or about 5 million people — almost double compared to male (Dennis, 2017). His height prevalence This No only reflect vulnerability biological and psychological women, but also shows existence factor social and structural factors that worsen conditions, such as stigma against mental disorders, lack of support social, and limitations intervention based community

More far, the 2020 report from the Indonesian Ministry of Health shows that 43.3% of mothers pregnant experience disturbance mental health, in particular anxiety, and numbers the increase up to 48.7% during labor (GBD 2019 Mental Disorders Collaborators, 2022). This show existence trend improvement burden psychological along approaching the birth process, which can related with fear to complications, uncertainty of the birthing process, to concern will role new as mother. Condition this is very worrying Because disturbance mental health is proven relate close with various risk medica, including birth premature, baby heavy born low birth weight (LBW), up to disturbance grow flower in the period gold The First 1000 Days of Life (HPK) (Ministry of Health, 2020). Not only that, maternal mental health pregnancy also contributes to the quality bond emotional (bonding) between mother and child, and influential to success breastfeeding and patterns parenting beginning.

Although role maternal mental health pregnancy is very crucial, the results observation in Tanjung Morawa District show that Lots Mother pregnant Still face limitations access to information comprehensive and reliable about mental health during pregnancy. Most of the only depend on information from family or social media that has not been of course valid, so that potential cause anxiety excessive, stressful, even depression light until in progress. Meanwhile that, power health also faces limitations time and resources Power in give education deep related mental health in mothers pregnant.

As effort answer challenge said, has developed Pregnancy Education Application with Mental Health approach (PEA-MH), which is an educational media digitally designed For provide valid information, easy accessible, and oriented towards maternal mental health pregnant. However, even though application This has available, required study more carry on For test its effectiveness in increase understanding, improving condition psychological, as well as support maternal mental health pregnant optimally. Therefore that, research This focus on analysis effectiveness of Pregnancy Education Application with Mental Health approach (PEA-MH) for mothers pregnant, with objective give proof empirical about benefit application This as intervention innovative in increase quality health mother and child since pregnancy.

METHOD

Research methods This use approach qualitative descriptive with support evaluation quantitative based questionnaire. This design chosen Because capable give in -depth overview about experience subjective Mother pregnant at a time evaluate effectiveness Pregnancy Education Application with Mental Health approach (PEA-MH) through measurable quantitative data. Through approach inductive, researcher can involved direct in the research process, observing phenomenon in a way natural, and compile conclusion based on facts empirical data found in the field. Population study is all over Mother pregnant women residing in Tanjung Morawa District, Deli Serdang Regency, North Sumatra. The research

sample determined with technique purposive sampling based on criteria certain, namely Mother pregnant in the second and third trimester, have ability using a smartphone, willing use PEA-MH application during period research, as well as agree For participate through informed consent. From the results selection, as many as 25 mothers pregnant fulfil criteria inclusion and inclusion in study.

Instrument study in the form of questionnaire effectiveness adapted digital services from Pedrosa et al. (2021). Questionnaire This use Four- Point Likert Scale, starting from “very much not agree” to “strongly agree” with dimensions measurement covers convenience usage, quality information, usefulness, satisfaction users, as well as impact to condition psychological validity instrument has tested through expert judgment, whereas its reliability checked with use Cronbach's Alpha coefficient for ensure internal consistency. Data collection was carried out in a way gradually. First, the researcher do observation beginning For get description general about condition maternal mental health pregnant on site research. Next, the participants given access For use PEA-MH application regularly according to need they. After period use application ended, participants requested fill in questionnaire effectiveness and some of them follow semi - structured interviews designed For dig experience subjective during use application. Quantitative data obtained from questionnaire analyzed with statistics descriptive For see distribution evaluation effectiveness application.

RESULT

This study involved 25 pregnant women who met the inclusion criteria and used the Pregnancy Education Application with Mental Health Approach (PEA-MH) application according to the research guidelines. Data were obtained through initial observations, digital service effectiveness questionnaires, and semi-structured interviews. Respondents consisted of pregnant women in their second (56%) and third (44%) trimesters. Most respondents were aged 21–35 years (72%), had a high school education (52%), and the majority used Android-based smartphones (84%). These characteristics indicate that the majority of respondents were in the healthy reproductive age group and possessed basic skills in using digital technology. The following is a display of the Platform y which has been validated by experts.

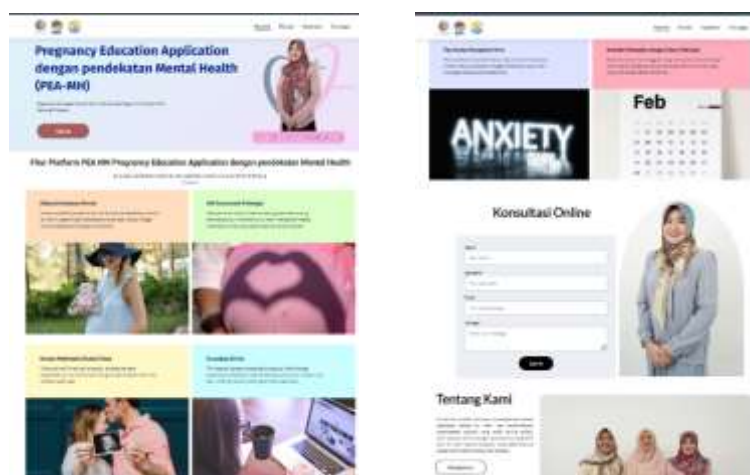


Figure 1. PEA MH Platform Display (www.paemhealth.id)

Initial observations were conducted to obtain an overview of the mental health of pregnant women before using the PEA-MH application. The observations focused on information access, family support, general psychological well-being, available health services, and the need for additional information.

Table 1.
Results of Initial Observations of Pregnant Women in Tanjung Morawa District (n=25)

Observed Aspects	Findings Observation	Percentage (%)
Access to information about mental health	Most of the respondents only depend on information from family / social media, not yet There is access structured from power health	64%
Support family	Majority respondents get support emotional from family, but Not yet specific to the aspect mental health.	72%
Condition psychological general	Pregnant mother often feel worried approaching childbirth, some show symptom stress light.	60%
Service access health	Antenatal services are available at the community health center, but education related mental health is still very limited.	68%
Need information addition	Respondents state the need information practical about relaxation, management stress, and preparation childbirth.	76%

The digital service effectiveness questionnaire was adapted from Pedrosa et al. (2021) with five main dimensions: ease of use, information quality, usefulness, user satisfaction, and psychological impact.

Table 2.
Assessment Results Effectiveness of PEA-MH by Pregnant Women (n=25)

Dimensions Effectiveness	Minimum Score	Maximum Score	Average (Mean)	Elementary School	Category
Convenience use	3	4	3.72	0.45	Very effective
Quality information	2	4	3.56	0.50	Effective
Usefulness	3	4	3.68	0.47	Very effective
Satisfaction users	2	4	3.44	0.51	Effective
Impact psychological	2	4	3.60	0.49	Effective
Effectiveness Score	2.6	4.0	3.60	0.48	Effective

Analysis results show that dimensions convenience use get score highest with an average of 3.72 (SD=0.45), indicating that PEA-MH application is very easy used by respondents. Dimensions quality information obtained an average of 3.56 (SD=0.50), which indicates that respondents evaluate content available information quite valid, accurate and relevant with need Mother pregnant. However, some respondents disclose the need addition feature consultation interactive with power health For enrich content education.

Dimensions usefulness occupy position second highest with an average of 3.68 (SD=0.47), which indicates that application give benefit real, good from side improvement knowledge and support psychological. This is consistent with statement respondents who feel more Ready facing the labor process after use application. Dimensions satisfaction users obtained an average of 3.44 (SD=0.51), which although is at in category effective, showing existence room For repairs. Some respondents mention constraint technical like need stable internet connection For access all over feature.

Dimensions lastly, namely impact psychological, showing an average of 3.60 (SD=0.49). This signify that PEA-MH application is capable of help reduce anxiety and increase trust self to mother pregnant. Respondent disclose that existence content related relaxation, management stress, and understanding about mental health is very helpful they in undergo pregnancy with more calm.

DISCUSSION

Research result show that effective PEA-MH application in support maternal mental health pregnant in Tanjung Morawa District. Dimensions with score highest is *convenience usage* (mean = 3.72), which confirms that respondents No experience obstacle means in access feature application. Findings This in line with studies Divanda & Oktariyanda (2025) who emphasize that *user-friendliness* is prerequisite main success adoption application digital health in services public, because can increase efficiency administration and expanding access service. With thus, success PEA-MH application in aspect This show that design interface and affordability technology become factor key in reception user.

Dimensions *benefits* also obtained score high (mean = 3.68), which shows that application truly give mark plus for users, especially in increase knowledge and readiness face childbirth. This is strengthen findings of Arifah et al. (2024), which highlighted that digitalization health capable increase literacy health at a time give support psychological through education based application. With Thus, the benefits of PEA-MH are not only nature informative but also has an impact practical to mother's mental readiness pregnant.

In dimension *quality information* (mean = 3.56), respondents evaluate content Enough relevant However Still need development, especially in the aspect consultation interactive with power health. Limitations This reflect challenge similar found in implementation of telehealth for elderly, where even though application can increase quality life, connectedness with power health still crucial For ensure support comprehensive (Efendi & Sukihananto, 2024). This means that the success of application digital health no only determined by availability information, but also by two- way interactions that can increase validity and reliability user. Temporary that, *satisfaction users* (mean = 3.44) are in category effective, but Still show room repairs, especially related need stable internet connection. Challenges similar also found in telemedicine studies at home sick, which highlights that obstacle technical can reduce efficiency service although benefit digitalization is very large (Wildan & Hariyati, 2024). With thus, infrastructure technology still become factor determinant sustainability digital services, including PEA-MH.

Lastly, *the impact psychological* (mean = 3.60), indicating that application succeed reduce anxiety and increase trust self Mother pregnant. This is consistent with Agustina et al.'s (2023) findings that telemedicine during the pandemic effective as a consultation medium health For reduce anxiety society. In fact, in a more general context area, use technology proven digital health capable give support psychological significant in the group vulnerable, good Mother pregnant and elderly (Efendi & Sukihananto, 2024). In a way overall, results study This show that PEA-MH has fulfill five dimensions effectiveness digital services as put forward by Pedrosa et al. (2020), namely *convenience usage*, *quality information*, *usefulness*, *satisfaction*, and *impact psychological*. However, success application This still face challenge similar with various implementation *e-health* in Indonesia, namely limitations access infrastructure and needs strengthening feature interactive (Suhermawan & Oktariyanda, 2025). With Thus, the development strategy application to front need directed at improving *user engagement*, provision feature online consultation with power health, as well as repair infrastructure network in the area.

CONCLUSION

Pregnancy Education Application with Mental Health approach (PEA-MH) is effective support maternal mental health pregnant. Application rated very easy used and useful in increase knowledge as well as readiness face childbirth. In addition, the aspect quality information satisfaction users, and impact psychological is also in the category effective,

although Still there is constraint in the form of limitations feature interactive with power health and needs stable internet connection. Findings This in line with various studies regarding telehealth and e-health that shows benefit digitalization health in expand access services and provide support psychological for group vulnerable. In the future, the development of PEA-MH needs to be focused on improving feature online consultation, repair content education, as well as support digital infrastructure, so that application can become solution sustainable For strengthen service maternal health.

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