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Comparison of the use mobile health Edinburg postnatal depression scale (EPDS) and conventional questionnaire on early detection of incidents postpartum blues

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Abstract
Background: Mothers postpartum undergo physical and psychological adaptation changes. One of the psychological disorders is postpartum blues by 80%, and 10% progress to depression postpartum. The reason is that mothers postpartum do not want to tell stories and are ashamed to reveal their psychological conditions and there is a bad stigma in society related to psychological disorders in mothers postpartum. With the development of conventional questionnaire application technology is used mobile health to integrate care services for mothers postpartum in examining maternal psychological well-being.
Objective: Obtain a comparative overview of the use m-Health EPDS and conventional questionnaires as a means of early detection of incidents postpartum blues.
Method: Systematic literature review looks for previous research studies on electronic data bases (MEDLINE, ABI/Inform Complete, Academic Search Complete, ACM Digital Library, Elsevier (SCOPUS), Emerald, IEEE Explore, and Science Direct) with research design criteria Randomized Controlled Trial, cross sectional design, and quasi experimental design which was published in 2016-2020 and has been published internationally indexed by Scopus Q1, Q2, Q3 and Q4. Data analysis used the PRISMA protocol with a population of 76 and a sample of 25 articles.
Results: Analysis of data on the use of mobile health EPDS and conventional questionnaires in detecting postpartum blues is more effective in using mobile health. This is evidenced by the value of the effect size which is more on mobile health EPDS and compared to conventional questionnaires. However, mobile health has a weakness, namely it does not have direct empathy for clients and also requires system maintenance. Data from 25 articles from international journals ranked Q1 12 articles, Q2 7 articles, Q3 3 articles, Q4 2 articles with a discussion of the use of mobile health and conventional questionnaires.
Conclusion: Mobile health EPDS has more ability to detect early postpartum blues than conventional questionnaires.

Keywords: Mobile health, edinburg postnatal depression scale (EPDS), conventional questionnaires, postpartum blues

Introduction

The puerperium is the period it takes the body to return to its pre-pregnancy size and function that begins after the placenta is born and ends 6 weeks later. There are three periods of physiological adaptation during the puerperium, namely the immediate puerperium (within the first 24 hours of the puerperium), early puerperium (>24 hours - 7 days of the puerperium) and remote puerperium (>7 days - the first 6 weeks of the puerperium). In the period, immediate puerperium contractions begin to occur uterine to stop bleeding at the placenta implantation contractions Uterine are caused by hormone oxytocin and prostaglandins. The period early puerperium begins to recover the genital tract and the period remote puerperium begins to restore the entire body system [1].

Postpartum mothers experience three periods of psychological adaptation during the postpartum period, namely taking in (the first 3 days of the puerperium), taking hold (>3 - 10 days of the first postpartum period), and letting go (>10 on the first day of the puerperium). In the period of taking in, there is a decrease in the levels of the hormones estrogen and progesterone which affect the mood of the post-partum mother and fatigue during the labor process, thus making the mother passive and dependent on others. The period taking hold mothers began to independently take care of herself and her baby and the period letting go mother's was able to accept her new role as a parent [2].

Postpartum mothers can experience problems if unable to adapt physiologically or psychologically. If the mother's body is postpartum unable to adapt, there will be several physical health problems such as uterine sub-involution and bleeding [3]. Postpartum mothers who cannot adapt to their new role as parents or there is no family support, they may experience psychological (mental) disorders, namely postpartum blues, depression postpartum, and even psychosis postpartum [4].

Psychological disorders in postpartum mothers three kinds are differentiated according to the severity. The first psychological disorders for postpartum mothers are postpartum blues with symptoms of sadness and even crying without cause, sleep disturbances, restlessness, inability to concentrate, headaches, and unwillingness to pay attention to their babies. Postpartum blues can occur from day 2 of the puerperium, peaking on day 6 and ending on day 7. Second depression postpartum with symptoms of decreased libido, decreased appetite, lack of enthusiasm for activity (anhedonia), and a feeling of inability to care for the baby which can occur until the fourth week of the puerperium. The third is psychosis postpartum with symptoms of insomnia, delusions, hallucinations, and thinking disorders that can occur from the 3rd day of the puerperium and even up to one year [3].

Postpartum mothers in the world who experience postpartum blues by 80%, 10% of postpartum mothers experience depression postpartum, and 1 in 1,000 postpartum mothers experiencing psychosis postpartum. Causes of mental disorders in postpartum mothers not known with certainty, but allegedly due to a sharp decrease in levels of the hormone's estrogen, progesterone, and cortisol after delivery. Unwanted pregnancies, economic limitations, family demands for the sex of the baby, support from husbands and families can also cause psychological disorders for postpartum mothers [4].

Prevalence of psychological disorders postpartum mothers in Indonesia are not certain because there is no institution that has conducted a survey of these cases. However, there are several studies regarding the incidence of psychological disorders in postpartum mothers in several districts or cities in Indonesia, which was assessed using the Edinburgh Postnatal Depression Scale (EPDS) with the largest prevalence, namely the postpartum blues. Research in Blora showed that 48.6% of postpartum mothers experienced postpartum blues [5]. Another study in Jakarta, 66.7% of postpartum mothers experienced postpartum blues [6]. In Jember Regency, 51.1% of postpartum mothers experienced postpartum blues [7]. In Jakarta and Banten, 26.15% of postpartum mothers experience depression postpartum [8]. In Yogyakarta, 35.2% of postpartum mothers experience depression postpartum [9]. Postpartum blues has a 10% risk of progressing to depression and even psychosis postpartum if left untreated [10].

Psychological disorders in postpartum mothers very dangerous to the safety of himself and others. Postpartum mother 5% who experienced psychological problems committed suicide and 49% committed murder of their own baby. Psychological disorders in postpartum mothers can also interfere with the relationship between mother and baby and family, interfere with physical health, interfere with the development of IQ and the baby's psychological mothers who experience depression or psychosis postpartum have a 20% risk of experiencing it again in the next pregnancy [4].

Screening for psychological disorder in postpartum mothers need to be done so that prevention efforts can be done earlier. Government Regulation of the Republic of Indonesia Number 61 of 2014 article 17 explains that postpartum health services include screening or early detection of physical and psychological health disorders, as well as prevention by health workers according to their competence and authority [11]. Regulation of the Minister of Health Number 97 of 2014 regulates physical health examinations for postpartum mothers such as examination of vital signs, uterine fundal height, lochia, breasts, while psychological health checks have not been specifically regulated in regulations and legislation [12]. There is no standard instrument for screening psychological disorders of mothers postpartum.

The Edinburgh Postnatal Depression Scale (EPDS) is a valid instrument for screening the most frequently used in various studies with a sensitivity of 85%, specificity of 77%, positive predictive value of 83%, and a coefficient of 0.87.[13] EPDS began to be developed in 1987 in the United Kingdom by Cox, Holden, and Sagovsky which contains 10 questions about the mood of postpartum mothers for 7 days [13]. The reliability of the EPDS in the English version has been tested on 118 respondents, the result is that the EPDS has a high retest reliability with an Interclass Correlation Coefficient (ICC) value of 0.92. The [14]. EPDS in the Indonesian version has also been tested with the validity of 87.5% and the reliability of 0.76% [15].

Research on the prevalence and risk factors for depression postpartum in the city of Denpasar using the EPDS questionnaire in the conventional form showed that the prevalence of postpartum depression in the city of Denpasar using the EPDS scoring contained 9 mothers (20.5%) and 4 mothers (9.1%) requiring treatment. extra. This prevalence rate is almost the same as the prevalence of postpartum depression in Bangladesh, which is 22% [16]. Current technological advances have made the EPDS questionnaire innovation in conventional form made in the form of a website by utilizing the internet network.

Web-based EPDS has been created by Mufidati, *et al*. In 2018 as an innovative effort to detect symptoms of depression postpartum efficiently using technology. The web-based EPDS has been tested on 44 postpartum mothers in the Semarang city. The effectiveness of web-based EPDS screening was assessed using the Technology Acceptance Model (TAM) with an average value of ease of use of 4.32, meaning that all respondents in the study agreed that web-based EPDS was very easy to use. The average value of web-based EPDS benefits is 4.83, which means that all respondents in the study received very good benefits from web-based EPDS [17]. However, currently the web-based EPDS cannot be accessed because the creator did not maintain the system.

The digital marketing research institute Emarkete explained that the number of active Android users in Indonesia in 2018 there were 100 million people, so Indonesia is in 4th place with active Android users most in the world [18]. This is a very big opportunity if you want to develop an instrument by utilizing the sophistication of android.

The researcher intends to review the comparison of the use of m-Health Android-based EPDS on smartphones and conventional questionnaires using paper. This is because some mothers postpartum do not want to say that they suffer from disorders postpartum, because of the bad stigma in society related to psychological disorders in mothers postpartum [19]. There are times when some mothers have concerns if they are judged to be bad mothers, mothers are embarrassed to express their feelings, or think their feelings or concerns are not something important to convey to other people or people around them. Therefore, sometimes painful emotions are kept by a mother alone [20]. In addition, midwives or medical personnel on duty are less sensitive in dealing with the condition of the mother, which worsens the condition from postpartum blues to depression postpartum. For this reason, the easy access to mobile health makes mothers not need to have direct contact with midwives and other medical personnel to express their feelings after childbirth. The advantages of m-Health this android-based EPDS are also expected to be easier to operate, efficient because they do not require computers, laptops, even paper, and can be reached by the wider community in detecting postpartum blues when compared to conventional questionnaires.

Based on the explanation above, the researcher is interested in conducting a literature study with the title "Comparison of the use mobile health EPDS and conventional questionnaires on early detection of event postpartum blues (A Systematic Literature Review)".

Theoretical Framework

1. Systematic Literature Review (SLR)

- This research uses the method Systematic Literature Reviews (SLR) which is a systematic, clear, comprehensive literature study by identifying, evaluating and collecting existing research data. The purpose of this method is to help researchers better understand the background of the research that is the subject of the topic being sought and understand why and how the results of the research can be used as a reference for new research to be conducted.
- The objective of this SLR study was to compare the use of mobile health EPDS and conventional questionnaires to early detection of postpartum blues with literature studies. In addition, another objective is to see the use or development of m-Health EPDS for early detection of postpartum blues through several existing research sources.

Methods

1. Literature search

Data or literature collection was carried out manually and through electronic media, namely in the form of research results regarding the use of the mobile health Edinburg Postnatal Depression Scale (EPDS) and conventional questionnaires on early detection of Incidents postpartum blues. Literature research through electronic media is carried out online. The keywords used are Mobile Health, Edinburgh Postnatal Depression Scale (EPDS), Early Detection of event Postpartum Blues.

2. Selection of Literature

Determination of keywords in the search is based on predetermined criteria, namely health journals with the keywords used are Mobile Health, Edinburgh Postnatal Depression Scale (EPDS), Early Detection of Incidents Postpartum Blues and the journal publication year spanning from 2016-2020. Data is obtained from providers of international journal pages that can be accessed freely using the MEDLINE search engine, ABI / Inform Complete, Academic Search Complete, ACM Digital Library, Elsevier (SCOPUS), Emerald, IEEE Explore, and Science Direct.

3. Inclusion and Exclusion

1.1 Criteria Inclusion Criteria

a. International journals that discuss the literature examine the relationship or influence of two or more variables.
b. Indexed by Scopus with ratings of Q1, Q2, Q3 and Q4.
c. This research is a quantitative research.
d. The research subjects were mothers postpartum.
e. The literature is researched / published in the 2016-2020 period.
f. Journal in full text form (can be accessed in full)
g. Available URL or DOI link.

1.2 Exclusion Criteria

a. International journals that do not discuss the literature examine the relationship or influence of two or more variables.
b. The research is not quantitative research.
c. The literature is researched / published in a vulnerable time less than 2016.
d. The constrained full text cannot be accessed

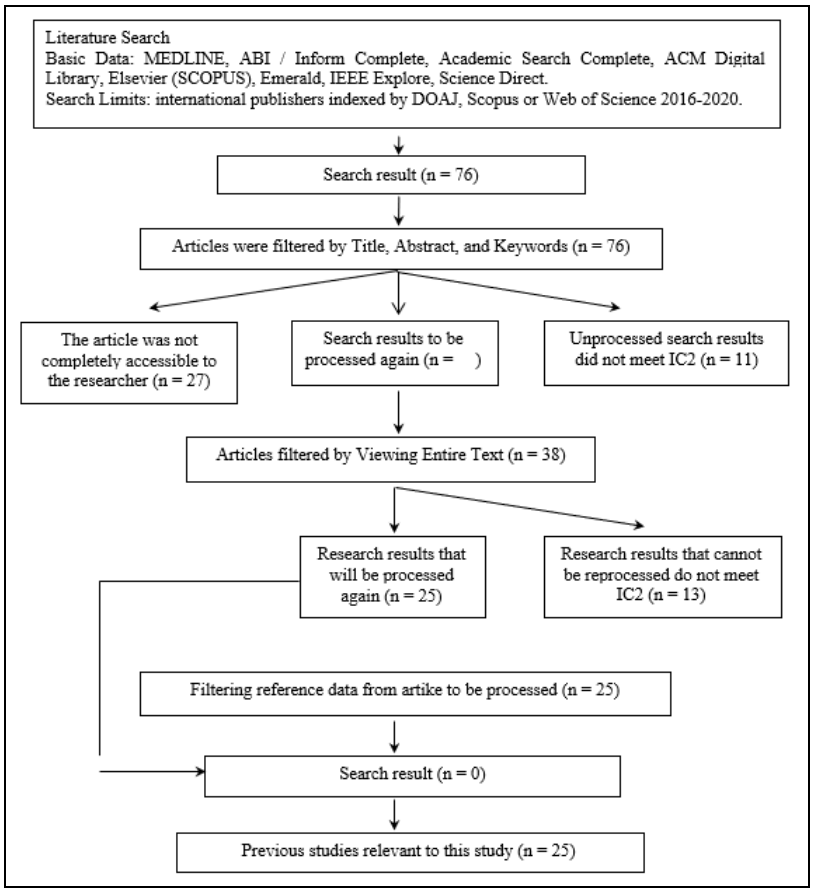

Fig 1: Flow chart of literature search interventions mobile health EPDS and conventional questionnaires for early detection of incidents postpartum blues

4. Data collection

Title: Comparison of the use of mobile health Edinburgh Postnatal Depression Scale (EPDS) and conventional questionnaires on early detection of incidents postpartum blues

Article Type: Research article, Systematic review

Publication Year: 2016 - 2020

Keywords: Mobile Health, Edinburg Postnatal Depression Scale (EPDS), Postpartum blues

Research Methods: Randomized controlled trial, cross sectional design, and quasi experimental design

Research Results

1. Search Process

Results The results search process displayed in table 1 are grouped by journal type to make it easier to see the type of data or journal types obtained through the search process.

Table 1: Grouping by journal

No	Type Journal	Total
1	*Medical Internet Research*,	3
2	JMIR M-health U-health,	1
3	AdvNurs,	1
4	*Advanced Nursing*,	1
5	*PLoS ONE*,	1
6	Psychological Medicine	1
7	*Physiology & behavior*,	1
8	*Healthcare*,	1
9	Family Medicine and Primary Care,	2
10	Mindfulness and Reflection,	1
11	Pak J Med Sci,	1
12	Behaviour Research and Therapy	1
13	BJPsych Advances	1
14	*Midwifery*	1
15	Clinical Nursing Research	1
16	Malaysian Journal of Medical Research,	1
17	Tropical Doctor,	1
18	Maternal and Child Health Journal,	1
19	*BMC Pregnancy and Childbirth*	1
20	Arch Womens Ment Health,	1
21	Elsavier: Psychiatry Research,	1
22	Obstetrics and Gynecology	1
	Total	25

2. Selection results of inclusion and exclusion criteria

Results of the search process will be selected based on the inclusion and exclusion criteria. This process obtained 25 journal study literature and then performed scanning data.

Discussion

The 25 literature of research studies that met the criteria for this systematic literature review, the results obtained were 13 studies using a randomized controlled trial, 3 studies using experimental design, 3 studies using cross sectional design, 3 studies cohort, and 3 studies using descriptive. Study results are grouped according to the determined variables, namely the use of the Edinburgh Postnatal Depression Scale (MHEPDS) mobile health and the use of the conventional Edinburgh Postnatal Depression Scale (EPDS) questionnaire.

The welfare of mothers postpartum in knowing psychological conditions is considered important. With the EPDS questionnaire, it is easier to filter maternal feelings during the period in postpartum order to get support in vulnerable periods [21]. The Edinburgh Postnatal Depression Scale (EPDS) is widely used in many countries to screen for psychological disorders in the perinatal period [22].

The EPDS questionnaire used generally uses conventional instruments, namely manuals in the form of paper which are distributed to respondents. The use of this research tool is not stated in detail but from the results of previous studies to detect the incidence of postpartum blues using the EPDS questionnaire and other psychological disorders detection instruments comparison. However, the use of this paper will not be effectively used in the era paperless current. It is necessary to use technology as a solution to reduce the use of conventional methods in the form of paper. In addition, this conventional method also allows officers to just share it and leave the client to fill out the questionnaire and tend not to be followed up [23]. mothers Postpartum also felt discomfort when waiting to provide answers to their feelings on the papers that were distributed. For that we need digital media. One example is the development of applications in smartphone line with the large number of users of this telecommunications device.

Smartphones are sophisticated cell phones that function as handheld computers capable of running software applications. The app is also capable of implementing behavior change interventions, which can improve the user's physical health [24]. applications are Smartphone more likely to assist in early detection than conventional treatments [25].

The application smartphone provides a platform for psychological well-being in pregnancy in the form of the Scale Edinburgh Postnatal Depression (EPDS) [26]. The mobile application provides an opportunity to take advantage of m-Health in the care of mothers and newborns. This includes the integration of home visit health into prenatal health services and newborns have shown positive results [27]. The application is Mobile Health highly recommended according to the times in the effectiveness of screening postpartum maternal psychological disorders [28].

The application m-Health EPDS offers exciting new opportunities for post screening mental health mother postpartum for user smartphone. This review has produced

25 recommendations for consideration in the development m-Health EPDS of future. However, several articles mentioned that the lack of access to m-Health is that mothers postpartum can change their answers so that the results are invalid and unknown to the officer.

In short, m-Health EPDS should aim to detect mental emotional health problems early using a variety of CBT-based techniques that are tailored to individual needs and delivered through simple interactive designs. Gamification structures and habit formation should be used to maximize engagement in application interventions. The app itself must be validated experimentally, and user data should be used for continuous improvement.

Development Mobile Health Application Many (MHAPP) currently available, there are several feature deficiencies that need to be optimized in terms of functionality [24]. It's s highly recommended that the developers of the m-Health EPDS review more frequently with this much literature. This review can help developers get started with this introductory process, but further reading is highly recommended. In addition, a multidisciplinary team of experts in usability engineering, programming, data collection and analysis, industrial and health sector applications, clinical psychological interventions, and other related fields is highly recommended.

Conclusion

Based on the findings of 25 studies that have been analyzed interventions Mobile health Edinburgh Postnatal Depression Scale (EPDS) is one of the interventions that can be applied in early detection of postpartum blues compared to conventional questionnaires. The use of mobile health EPDS for early detection of postpartum blues is using applications smartphone, digital media websites and also the use of short messages (SMS). The application of mobile health EPDS is more effective in terms of time, cost and client confidentiality when answering the EPDS questionnaire compared to conventional questionnaires.

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