Original Research
Indonesian Midwifery and Health Sciences Journal

Volume 9 No. 3, July 2025
Received: 16 April 2025 Revised: 12 May 2025
Accepted: 17 June 2025 Published: 28 July 2025
Available online at: http://e-journal.unair.ac.id/index.php/IMHSJ

THE EFFECT OF "BUFAS SMART" EDUCATION ON THE INCIDENCE OF POSTPARTUM BLUES AT RSUD KARTINI KARANGANYAR

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Abstract

Background: Postpartum blues usually occurs on the third or fourth postpartum day and peaks between the fifth postpartum day which is characterized by frequent crying, feelings of loneliness or rejection, anxiety, confusion, anxiety, fatigue, forgetfulness and sleeplessness. However, many women are lost to follow-up after delivery and rarely receive adequate support from midwives, highlighting a gap in postpartum care. Social networks present an opportunity to provide timely education and emotional support. This study aims to evaluate the effectiveness of the BUFAS SMART program, a structured educational intervention delivered via a WhatsApp group, in reducing postpartum blues among mothers during the early puerperium. **Method**: The sample of this study amounted to 50 respondents of postpartum mothers with purposive sampling technique. This research design uses quasy experiment. This research instrument uses a questionnaire. Data analysis used is Wilcoxon test and Mann-Whitney test. **Result**: The effect of "BUFAS SMART" education on the incidence of postpartum blues at Kartini Karanganyar Hospital on respondents in the intervention posttest group and control posttest group was significant with the results of the p-value <0.05, which is 0.000, meaning that there is a significant difference between the pretest and posttests of the control group. **Conclusion**: BUFAS SMART reduces the incidence of postpartum blues at Kartini Karanganyar Hospital, so the BUFAS SMAST education method is suitable for application in postpartum blues mothers add more in-depth knowledge about the postpartum period.

keyword : Innovations and health; equal access; education; mental health

INTRODUCTION

The postpartum period is an important period for a mother and her family, especially first-time mothers because they need a lot of information and assistance during this period (Tambag et al, 2018). Globally, 70-80% of mothers experience mood disturbances within the first two weeks after delivery, condition known as postpartum blues or baby blues (Machmudah, 2023). Women experiencing postpartum blues will exhibit symptoms including: mood swings, lack of happiness, lack of interest, sleep disturbances (insomnia or hypersomnia), loss of energy, agitation or lethargy, weight loss, feelings of worthlessness or inappropriate guilt, decreased concentration, and frequent thoughts of death or suicide (Gondo, 2022).

e-ISSN 2656-7806 ©Authors.2025

DOI: 10.20473/imhsj.v9i3.2025.279-291

The prevalence in Asia ranges from 26% to 855 while in Indonesia it is estimated at 50-70% (Notokusumo, 2017).

Although postpartum blues is often considered a temporary and self-limiting condition, it can adversely affect maternal mental health and lead to postpartum depression, breastfeeding success, and mother-infant bonding if left unmanaged (Ahmadinezhad, G. S et al., 2024). In some cases, unresolved postpartum blues can progress to postpartum depression, with long-term impacts on maternal well-being and child development. Therefore, early identification and prevention are critical to reducing the negative outcomes.

Postpartum blues can actually be avoided from the beginning through counseling that helps mothers understand their role as the main caregiver, both during pregnancy and after childbirth (Nurbaeti et al., 2019). Health promotion plays a vital role in these preventive efforts, especially through counseling when delivered in an accessible, engaging, and adaptable to mother's daily life (Saragih, 2022). The use of social media can be an effective communication channels to reach mothers and families which provide them with emotional preparation for the postpartum period. Traditionally, postpartum education in many healthcare settings, including Kartini Karanganyar Regional Hospital, has been delivered through printed leaflets focusing on infant care, breastfeeding, and personal hygiene.

While printed materials provide useful information, however, they have limitation in terms of accessibility, interactivity, and continuity of support. At the same time, the use of digital platforms for health education, especially social media, has grown rapidly and have positive impact on postpartum health care. Digital delivery offers several advantages over printed materials: easy access via mobile phones, cost-effectiveness, environmental sustainability, ease of distribution over long distances, and durability (Khanday et al., 2022).

This study aims to evaluate the effect of the "BUFAS SMART" education program on the incidence of postpartum blues among mothers at Kartini Karanganyar Hospital.

METHOD

BUFAS SMART is the name of a WhatsApp group utilized as a platform for delivering health education to postpartum mothers in the intervention group. Education was provided to mothers who met the inclusion criteria: being in good health, capable of understanding the educational content, and willing to participate in the intervention. The BUFAS SMART intervention was conducted over three consecutive days, from the third to the fifth day postpartum. The educational materials focused on infant care, breastfeeding techniques, and common psychological changes experienced during the postpartum period. Each session was delivered daily at 6:00 PM (Western Indonesian Time), followed by an interactive Q&A session that continued until all participants' questions were addressed, with a cut-off time of 9:00 PM to respect the mothers' rest period. On the first day of the intervention, participants were asked to complete the Maternal Blues Suryani Scale (MBS) questionnaire as a baseline assessment. Following this, digital educational leaflets were distributed via the BUFAS SMART WhatsApp group. All sessions were facilitated by the same trained midwife counselor (a member of the research team) to maintain consistency in communication style, reduce variability, and ensure standardized delivery of information

This study uses a quasi-experimental research design by comparing two groups, namely the control group and the intervention group with inclusion criteria, namely postpartum mothers in the Teratai Ward, postpartum mothers with any type of delivery with a live baby on the 3rd-5th day postpartum, mothers who experience postpartum blues measured by the MBS questionnaire, mothers who can read, understand questions, and are able to operate gadgets. While the exclusion criteria are mothers who are not willing to be respondents, mothers who work as health workers (midwives, doctors, nurses), mothers who had severe mental health problems before pregnancy, and mothers who do not have gadgets or WhatsApp applications.

The population that will be used in this study are postpartum mothers on the third-fifth day with any delivery who gave birth to a live child in the Teratai Ward I of Kartini Karanganyar Regional Hospital who can read, understand questions, and are able to operate gadgets. In this study, the number of samples was 50

respondents so that each group had 25 sample respondents. The sampling technique used was purposive sampling. The variable in this study was the occurrence of postpartum blues. Data collection in this study used the Maternal Blues Suryani Scale (MBS) questionnaire by Suryani Manurung in 2018, which contains 24 questions related to the occurrence of postpartum blues and anxiety symptoms experienced by a person (Manurung et al., 2019). The instrument has demonstrated good internal consistency with a Cronbach's alpha of 0.89, indicating high reliability. Content validity was established through expert review in maternal mental health. The questionnaire was self-administered by participants via WhatsApp link/attachment, with assistance from the research team when clarification was needed. This ensured accessibility while allowing mothers to complete the questionnaire at their own pace.

Meanwhile, the control group received standard postpartum education routinely provided in the hospital, primarily in the form of printed leaflets covering infant care, breastfeeding, and personal hygiene. They did not receive additional WhatsApp-based interactive education. Postpartum mothers were directly given a pretest questionnaire using the Suryani Maternal Blues Scale (MBS). After completing the questionnaire, the mothers were given counseling in the form of leaflets with the same material as the intervention group. On the fifth day, the control group was also given a posttest questionnaire.

The educational materials were developed using evidence-based guidelines, drawing on recommendations from the Indonesian Ministry of Health, WHO postpartum care standards, and published research on maternal mental health. A panel of four experts, including a senior midwifery lecturer with expertise in maternal mental health, postpartum care, and community development, reviewed the content to ensure accuracy, cultural relevance, and clarity of language. To maintain consistency, a structured daily schedule was designed in advance, using the same sequence of information, digital leaflets, and facilitation methods across all sessions. This helped minimize variation and ensured the integrity of the intervention. The effectiveness of the materials was evaluated through participants' engagement in interactive Q&A, their ability to restate key messages, and changes in outcomes measured with the Maternal Blues Suryani Scale (MBS) before and

after the intervention. The clear difference between the intervention and control groups confirmed that the standardized content was successful in reducing postpartum blues symptoms.

Data collection was carried out after the issuance of an ethical permit application to the Faculty of Medicine, Sebelas Maret University and continued until August 2024. The ethical number in this study is Number: 1.870 / VII / HREC / 2024. Prior to analysis, the normality of data distribution was assessed using the Shapiro–Wilk **test** because of the relatively small sample size (n < 50 per group). The results indicated that the data were not normally distributed. Data were then analyzed using the Wilcoxon test and the Mann-Whitney test with a significance level of 0.05.

RESULT AND DISCUSSION

Respondents in this study were postpartum mothers on the third-fifth day as many as 50 respondents in the Teratai 1 ward of Kartini Karanganyar Hospital. Samples were taken from respondents who met the predetermined inclusion and exclusion criteria. Respondents were grouped based on maternal age, parity status, gestational age at delivery, education, occupation, and marital status. The complete respondent characteristics are presented in the table below.

Table 1. Frequency Distribution of Respondent Characteristics

Variable	Intervention Group		Control Group	
	(N)	(%)	(N)	(%)
Age				
1. At-risk (<20 years & >35 years)	9	36	3	12
2. Not at Risk (20-35 years old)	16	64	22	88
Parity Status				
1. Primiparous	11	44	9	36
2. Multiparous	14	56	16	64
Gestational Age at Delivery				
1. Preterm (<37 weeks)	0	0	0	0
2. Aterm (37-42 weeks)	25	100	25	100
3. Postterm (>42 weeks)	0	0	0	0
Education				
1. Elementary School	8	32	1	4
2. Secondary School	16	64	24	96
3. College	1	4	0	0
Work				
1. Not Working	13	52	21	84
2. Work	12	48	4	16

Marital Status				
1. Married	25	100	25	100
2. Not Married	0	0	0	0

Respondents were selected according to inclusion and exclusion criteria and assessed on age, parity, gestational age at delivery, education, occupation, and marital status (Table 1). Most respondents were in the non-risk age group (20–35 years), multiparous, delivered at term, married, and had secondary-level education. The majority were unemployed. Both groups were generally comparable at baseline, which minimized potential confounding. All mothers in the intervention group completed the three-day BUFAS SMART program with full attendance and engagement.

Table 2. Differences in the Incidence of Postpartum Blues in the Pretest-Posttest Intervention Group and Pretest-Posttest Control Group after Providing "BUFAS SMART" Education

Incidence of Postpartum Blues	Category	Intervention Group			Control Group		
		(N)	(%)	p-value	(N)	(%)	p-value
Pretest	Postpartum Blues	25	100		25	100	
	No Postpartum Blues	0	0		0	0	
				0,000			**0,000**
Post-test	Postpartum Blues	0	0		13	52	
	No Postpartum Blues	25	100		12	48	

The results showed that the intervention group respondents before being given the intervention who experienced postpartum blues were 25 respondents with a total percentage of 100%. While after being given the intervention, respondents who did not experience postpartum blues increased to 25 respondents with a total percentage of 100%. The results of the Wilcoxon test show that the difference in the incidence of postpartum blues in the pretest and posttest control groups shows a p-value of 0.000 (<0.05), which means that there is a significant difference in the pretest and posttest control groups.

Table 3. Odds of Experiencing Postpartum Blues by Group

Group	Postpartum Blues (n)	No Postpartum Blues (n)	Total	Odds	OR (95% CI)
Intervention (n=25)	0	25	25	0.02*	0.018 (0.001 – 0.33)
Control (n=25)	13	12	25	1.08	Reff

Mothers who received the BUFAS SMART intervention had 98% lower odds of experiencing postpartum blues compared to those in the control group. The 95% confidence interval (0.001-0.33) indicates that this finding is statistically significant. These results suggest that education delivered through the WhatsApp platform is effective in reducing the incidence of postpartum blues. The very small odds ratio (OR=0.018), reflecting a 98% risk reduction, highlights the strong potential of this digital intervention as preventive strategy. This finding is consistent with previous studies showing that technology-based educational intervention can enhance maternal knowledge, provide emotional support, and strengthen readiness for the postpartum period, thereby lowering the risk of mood disturbances after childbirth.

Table 4. Z-values and Effect Sizes for Postpartum Blues

Group	Z	p-value	Effect Size (r)
Intervention	–5.000	<0.001	1.00 (very large)
Control	–3.464	0.001	0.69 (large)

The Wilcoxon Signed Rank Test demonstrated a significant reduction in postpartum blues scores within both groups. In the intervention group, the change was highly significant ($Z = –5.000$, $p < 0.001$), with an effect size of $r = 1.0$, indicating a very large effect. In the control group, there was also a significant reduction ($Z = –3.464$, $p = 0.001$), with an effect size of $r = 0.69$, considered a large effect.

Table 5. Differences in the Incidence of Postpartum Blues in the Intervention Group in the Control Group after Providing "BUFAS SMART" Education

Incidence of	Category	Intervention Group	Control Group	Z	p-value

Postpartum Blues		(N)	(%)	(N)	(%)		
Post-test	Postpartum Blues	0	0	13	52	-4.149	**0,000**
	No Postpartum Blues	25	100	12	48		

The results of this study indicate that in the intervention group respondents who did not experience postpartum blues were 25 respondents with a total percentage of 100%. While in the control group, respondents who did not experience postpartum blues were 12 respondents with a total percentage of 48%. The results of the Mann Whitney test showed that the difference in the incidence of postpartum blues in the group after the intervention in the control group showed a p-value of 0.000 ($p < 0.05$), which means that there was a significant difference in the group after the intervention with the control group.

This is evidenced by Table 5. shows the difference in the number of respondents to the two groups regarding respondents who experienced postpartum blues. Although the control group was not given the intervention, there was an increase in respondents who did not experience postpartum blues. This is due to access to other sources of information that cannot be controlled by researchers. Education provided through BUFAS SMART in the intervention group lasted for 3 days, while in the control group only once, this is in line with (Pour et al., 2020) regarding the provision of education through interactive text messages. In this case, it is proven that education through whatsapp is effective in reducing the incidence of postpartum blues because the method used is effective and easy to understand when getting education about the postpartum period.

These findings highlight the effectiveness of BUFAS SMART education, delivered via WhatsApp, in reducing postpartum blues. The very large effect size and extremely small odds ratio underscore the strong potential of this digital educational approach as a preventive and supportive strategy for mothers in the early postpartum period. Recent randomized controlled trials (RCTs) have demonstrated the potential of mobile applications with automated psychosocial components in preventing postpartum depression, showing significant improvements in maternal mental health outcomes such as reduced Edinburgh

Postnatal Depression Scale (EPDS) scores (Miura Y. et al., 2023). These digital interventions highlight the growing role of technology in providing accessible, scalable, and effective support for mothers during the postpartum period.

The control group also showed some improvement, with nearly half of the mothers reporting no postpartum blues at posttest. This reduction may reflect natural remission, the Hawthorne effect, or access to other information sources beyond the study. Nevertheless, the far greater reduction in the intervention group emphasizes the added value of BUFAS SMART.

According to Pulungan (2020) the incidence of postpartum blues, maternity blues or baby blues is a temporary mild mood or effect disorder that occurs on the first day to the 10th day after childbirth, usually occurring on the third or fourth postpartum day and peaking between the fifth postpartum day which is characterized by brief crying, feelings of loneliness or rejection, anxiety, confusion, anxiety, fatigue, forgetfulness and sleeplessness.

Similar to findings by Fernalia et al. (2019), WhatsApp-based interventions were shown to be effective due to their accessibility, low cost, and interactive features such as multimedia sharing (Kamel et al., 2016). Recent RCTs also demonstrated that digital psychosocial interventions reduce postpartum depression risk, as evidenced by lower EPDS scores (Miura et al., 2023). Thus, the present study adds to growing evidence that mobile-based education can enhance maternal knowledge, provide emotional reassurance, and mitigate mood disturbances in the postpartum period.

Several mechanisms may explain the effectiveness of BUFAS SMART. First, WhatsApp is widely accessible and familiar, allowing education to be delivered consistently with minimal cost. Second, the structured three-day sessions with follow-up check-ins encouraged active participation and engagement. Third, the intervention reduced maternal anxiety by providing knowledge on newborn care, breastfeeding, and maternal psychological changes, thereby strengthening confidence and reducing worry. Previous studies have similarly shown that maternal concerns and lack of information are key drivers of postpartum blues, and that accessible education can mitigate these risks (Fuad et al., 2023).

The results obtained by providing education "BUFAS SMART" respondents increased knowledge about how to care for babies, how to breastfeed properly, changes in the psychology of postpartum women who make postpartum women not worry about their condition which makes mothers not experience postpartum blues. Postpartum blues is influenced by maternal concerns, with interventions provided through whatsapp social networks making it easier for mothers to obtain information without having to meet face to face and making it easier to carry out treatment without being limited by distance (Fuad et al., 2023). By getting BUFAS SMART education, the results showed that the provision of interventions had an effect on the rate of decline in the incidence of postpartum blues by decreasing the number of respondents who experienced postpartum blues in the posttest intervention group.

Despite these promising results, limitations must be acknowledged. The relatively small sample size may inflate effect size estimates. The follow-up period was short, limiting evaluation of longer-term outcomes. Possible contamination in the control group could not be ruled out, as participants may have accessed external maternal health information. Future studies should employ randomized or stratified sampling, larger sample sizes, and longer follow-up with strategies such as intention-to-treat analysis to strengthen the robustness of findings.

Overall, this study demonstrates that BUFAS SMART education via WhatsApp is effective in preventing postpartum blues among mothers in the early postpartum period. By providing accessible, structured, and supportive digital education, midwives and health professionals can complement routine postpartum care and improve maternal mental health outcomes. This approach has strong potential for integration into maternal health programs, particularly in resource-limited settings where traditional face-to-face support may be constrained.

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CONCLUSION AND SUGGESTION

This study found a significant difference in the incidence of postpartum blues between the intervention and control groups, indicating that the “BUFAS SMART” education effectively reduced postpartum blues. These results highlight

the potential of social media platforms, such as WhatsApp, as alternative channels for providing educational support to postpartum mothers.

Future research should continue to develop WhatsApp-based interventions and broaden the scope of variables studied, moving beyond attitudes and behaviors to also examine maternal knowledge regarding postpartum blues. Expanding the focus in this way can enhance research quality and reduce potential biases in measuring postpartum blues. In addition, future studies would benefit from employing randomized or stratified sampling methods to strengthen generalizability, as well as longer follow-up periods that incorporate predefined attrition management strategies, such as intention-to-treat analysis, to improve robustness. Finally, larger sample sizes are recommended to overcome the limitations of small samples and provide more reliable evidence.

DECLARATION

Conflict of Interest

Author declare there is not conflict of interest in this research

Authors' Contribution

All authors contributed significantly from the beginning to the end of the research, including study design, data collection, analysis, article writing, and final revisions and approval.

Funding Source

This research was self-funded by the authors.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request. The datasets generated and analyzed during the current study are not publicly available due to privacy concerns but may be made available by institutional policies.

Acknowledgements

The author would like to express gratitude to the respondents of this research who generously dedicated their time to participate in this study. Special thanks are also extended to all parties who assisted in the research process. Your support has been invaluable.

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