

Development of M-Health Promotion in Postpartum Care

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Abstract: *Postpartum is a time of risk, most maternal and infant deaths in the world occurs in the first month. Education is aimed at improving health literacy so that quality postpartum care will optimize the health and well-being of mothers and babies. The aim of the study was to develop and test the validity of postpartum health promotion media in Semarang, Indonesia. We conducted research for four months in 2020 (May-August) in Semarang City, Central Java Province, Indonesia. Two sub-districts were selected: North Semarang and Genuk; for having the postpartum mother risk the largest. We use research and development methods which are divided into three phases; needs analysis, development and validity testing of promotional media. Needs analysis was carried out by means of focus group discussions, semi-structured interviews involving eight material experts (midwives) and 10 users (third trimester pregnant women couples). Development based on a needs analysis was carried out by editing the media using Adobe Photoshop software. Testing the validity of the material involved eight material experts and 36 thematic data analysis and descriptive statistics. The results of the thematic analysis reveal four main themes, first: the limited movement of the midwife, mother and husband, second: postpartum knowledge as most of the respondents have less knowledge in postpartum care. Third, traditional beliefs and practices as midwives still find mothers who believe in myths and practice traditional postpartum, and fourth, m-health for postpartum care is not much known. This study produces a postpartum care promotion model using m-health that is acceptable and feasible to implement for improving postpartum care literacy.*

Keywords: *m-health, health promotion, postpartum care.*

1. INTRODUCTION

The maternal mortality rate in Indonesia (350 / 100,000 live births) is still not in accordance with the target (70 / 100,000 live births) (Osborn *et al.*, 2015). Government policies to reduce maternal mortality, such as safe motherhood initiatives, the movement for motherly love, making pregnancies safer, books on maternal and child health, and expanding maternal and neonatal survival, in fact, it has not been able to reduce maternal mortality (Ministry of Health of the Republic of Indonesia, 2016).

Semarang City is the capital city of Central Java province. In the last four years, the maternal mortality rate in Semarang City has always been in the top ten among other districts / cities in Central Java (Semarang City Health Office, 2019; Central Java Provincial Health Office, 2019). Most maternal deaths occurred in postpartum (72.5%) with the highest postpartum maternal mortality on the fourth day-28 (42.9%), six hours-three days (38.1%)

and the 29-42th day after delivery (12%) (Semarang City Health Office, 2019). Several policies of the Semarang City Health Office (2016-2019) have been implemented: the movement of healthy mothers and children at the community level, professional organizations, health centers and hospitals. Although the highest mortality is postpartum, there is no specific policy regarding postpartum.

Postpartum care education will increase literacy in improving postpartum care so that the health of mothers and babies is physically and psychologically maintained (Fathi-Ashtiani *et al.*, 2015; Probandari *et al.*, 2017)

The Coronavirus-19 pandemic has a significant impact on changing the way health education is carried out, by reducing physical interactions, to reduce the spread rate. The use of information technology with online education is the right solution for this goal (Seymour-Walsh *et al.*, 2020; Chelongar and Ajami, 2020). Based on a circular from the Coronavirus-19 Task Force for the acceleration of handling of the Coronavirus-19 concerning the practical guideline protocol for maternal and newborn health services during the Coronavirus-19 pandemic, the implementation of consultation and education during postpartum pregnancy uses social media applications. This study aims to develop and test postpartum health promotion media in Semarang, Indonesia.

2. SUBJECTS AND METHODS

The Study consisted of three phases

The first phase of needs analysis: we conducted focus groups with eight subject matter experts and semi-structured interviews with five pairs of users: mother and husband. We conducted a focus group discussion video conference using *Google meet* for approximately 60 minutes, which was recorded. We explore questions about health problems and postpartum care during the coronavirus-19 pandemic in the city of Semarang, Indonesia. The semi-structured interview used recorded phone calls for approximately 30 minutes, to explore pregnancy and postpartum care habits and preferences for the media.

Open qualitative analysis uses an inductive process, which is a test based on collected text data to conclude in general, thus forming the main theme (Attride-Stirling, 2001). Data processing uses the Miles and Hubberman model analysis with the stages: data reduction, data presentation and drawing conclusions and verification (Miles *et al.*, 2014).

The second phase of media development: based on the results of a qualitative study of focus group discussions and semi-structured interviews we reviewed based on the themes found. Literature studies are also used to identify standards that have the potential to be used in media development. We use Adobe Photoshop software to edit health promotion media. Qualitative initial field testing on material experts (n = 8) and users (n = 10) using interviews to determine the feasibility and suitability that has been developed (Jadmika *et al.*, 2019; Borg, WR, & Gall, 2003). We have noted down some input and suggestions as materials for making improvements.

The third phase of media validity testing: aims to determine the suitability and validity of the use of health promotion media. We conducted quantitative testing with questions via *Google form* after previously sending media via *Whats App*. The test involved material experts (n = 8) using the alpha test to measure the achievement of media quality standards based on aspects: material, interface, information and reliability. Testing on users uses a beta test on users (n = 36) to measure how good and useful the media is based on aspects: motivation, appearance, understanding and use of users with answer choices based on a Likert scale of one to four (Stephen M. Alessi, 2001; Wahono, 2020). The validity of the assessment of each aspect is based on the criteria: valid, fairly valid, less valid and invalid (Arikunto, 2009).

3. RESULTS

Needs analysis phase

Focus group discussion participants involve seven midwives from three Community Health Center and one maternal and child health staff member from the City Health Office. Five mothers (age 21-27 years) who were interviewed were pregnant women in the third trimester of pregnancy with their first and second children, along with their husbands (aged 27-31 years). Based on the results of the thematic analysis of focus group discussions and semi-structured interviews obtained four main themes which are presented in Table 1:

Table 1: Themes and Sub Themes in Needs Analysis

Sub Themes	Themes
Changes in pregnancy examination visits Examinations at the nearest health service Postponement of pregnancy examinations	Limited movement
Lack of postpartum care knowledge Lack of book socialization Maternal and Child Health Motivation know postpartum care	knowledge
Abstinence food and beverage Traditional practices risk	Trust and traditional practices
Helpful Passions against media Delivery time	M-health for health promotion

a. Limitation of motion

Question during focus group discussions and semi-structured interviews regarding the habits of examination visits during the third trimester and postpartum pregnancy resulted in three sub-themes, namely: changes in antenatal care visits, examination visits to the nearest health service and postponement of antenatal care.

Changes in antenatal care visits

Mothers and midwives feel that their movements are limited during the pandemic because of concerns about contracting the virus:

“Problems during a pandemic are very complex and affect visits restrictions . Before the pandemic, visits were freer: mothers went to the Community Health Center or we visited at home, but now both are limited. Mothers are afraid to go to the Community Health Center and we also have restrictions on home visits, so the intensity is greatly reduced ”- Ern, midwife,

Another participant explained:

“ During postpartum, mothers who want to visit the Community Health Center are mothers with special conditions, such as hypertension who must be frequently controlled blood pressure or mothers who gave birth by caesarean section. For this we usually also make home visits ”- Ang, midwife

Checks at the nearest health service.

Almost all couples choose to do something safe for antenatal care:

" usually my wife checks at the hospital, but during the pandemic my wife checked at a midwife near House. Because if the hospital is far away and there are many patients, there are 4 patients here, so there are not many people crowding "- Adt, father of the first child

Postponement of antenatal care

During the pandemic, two couples choose to postpone antenatal care:

" During the pandemic Coronavirus - 19 I have an irregular pregnancy check sometimes three months or one month. Yes .. because there are no complaints .. "- Glg, mother of second child pregnancy

b. Postpartum knowledge

Questions to couples are about postpartum care. Almost all mothers and husbands do not know about postpartum care, although there are books on Maternal and Child Health, mothers and husbands do not have time to read them. So far, how to do postpartum care has been obtained from parents, friends and neighbors. The desire to be able to provide assistance quickly is a motivation for knowing postpartum care. Three sub-themes were identified:

Lack of knowledge on postpartum care

All mothers with first child pregnancies and all husbands having their first or second child stated that they did not know and needed information on postpartum care:

"Regarding postpartum care, I don't know at all, I want to know, but not yet. ask the doctor"- Nl, pregnant woman for the first child

" Do not know. Because if men don't pay attention to it. I only dare to ask my mother, I am embarrassed. But I want to know what care postpartum looks like. What is Postpartum, ma'am? " Adt, father of the first child.

Lack of socialization of the Maternal and Child Health book. The following statements are from mothers and husbands regarding their ignorance of postpartum information contained in the MCH handbook:

"The MCH Handbook? No, I never read it. "Rfa, father of the first child

" I think the book Maternal and Child Health is only for the midwife / doctor to fill in. I only opened the section filled out by the midwife, the other sheet I did not read "Dear, pregnant woman with first child

Motivation for knowing postpartum care

A father stated his motivation to know postpartum care:

" I want to know postpartum care, so if something happens to my wife, I can act fast "- Amd, father of first child

c. Traditional beliefs and practices

Almost all respondents have beliefs and practice traditional practices during pregnancy and postpartum. Some myths still exist and are passed down from generation to generation and are believed to provide positive results for the health of mothers and babies. The lack of mother's knowledge plus the strong influence of the elders who live together tends to lead mothers to carry out these myths and rules. Two themes emerged, namely:

Abstinence from food and drinks

Avoiding certain during the postpartum period were conveyed by mothers, husbands and midwives:

"After giving birth, fish, eggs, shrimp are usually not allowed, because the mother's stitches have dried up for a long time" - In, father of the first child

"Most mothers who live with their parents-in-law / biological mothers are told to limit their drinking, not to eat foods with soup, because they think their babies will

have a cold. You are not allowed to eat spicy food, drink ice because the baby can get diarrhea”- Re, midwife

“ During my time in the field I often met mothers with complaints of difficulty defecating. They think that during the postpartum period they should not eat fruit”- Ni, Midwife

“ You can't eat bananas, I don't know why... you can't eat fishy fish like chicken, eggs, fish. So I only had to eat tofu and tempeh, I got bored ... It took a long time until the stitches dried up, it could be more than a month ”- Gln, a pregnant woman with her second child

Risk of traditional practices Some of the traditional practices at risk were conveyed by mothers and midwives:

“I will practice it again later, I will use “stagen” – traditional fabric worn around stomach- usually from day two to day 30 after giving birth. This was done so that the uterus did not go down because I was active. Even though it tastes bad ... it feels short when I breathe ”- Gln, mother of pregnancy with her second child

A midwife found something that does not normally consume mother:

“ In my community I have encountered women who drink red wine (wine fermented drink mixed with medicine and spices). spices, alcohol 14.7% -19.7%), he said that the mother's milk smoothly ”Rn,midwife

“mother and baby should not be out of the house before cord the umbilical off. There is an assumption that this is so that the baby is not exposed to sawan (evil spirit). Usually up to seven days after the mother gives birth. Even though at that time babies need to be dried in the sun so they don't get yellow. ”Ni,midwife

d. M-Health for health promotion

Answering a question about the use of m-health in postpartum care, almost all mothers and husbands hope it will benefit the health of mothers and babies. Three sub themes were obtained: usefulness, liking for media and delivery time.

The Benefits

Answers of mothers and husbands related to benefits: suitable for pandemic times, easy, practical, economical, fast, simple, useful and suitable for shy ones:

“I prefer to be sent information via WhatsApp, because I don't need to go to a midwife, it's easier. , whenever it can be done ”- Rn, pregnant woman for the first child

“ Information for postpartum we need, especially during the pandemic, everything has to be online, not face to face, I think it will be very beneficial. Yes .. It's nice because someone is monitoring online ”- Erk, pregnant woman for the first child

“ I think it's very good .. suitable for me who is shy, so no need to meet face to face if I want to ask. Simpler, faster because it doesn't wait for the inspection schedule. It's also more economical ... because you don't have to spend money to check with the midwife. ”- Nl, first child pregnant women

Love for media

Mothers and husbands' desire for this type of media includes pictures, videos a long text with explanatory language that is easy to understand:

“ I like everything..text, picture with description and video. But the language is just general .. which is easy to understand ” - Mhd, father of the first child

" ummm ... I like pictures with detailed descriptions, so it's clearer. Because this is my first pregnancy, so I don't understand. If it's just a brief description I'm a little confused .. " - Hey, a pregnant woman with her first child

Delivery time.

"In the afternoon ... Afternoons are relaxed. If you are still busy doing homework in the morning "–Dih, pregnant women with their first child.

Testing phase

Results of initial field media testing in our study indicate the need for improvement and the addition of some material to health promotion media. The results of material improvements we tested the validity of on a wider scale (Table 2).

Table 2. Results of Validity Testing by Media Experts and Users

Aspect	n	Variable	Results	Mean
Validity by media experts	8	Material	100.00	88.67%
		Suitability of material	%	
		Order of material	87.50%	
		Language	90.63%	
		suitability of narrative to topic	84.38%	
		interface		
		Design	87.50%	
		Information		
		Clarity of instructions	84.38%	
		Reliability		
		Ease of discussion	87.50%	
Ease of access	87.50%			
Validity by users	36	Motivation		82.99%
		Interest	84.03%	
		Display		
		quality	81.94%	
		Comprehension		
Understanding material	82.64%			
Utilization				
Impact on users	83.33%			

Information: 76% -100%: valid

4. DISCUSSION

Our study underlines the need for analysis to develop and test the validity of health promotion media regarding postpartum care in the city of Semarang. Our findings serve as a basis for thinking about implementing postpartum promotional media as needed.

Needs analysis phase

Limitations of motion during the pandemic Coronavirus-19

Pandemic of *Coronavirus-19* that swept the world, including Indonesia, causes space becomes limited in accessing health services by mothers to midwives or vice versa. The findings of our study showed that all mothers performed antenatal care at a health service near their home, as recommended by the midwife. Some mothers postponed their schedule for antenatal care visits, and some even did not make scheduled antenatal care visits. The absence of mothers from antenatal care at health facilities is one of the factors in the low presence of postpartum care (Lwelamira *et al.*, 2015)

Postpartum knowledge

All mothers and husbands in our study expressed their ignorance of postpartum care practices. One of the reasons is that they do not read books on Maternal and Child Health. The Maternal and Child Health Book is an effective means of health education for mothers with low education, a reliable source of information and a means of communication between mothers and husbands and health workers (Pratiastuti and Syafiq, 2018; Hagiwara *et al.*, 2013). Previous studies in Central Java and in West Java, Indonesia reported that a lack of knowledge, skills and awareness is an obstacle to postpartum care practices (Probandari *et al.*, 2017; Titaley *et al.*, 2010). Other studies have reported that the causes for not practicing postpartum care are low knowledge and the assumption that it is not important (Chen *et al.*, 2014). Based on this fact, it is necessary to provide postpartum care education to mothers and husbands. Health education creates a condition for healthy pregnant women with a health perspective, able to face maternal problems with effective and efficient prevention (Datta *et al.*, 2014).

Traditional beliefs and practices

In this study we investigated the role of close relatives in postpartum care practice. Mothers who live with their parents still tend to practice traditional practices that they believe from generation to generation such as abstinence from *fishy* food (fish, eggs, chicken) which was also found in previous studies (Probandari *et al.*, 2017; Diamond-Smith *et al.*, 2016; Mao *et al.*, 2016).belief in spirits We still find the evil in our study, where mothers actually practice practices that can threaten the safety of babies. The same thing is also found in other regions in Indonesia (Sari *et al.*, 2017; Rahmilasari and Tresnaasih, 2020) and consistent with the results of previous studies (Rashid, 2007). Based on the information above, education is needed for health workers to provide a correct understanding of postpartum care by respecting existing traditional practices, as was done in research in Turkey (Altuntuğ *et al.*, 2018) and Myanmar (Sein, 2013).

M-health for health promotion

Our findings indicate a positive response from all mothers and husbands regarding the use of m-health in postpartum care. In accordance with previous studies that m-health has advantages, namely: interactive, broad reach, providing social and emotional support (Moorhead *et al.*, 2013) saving time and money (Liu *et al.*, 2015). Whats app is an application using m-health which functions as a health communication tool and health promotion (Moorhead *et al.*, 2013; Schein R, Wilson K, 2010). Based on the results of the needs analysis, the right solution is needed to provide health promotion regarding postpartum care in the midst of a pandemic. The use of m-health has been widely used to provide the best care during a pandemic (Chelongar and Ajami, 2020; Zhai *et al.*, 2020). The use of m-health has been shown to improve knowledge and maternal care (Hazra *et al.*, 2018; Flax *et al.*, 2014; Fedha, 2014; Oliveira-ciabati *et al.*, 2017)

Testing Phase The

Results of the media validity test for material experts include material variables (suitability, sequence, language and narrative suitability to the topic), interface (design), information (clarity of instructions) and reliability (ease of discussion and access) shows more than 76% of the results (average 88.67%). Validity testing on users for all variables: motivation,

appearance, material and utilization showed more than 76% (mean 82.99%). The test results are said to be valid and can be used if they are 76% -100% (Arikunto, 2009).

Limitations

This study has several limitations. Postnatal care is part of maternal care. Our study does not yet accommodate all maternal information needs. Validity testing on the ease of access and discussion variables can cause answer bias because it is only based on respondents' perceptions. In future research, it is better if the provision of comprehensive health promotion starting from pregnancy, childbirth and postpartum.

5. CONCLUSION

Use of *m-health* is the right choice in the health promotion of postpartum care during the pandemic of Coronavirus-19. The results of testing the validity of postpartum health promotion media on media experts and users are valid for all variables. The health promotion of postpartum care in this study is feasible to implement and is expected to increase postpartum care literacy in the city of Semarang.

Ethical Clearance

This research protocol has been approved by the ethics committee at the Faculty of Health, Diponegoro University with No : 237 / EA / KEPK-FKM / 2020

Conflict Of Interest

All authors have no conflict of interest related to the implementation and reporting of this study.

Authors' Contribution

Contribution was given by all researchers in this research process starting from the preparation, review and approval of the manuscript.

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