

# Postpartum depression: combining a mobile application with recitations from the Holy Quran in Indonesia

## Abstract

**Background/Aims** The incidence of postpartum depression in Indonesia is greater than the global average, and has detrimental effects on mothers, families, society and the country. Mobile applications are widely used to treat postpartum depression, but combining this with readings from the Holy Quran is uncommon in Indonesia. This study aimed to investigate the effect of combining mobile applications with the Holy Quran on postpartum depression symptoms.

**Methods** A randomised controlled pre-post-test time series was conducted from June to December 2020, involving 128 pregnant women in their third trimester. The 'app' group (64 participants) received the intervention until 2 months postpartum, while the control group (64 participants) received no intervention. The Edinburgh postpartum depression scale, state-trait anxiety inventory, and the Rosenberg self-esteem scale were used to gather data.

**Results** Postpartum depression scores in the app group were significantly lower than in the control group. There were no differences in the anxiety or self-esteem scores between the app and control groups. The proportion of depression scores of 10 and above decreased by 25% in the app group and 7.8% in the control group.

**Conclusions** Use of a mobile application in combination with the Holy Quran voice may help reduce postpartum depressive symptoms in Indonesia. Maternity nurses and midwives may wish to recommend use of this app to the women they care for, if appropriate.

## Keywords

Mobile application | Postpartum depression | Pregnant women

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Postpartum depression can occur until up to 4 weeks after birth (Stewart and Vigod, 2016), and is experienced by 10–20% of postpartum women globally (O'Hara and McCabe, 2013; Bolak Boratav et al, 2016; Sharkey et al, 2016), and 13.5% of postpartum women in southeast Asia (Wang et al, 2021). In Indonesia, 13–26% of postpartum mothers experience postpartum depression (Murwati and Suroso, 2017; Nurbaeti et al, 2018; 2019; Kusuma, 2019).

Postpartum depression not only affects mothers, but can also impact their families, societies and the country as a whole. Postpartum depression causes low quality of life for mothers, and increases the risk of schizophrenia, bipolar and depressive disorder and suicide (Sadat et al, 2014; Chen et al, 2021; Lee et al, 2022). For families, postpartum depression is related to paternal depression, sexual dysfunction and relationship dissatisfaction (Goodman, 2004; Khajehei and Doherty, 2017), and can cause emotional problems in children, and impair their development (Walker et al, 2020; Faisal-Cury et al, 2021). Postpartum depression also leads to social and economic burdens, as mothers and their children require more care (van der Zee-van den Berg et al, 2021).

Many interventions to prevent and treat maternal depression have been trialled, including use of medication (O'Hara and Engeldinger, 2018; Wang et al, 2022), psychoeducation (Ugarte et al, 2017), cognitive behaviour therapy (Wang et al, 2022), and incorporating religious perspectives, in particular, listening to recitations from the Holy Quran (Jabbari et al, 2020). Studies have shown that listening to recitations of the Holy Quran has a positive effect on postpartum depression (Jabbari et al, 2020; Saged et al, 2020; Yolanda et al, 2023).

The use of mobile health applications has grown rapidly, including in relation to postpartum depression (Zhang et al, 2017). Studies have been carried out to test the application of mobile apps to early detection (Jiménez-Serrano et al, 2015; Nurbaeti et al, 2021) and intervention (Koçak et al, 2021; Seo et al, 2021) in postpartum depression. Several studies exploring the use of an app in managing postpartum depression have

combined the concepts of social support, mindfulness, perceived social support and cognitive behavioural therapy (Cheng et al, 2016; Sun et al, 2019; Jannati et al, 2020; Liu et al, 2022a, b; Seo et al, 2022).

Although studies have investigated the effect of mobile health apps on the symptoms of postpartum depression, to the authors' knowledge, no study has investigated combining a mobile app with the Holy Quran voice, in Indonesia or other countries. Therefore, this study aimed to explore this combination of interventions in order to improve self-esteem and reduce anxiety and other symptoms of postpartum depression.

## Methods

A randomised controlled trial using a pre-post-test time series was conducted between June and December 2020 in four working areas of the Banyumas District Public Health Centre, Central Java Province, Indonesia. This trial followed the consolidated standards for reporting trials (CONSORT) guidelines (Figure 1) (Schulz et al, 2010).

## Participants

The participants were women in their third trimester of pregnancy (28–40 weeks' gestation) who lived in the working areas of the Banyumas District Public Health Center. Only women who had smartphones and were Muslim were included, to allow them to receive the intervention if selected for the appropriate group. The exclusion criteria were women who drank alcohol or used drugs, and those who were diagnosed with mental disorders, hypertension, anaemia, heart problems, diabetes mellitus, placenta previa, fetal abnormalities, multiple pregnancies, hydramnios and post-term pregnancy.

The sample size was calculated using Cohen (1988), and gave a total of 64 women per group (app and control). To account for drop out, 10% of the sample size was added, yielding a total sample of 140 respondents. A total of 161 pregnant women were eligible for the study.

## Development of the mobile application

Development of the DEDE ARUM application aimed to provide information about postpartum depression based on the first six of seven steps of the mobile development lifecycle model: 1. identification, 2. design, 3. development, 4. prototyping, 5. testing, 6. deployment, and 7. maintenance (Vithani and Kumar, 2014). Following a literature search on postpartum depression, application content was compiled that contained the following information on postpartum depression: definitions, causes, risk factors, signs and symptoms, possible impacts, ways to manage the condition and ways to prevent it. Logos and images/photos for illustration were created, and a recitation of Al-Quran Surah Maryam (Jabbari et al, 2020) was recorded. The recitation was performed

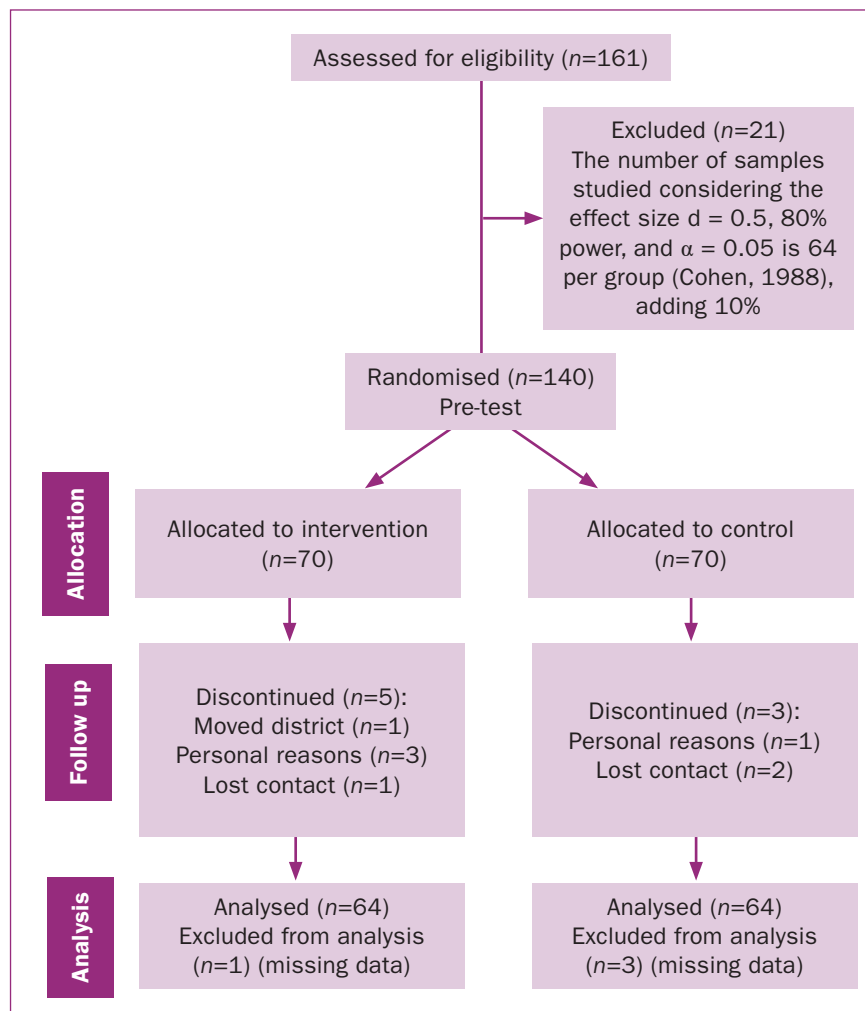


Figure 1. Consolidated Standards for Reporting Trials (CONSORT) participant flow diagram

by a junior high school student who won multiple Al-Quran reading competitions, guided by an expert in reading verses from the Holy Quran, for approximately 20 minutes (Saged et al, 2020). The selected passage for the recitation was the Surah Maryam, chosen by the authors based on a literature search that found that listening to a recitation of this section can reduce stress, anxiety and depression for pregnant and labouring women (El-Sayed et al, 2020; Jabbari et al, 2020; Ulya et al, 2022).

The educational content and recordings were given to an expert in smartphone application creation with more than 10 years of relevant experience, who produced the final application. Content validity was tested by three experts who were all nurse specialists in maternity nursing with more than 10 years' clinical experience, and the individual-content validity index was 1. The app's content was then tested by three postpartum mothers, to incorporate their input on the suitability of language and terms. After testing was complete and the feedback

was addressed, the app was uploaded to the Google Play Store.

### Data collection

#### Tools

The Edinburgh postpartum depression scale is a 10-item scale that uses a 4-point rating (0, 1, 2, and 3) to measure depression in the past 7 days. The total score ranges from 0 to 30, with a higher score indicating greater likelihood of depression. The scale was developed by Cox et al (1987), and the Indonesian version was adapted by Edwards et al (2006), which was shown to be effective in detecting the risk of postpartum depression at 0.01 with Z values of (2.33) and (-2.320) (Latifah and Hartati, 2006).

The state-trait anxiety inventor is a 40-question tool used to measure general anxiety using a Likert scale. The scale uses 20 questions to assess trait anxiety, and 20 to assess state anxiety, yielding a possible range of 20–80 for total score. Higher scores are positively correlated with higher levels of anxiety (Baker et al, 2009). The Indonesian version was tested for reliability with a value of 0.923 using Cronbach's alpha (Latifah et al, 2019).

The Rosenberg self-esteem scale is a 10-item questionnaire that uses a Likert scale (0=strongly disagree to 3=strongly agree) to measure self esteem. The scores range from 0 to 30, with a higher total indicating higher self esteem. This scale has been used globally in 53 nations (Schmitt and Allik, 2005). The Indonesian version was translated by Nurbaeti et al (2019) with an internal consistency of 0.79.

#### Procedure

Pregnant women who met the inclusion criteria ( $n=161$ ) were recruited from the public health centre. They were contacted using WhatsApp. After informed consent was obtained, a trained assistant visited the respondent's house to conduct the pre-test. The 140 respondents who had consented were randomly assigned to either the intervention (app) ( $n=70$ ) or control group ( $n=70$ ).

Participants in the intervention group were asked to download the DEDE ARUM app, and were taught how to use it. They were asked to read through the information in the app independently and listen to the recordings from the Holy Quran in the app once a day, beginning in their third trimester and continuing until 2 months after birth. The assistant monitored participants via WhatsApp once a week (Danaher et al, 2013) until 2 months after birth. Post-tests were conducted twice, at 1 and 2 months after birth. The control group were allowed to access the application after the second post-test, when monitoring had concluded. At the end of the study, the respondents received a package of herbal essential oils to thank

them for their participation. During the study, eight participants chose to discontinue (five in the app group and three in the control group), and data were missing for a further four participants (one in the intervention group and three in the control group), leaving a final sample of 128 women included in the analysis ( $n=64$  per group).

#### Data analysis

Univariate analysis was used to describe the frequency, mean, median, standard deviation, minimum and maximum of the variables. Bivariate analysis (Chi-squared, Fisher's Exact, Independent *t*-test, and Mann-Whitney U test) was used to describe the baseline characteristics of the variables. Friedman analysis was used to investigate the difference between each measurement, as the data were not normally distributed.

#### Ethical considerations

Ethical clearance for this study was obtained from the Faculty of Medicine Universitas Jenderal Soedirman (approval number:109/KEPK/IV/2020). The study's purpose, benefits and time were clearly explained before participants signed an informed consent form. All participants voluntarily participated.

#### Results

The participants' demographic and clinical characteristics are presented in *Table 1*. Their ages ranged from 17 to 44 years (mean:  $28.63 \pm 5.97$  years), almost all were married (98.4%), less than half had received senior high education (40.6%), and the majority were unemployed (65.6%). Most reported living with their husbands (85.9%), and more than half lived with their extended families (54.7%). The majority of participants had had one or more prior pregnancies (65.6%), and most current pregnancies were intended (96.9%).

Most of the participants' infants were full-term (87.5%), with a median birth weight of 3000 (range: 2000–4900). Most participants reported that they were content with their baby's (98.4%), and had a vaginal birth (78.9%). Most participants did not have postpartum complications (94.5%) and did not have a history (98.4%) or family history of depression (98.4%).

Most of the participants' demographic and obstetric characteristics showed no significant differences between the two groups. However, there were significant differences in education, parity and infant birth weight. When tested for correlation with depression, anxiety and self-esteem, the only significant correlation was between self esteem and education (*Table 2*).

In the Friedman analysis, the differences between the pre-test, post-test 1 (1 month postpartum) and post-test 2 (2 months postpartum) were assessed

**Table 1. Participants' characteristics**

Characteristic		Frequency (%)			P value
		App group (n=64)	Control group (n=64)	Total (n=128)	
Age (years)	Mean ± standard deviation	26.27 ± 4.42	31 ± 6.4	28.63 ± 5.97	0.094*
	<20	3 (4.7)	1 (1.6)	4 (3.1)	
	20–35	59 (92.2)	46 (71.9)	105 (82.0)	
	>35	2 (3.1)	17 (26.6)	19 (14.8)	
Marital status	Married	64 (100.0)	63 (98.4)	127 (99.2)	1.000†
	Not married	0 (0.0)	1 (1.6)	1 (0.8)	
Education	Elementary school	3 (4.7)	11 (17.2)	14 (10.9)	0.032‡
	Junior high school	15 (23.4)	22 (34.4)	37 (28.9)	
	Senior high school	31 (48.4)	21 (32.8)	52 (40.6)	
	Higher education	15 (23.4)	10 (15.6)	25 (19.5)	
Employment	Employed	31 (48.4)	13 (20.3)	44 (34.4)	1.000‡
	Unemployed	33(51.6)	51(79.7)	84 (65.6)	
Husband in another town for work	Yes	12 (18.8)	9 (14.1)	21 (16.4)	0.474‡
	No	52 (81.3)	55 (85.9)	107 (83.6)	
Living with extended family	Yes	36 (56.3)	35 (54.7)	71 (55.5)	0.859‡
	No	28 (43.8)	29 (45.3)	57 (44.5)	
Parity	0	31 (48.4)	13 (20.3)	44 (34.4)	0.001‡
	≥1	33 (51.6)	51 (79.7)	84 (65.6)	
Pregnancy intention	Intentional	63 (98.4)	61 (95.3)	124 (96.9)	0.619†
	Unintentional	1(1.6)	3 (4.7)	4 (3.1)	
Gestational age at birth	Aterm	55 (85.9)	57 (89.1)	112 (87.5)	0.593‡
	Preterm	9 (14.1)	7 (10.9)	16 (12.5)	
Mode of birth	Vaginal	51 (79.7)	50 (78.1)	101 (78.9)	0.828‡
	Caesarean	13 (20.3)	14 (21.9)	27 (21.1)	
Birth weight (g)	Median (min–max)	2955 (2000–3890)	3000 (2450–4900)	3000 (2000–4900)	0.04§
Postpartum complications	Yes	5 (7.8)	2 (3.1)	7 (5.5)	0.44†
	No	59 (92.2)	62 (96.9)	121 (94.5)	
Content with baby's sex	Yes	62 (96.9)	64 (100.0)	126 (98.4)	0.496†
	No	2 (3.1)	0 (0.0)	2 (1.6)	
Postpartum supplementary parenting	Husband	25 (39.1)	31 (48.4)	56 (43.8)	0.437‡
	Parents	10 (15.6)	11 (17.2)	21 (16.4)	
	Other family members	17 (26.6)	16 (25.0)	33 (25.8)	
	Husband and parents	12 (18.8)	6 (9.4)	18 (14.1)	
History of depression	Yes	2 (3.1)	0 (0.0)	2 (1.6)	0.496‡
	No	62 (96.9)	64 (100.0)	126 (98.4)	

**Table 1. Participants' characteristics (continued)**

Characteristic		Frequency (%)			P value
		App group (n=64)	Control group (n=64)	Total (n=128)	
Family history of depression	Yes	1 (1.6)	1 (1.6)	2 (1.6)	1.000‡
	No	63 (98.4)	63 (98.4)	126 (98.4)	

\*Independent t-test, †Fisher's exact test, ‡Chi-squared test, §Mann Whitney

**Table 2. Correlation between education, parity and birth weight with depression, anxiety and self-esteem**

Variable	P value		
	Depression	Anxiety	Self-esteem
Education	0.604	0.154	<0.001
Parity	0.648	0.185	0.095
Birth weight	0.094	0.058	0.766

(Table 3). There was a significant difference in the app group for depression scores ( $P < 0.001$ ); however, there were no differences in anxiety or self-esteem scores. In the control group, there were no differences in scores across all three dimensions.

The mean depression score in the app group was significantly reduced between the pre-test and second post-test. For anxiety, the mean score was reduced by 0.4 points in the app group, which was a smaller reduction than in the control group (1.51 points). The self-esteem scores were higher in the app group than the control group both before and after the intervention. In the intervention group, self-esteem increased at each time point, whereas in the control group, the score decreased between the pre-test and 1 month postpartum and then rose at 2 months postpartum (Figure 2).

The number of participants who had depression scores  $\geq 10$  are shown in Table 4. Both the app and control groups experienced a decrease in score over

time; however, the decrease in the intervention group was much greater (25.0%) than the control group (7.8%).

### Discussion

This study was conducted to investigate the effect of using a mobile application with readings from the Holy Quran on anxiety, self-esteem, and depressive symptoms among postpartum women. The study found that the app reduced depression symptoms, although it had no apparent effect on anxiety or self-esteem.

The mobile app contained information about postpartum depression, and was designed to ensure mothers understood when and how to take action to prevent or manage symptoms of depression. There is a proven relationship between knowledge and postpartum depression (Branquinho et al, 2019). A study in Nigeria reported that only 6% of participants had good knowledge of postpartum depression, while the prevalence of postpartum depression was as high as 52.3% (Obioha and Okafor, 2022). Knowledge about postpartum depression is also related to a greater likelihood of seeking professional help (Branquinho et al, 2020).

The application designed for the present study also allowed users to play recordings from the Holy Quran. For Muslims, listening to readings of the Quran can promote spiritual comfort and faith, which can positively impact anxiety and depression. Al-Quran

**Table 3. Friedman test comparison of total scores for each group**

Group		Pre-test		Post-test (1 month)		Post-test (2 months)		P value
		Mean (standard deviation)	Min–Max	Mean (standard deviation)	Min–Max	Mean (standard deviation)	Min–Max	
App (n=64)	Depression	12.06 (1.94)	8–16	11.31 (2.39)	6–18	10.92 (2.76)	2–18	<0.001
	Anxiety	48.63 (5.01)	37–64	48.16 (6.01)	33–62	48.23 (6.05)	33–67	0.718
	Self esteem	21.27 (3.51)	13–30	21.45 (4.41)	9–30	21.67 (4.22)	11–30	0.437
Control (n=64)	Depression	11.89 (2.32)	7–18	11.64 (2.19)	6–17	11.70 (2.27)	7–19	0.576
	Anxiety	49.34 (5.60)	34–66	48.45 (6.91)	33–68	47.83 (6.24)	36–63	0.229
	Self esteem	20.83 (3.06)	8–28	20.25 (2.67)	14–27	20.50 (2.74)	13–29	0.673



therapy is being developed for postpartum women to aid relaxation and manage postpartum depression (Yolanda et al, 2023). It has been reported to be an effective treatment for spiritual and psychological issues (Saged et al, 2020) and has the potential to improve mental disorders and psychological wellbeing (Owens et al, 2023). Quran therapy can also reduce stress hormones, activate natural endorphins, increase relaxation, divert attention from fear, anxiety and tension, reduce blood pressure and slow breathing, heart rate, pulse and brain wave activity (Kurniyawan et al, 2018; Anwar et al, 2019).

The excerpt of the Holy Quran used in the application for the present study was Surah Maryam. Listening to the recitation for 20 minutes each day for 3 weeks has been shown to reduce stress, anxiety and depression during pregnancy (Jabbari et al, 2020). Listening for 25 minutes a day for 14–17 days reportedly reduced anxiety in third-trimester pregnant women (Ulya et al, 2022). In labouring women, listening to the recitation has been shown to reduce pain, anxiety and hemodynamic parameters (El-Sayed et al, 2020).

Previous research has shown that listening to the Al Quran can reduce anxiety (Owens et al, 2023). However, the results of the present study showed that there were no differences in anxiety before and after the intervention. The COVID-19 pandemic was ongoing at the time of the study, which may have led to heightened anxiety related to the social restrictions in place to prevent transmission of the virus (Puspita and Mardiyana, 2021). Sabrin et al (2021) found that during the COVID-19 pandemic, 53.3% of pregnant women in Indonesia experienced anxiety. Additionally, studies from Indonesia reported that during the pandemic, 20.2–44.3% of pregnant women reported moderate to severe anxiety (Zainiyah and Susanti, 2020; Margawati et al, 2022), while before the pandemic, only 3.7–6.9% of pregnant women in Indonesia reported the same level of anxiety (Astuti and Afsah, 2019; Azizah and Rohimah, 2019).

The present study's results showed that the self esteem score in the intervention group was higher than in the control group for all time points. Although there was no statistically significant difference between the intervention and control groups before and after the intervention, there was a small increase in scores in the intervention group between the pre-test and second post-test, whereas the control group's score remained at a similar level throughout the study. There is a relationship between self esteem and depression; mothers with low self esteem are more at risk of experiencing postpartum depression than those with high self esteem (Onyemaechi et al, 2017). Similarly, the present study's results showed that the average depression

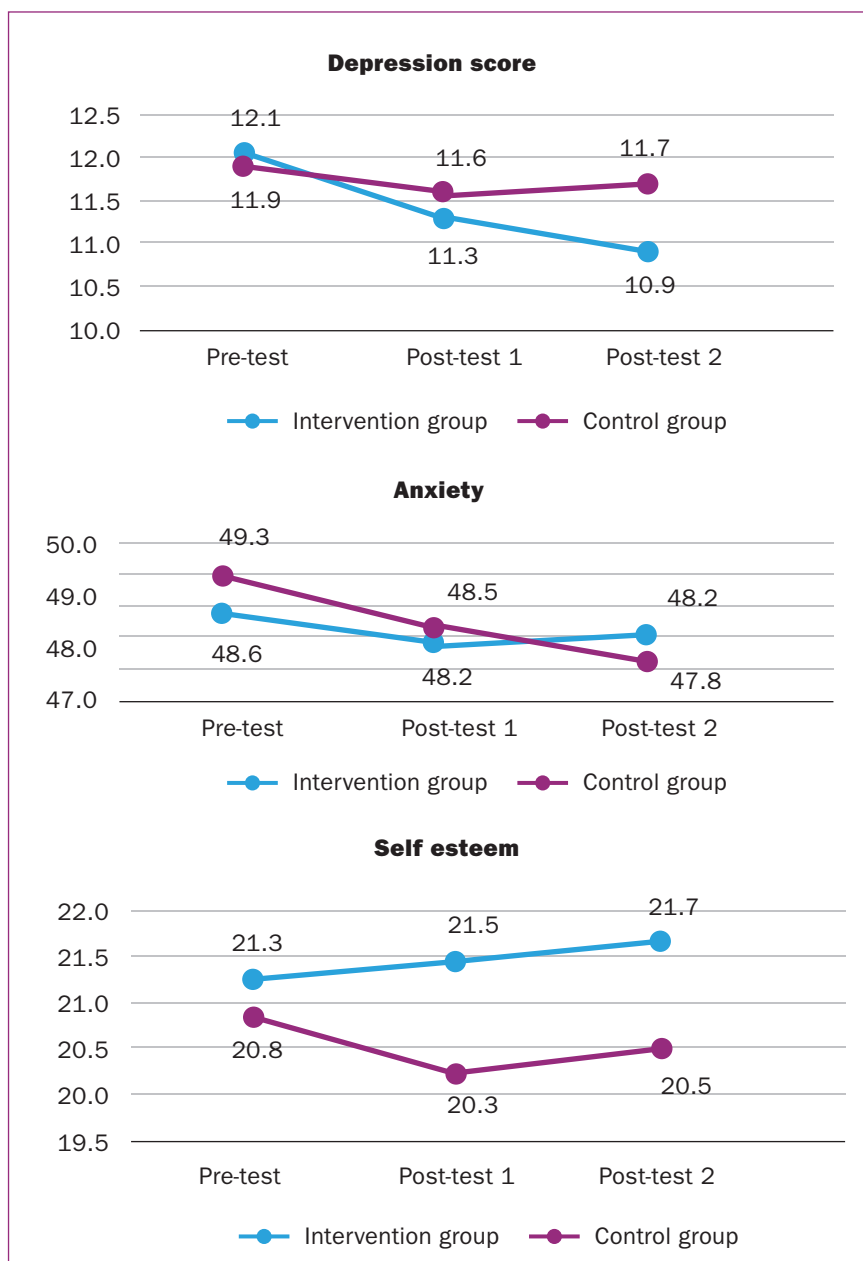


Figure 2. Changes in outcome measures over time each measurement

Table 4. Changes in depression scores of ≥10 pre- and post-intervention			
Test	Frequency, n=128 (%)		
	Total	App group	Control group
Pre-test	112 (87.5)	58 (90.6)	54 (84.4)
Post-test (1 month)	98 (76.6)	49 (76.6)	49 (76.6)
Post-test (2 months)	91 (71.1)	42 (65.6)	49 (76.6)

score decreased significantly in the intervention group, while their self esteem scores increased. Meanwhile, in the control group, there was a small increase in self

## Key points

- Postpartum depression has a negative effect on mothers, families, society and countries.
- Maternity nurses and midwives can provide non-pharmacological interventions to prevent postpartum depression.
- The combination of a mobile application and listening to recitations of the Holy Quran Voice can reduce postpartum depression symptoms among Muslim women in the postpartum period.

esteem and decrease in depression scores between the pre-test and first post-test, but an overall insignificant decrease to both scores by the final post-test.

### Strengths and limitations

This is the first investigation to combine a mobile application with recitations of the Holy Quran. This combination is suitable to the situation in Indonesia, where most of the population is Muslim and can access the internet using smartphones. By modifying the language, this application may also be suitable for use in other countries with a Muslim population.

However, this study had several limitations. First, the participants' compliance to daily use of the application and listening to the recitations was not assessed. Second, participants' knowledge of postpartum depression was not assessed and so it is not possible to assess whether reduced depression scores were solely the result of listening to the Holy Quran, or greater understanding of postpartum depression and preventive or treatment measures. Third, respondent characteristics such as parity and education, which are risk factors for postpartum depression, were not considered.

### Conclusions

The results of this study show that use of a mobile application combined with recitations from the Holy Quran was effective in reducing postpartum depression symptoms, and is therefore likely to be a useful tool for postpartum mothers who are Muslims. Further research should be conducted to explore mothers' experiences of using mobile applications. Adapting the mobile application to other languages for use in different populations of Muslim women would be beneficial. **BJM**

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- Anwar KK, Hadju V, Massi MN. Pengaruh Murottal Al-Quran Terhadap Peningkatan Kadar Beta-Endorphin Dan Penurunan Tingkat Nyeri Pasien Post Sectio Caesarea. *Jurnal Kesehatan*. 2019;10(2):58. <https://doi.org/10.35730/jk.v10i2.394>
- Astuti Y, Afsah Y. The factors influencing sleep quality of pregnant women in Yogyakarta, Indonesia. *Adv Health Sci Res*. 2019. <https://doi.org/10.2991/icosihsn-19.2019.44>
- Azizah N, Rohimah. Gambaran Kecemasan Ibu Hamil Primigravida Dalam Menghadapi Persalinan Di Wilayah Kerja Puskesmas Pringgasela. *ProHealth J*. 2019;16(1):1–9
- Baker AH, Carrington P, Putlin D. Theoretical and methodological problems in research on emotional freedom techniques (EFT) and other meridian-based therapies. *Psychology (Irvine)*. 2009;6(2):34–46
- Bolak Boratav H, Toker Ö, Küey L. Postpartum depression and its psychosocial correlates: a longitudinal study among a group of women in Turkey. *Women Health*. 2016;56(5):502–521. <https://doi.org/10.1080/03630242.2015.1101737>
- Branquinho M, Canavarro MC, Fonseca A. Knowledge and attitudes about postpartum depression in the Portuguese general population. *Midwifery*. 2019;77:86–94. <https://doi.org/10.1016/j.midw.2019.06.016>
- Branquinho M, Canavarro MC, Fonseca A. Postpartum depression in the Portuguese population: the role of knowledge, attitudes and help-seeking propensity in intention to recommend professional help-seeking. *Community Ment Health J*. 2020;56(8):1436–1448. <https://doi.org/10.1007/s10597-020-00587-7>
- Chen MH, Pan TL, Bai YM et al. Postpartum depression and psychosis and subsequent severe mental illnesses in mothers and neurodevelopmental disorders in children: a nationwide study. *J Clin Psychiatry*. 2021;82(4):20m13735. <https://doi.org/10.4088/JCP.20m13735>
- Cheng HY, Huang TY, Chien LY, Cheng YF, Chen FJ. The effects of a mobile application social support program on postpartum perceived stress and depression. *J Nurs*. 2016;63(6). <https://doi.org/10.6224/JN.63.6.52>
- Cohen J. *Statistical power analysis for the social sciences*. New Jersey, USA: Lawrence Erlbaum Associates; 1988
- Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh postnatal depression scale. *Br J Psychiatry*. 1987;150(6):782–786. <https://doi.org/10.1192/bjp.150.6.782>
- Danaher BG, Milgrom J, Seeley JR et al. MomMoodBooster web-based intervention for postpartum depression: feasibility trial results. *J Med Internet Res*. 2013;15(11):e242. <https://doi.org/10.2196/jmir.2876>
- Edwards GD, Shinfuku N, Gittelman M et al. Postnatal depression in Surabaya, Indonesia. *Int J Mental Health*. 2006;35(1). <https://doi.org/10.2753/IMH0020-7411350105>
- El-Sayed H, El-Sayed M, Hashim O, Saadoon MM, Mahmoud M, Saadoon M. Effect of listening to Holy Quran on maternal and neonatal outcomes among muslim primiparous during the active phase of labor. *Int J Novel Res Healthc Nurs*. 2020;7(2)
- Faisal-Cury A, Tabb KM, Ziebold C, Matijasevich A. The impact of postpartum depression and bonding impairment on child development at 12 to 15 months after delivery. *J Affect*

Disord Rep. 2021;4:100125. <https://doi.org/10.1016/j.jadr.2021.100125>

Goodman JH. Paternal postpartum depression, its relationship to maternal postpartum depression, and implications for family health. *J Adv Nurs*. 2004;45(1). <https://doi.org/10.1046/j.1365-2648.2003.02857.x>

Jabbari B, Mirghafourvand M, Sehhatie F, Mohammad-Alizadeh-Charandabi S. The effect of Holy Quran Voice with and without translation on stress, anxiety and depression during pregnancy: a randomized controlled trial. *J Relig Health*. 2020;59(1):544–554. <https://doi.org/10.1007/s10943-017-0417-x>

Jannati N, Mazhari S, Ahmadian L, Mirzaee M. Effectiveness of an app-based cognitive behavioral therapy program for postpartum depression in primary care: a randomized controlled trial. *Int J Med Inform*. 2020;141:104145. <https://doi.org/10.1016/j.ijmedinf.2020.104145>

Jiménez-Serrano S, Tortajada S, García-Gómez JM. A mobile health application to predict postpartum depression based on machine learning. *Telemed J E Health*. 2015;21(7):567–574. <https://doi.org/10.1089/tmj.2014.0113>

Khajehei M, Doherty M. Exploring postnatal depression, sexual dysfunction and relationship dissatisfaction in Australian women. *Br J Midwifery*. 2017;25(3):162–172. <https://doi.org/10.12968/bjom.2017.25.3.162>

Koçak V, Ege E, İyisoy MS. The development of the postpartum mobile support application and the effect of the application on mothers' anxiety and depression symptoms. *Arch Psychiatr Nurs*. 2021;35(5):441–449. <https://doi.org/10.1016/j.apnu.2021.06.009>

Kurniyawan EH, Haryanto J, Sriyono MN, K. R, Afandi AT. Therapy acupressure and Murottal Al-Quran on the pain intensity and endorphin urine. *Caring Nurs J*. 2018;2(1).

Kusuma R. Karakteristik ibu yang mengalami depresi postpartum. *Jurnal Ilmiah Universitas Batanghari Jambi*. 2019;19(1):99. <https://doi.org/10.33087/jjubj.v19i1.571>

Latifah L, Hartati H. Efektifitas skala edinburgh dan skala beck dalam mendeteksi risiko depresi post partum di Rumah Sakit Umum Prof. Dr. Margono Soekarjo Purwokerto. *Soedirman J Nurs*. 2006;1(1):15–19

Latifah L, Setiawati N, Rismawati I. Are there any effects of tapping therapy in reducing anxiety and labor pain in the latent phase. *Ann Trop Med Public Health*. 2019;22(11):403–410. <https://doi.org/10.36295/ASRO.2019.221152>

Lee YL, Tien Y, Bai YS et al. Association of postpartum depression with maternal suicide: a nationwide population-based study. *Int J Environ Res Public Health*. 2022;19(9):5118. <https://doi.org/10.3390/ijerph19095118>

Liu C, Chen H, Zhou F et al. Positive intervention effect of mobile health application based on mindfulness and social support theory on postpartum depression symptoms of puerperae. *BMC Womens Health*. 2022a;22(1):413. <https://doi.org/10.1186/s12905-022-01996-4>

Liu C, Chen H, Zhou F et al. Positive intervention effect of mobile health application based on mindfulness and social support theory on postpartum depression symptoms of puerperae. *BMC Womens Health*. 2022b;22(1):413. <https://doi.org/10.1186/s12905-022-01996-4>

Margawati A, Syauqy A, Utami A, Hananingtyas A, Zaimatussoleha C. Anxiety among pregnant women in rural-urban area Indonesia during the COVID-19 pandemic in

## CPD reflective questions

- Could the intervention outlined in this study be applied to your own practice?
- What facilities do you have to support implementation of postpartum depression interventions?
- Does the education provided during antenatal education on preventing and managing postpartum depression incorporate cultural or religious elements? Do you feel that women in your area would benefit from inclusion of this aspect in antenatal education?

Semarang, Indonesia. *Open Access Macedonian J Med Sci*. 2022;10(E). <https://doi.org/10.3889/oamjms.2022.10937>

Murwati M, Suroso S. Penerapan Cognitif Behavior Therapi (CBT) pada ibu nifas sebagai upaya pencegahan depresi postpartum di Kabupaten Klaten. *Jurnal Kebidanan dan Kesehatan Tradisional*. 2017;2(2):91–96. <https://doi.org/10.37341/jkkt.v2i2.91>

Nurbaeti I, Deoisres W, Hengudomsub P. Postpartum depression in Indonesian mothers: its changes and predicting factors. *Pac Rim Int J Nurs Res*. 2018;22(2):93–105

Nurbaeti I, Deoisres W, Hengudomsub P. Association between psychosocial factors and postpartum depression in South Jakarta, Indonesia. *Sex Reprod Healthc*. 2019;20:72–76. <https://doi.org/10.1016/j.srh.2019.02.004>

Nurbaeti I, Syafii M, Lestari KB. Developing an android-based application for early detection of postpartum depression symptoms in Indonesia. *Belitung Nurs J*. 2021;7(2):118–124. <https://doi.org/10.33546/bnj.130>

Obioha EG, Okafor I. Knowledge, attitude and prevalence of postpartum depression among postnatal mothers in southwest Nigeria. *Afr J Health Sci*. 2022;34(6)

O'Hara MW, Engeldinger J. Treatment of postpartum depression: recommendations for the clinician. *Clin Obstet Gynecol*. 2018;61(3):604–614. <https://doi.org/10.1097/GRF.0000000000000353>

O'Hara MW, Mc Cabe JE. Postpartum depression: current status and future directions. *Annual Rev Clin Psychol*. 2013;9. <https://doi.org/10.1146/annurev-clinpsy-050212-185612>

Onyemaechi I, Aroyewun B, Ifeagwazi CM. (2017). Postpartum depression: the role of self-esteem, social support and age. *IFE Psychologia*. 2017;25(2)

Owens J, Rassool GH, Bernstein J, Latif S, Aboul-Enein BH. Interventions using the Qur'an to promote mental health: a systematic scoping review. *J Mental Health*. 2023;32(4). <https://doi.org/10.1080/09638237.2023.2232449>

Puspita IM, Mardiyana NE. Relationship of pregnant mother's anxiety level with preparation for childbirth during Covid-19 pandemic in Surabaya, Indonesia. *Majalah Obstetri & Ginekologi*. 2021;29(3):102. <https://doi.org/10.20473/mog.V29I32021.102-107>

Sabrin G, Retnowati Y, Noviyanti NI, Sunardi W, Sutrang D. Analysis of anxiety levels of pregnant women during the Covid-19 pandemic in Indonesia. *Int J Sci Technol Manage*. 2021;2(5). <https://doi.org/10.46729/ijstm.v2i5.327>

Sadat Z, Abedzadeh Kalaroudi M, Kafaei Atrian M, Karimian Z, Sooki Z. The impact of postpartum depression on quality of life in women after child's birth. *Iran Red Crescent Med J*. 2014;16(2):e14995. <https://doi.org/10.5812/ircmj.14995>

Saged AAG, Mohd Yusoff MYZ, Abdul Latif F et al. Impact of



- Quran in treatment of the psychological disorder and spiritual illness. *J Relig Health*. 2020;59(4):1824–1837. <https://doi.org/10.1007/s10943-018-0572-8>
- Schmitt DP, Allik J. Simultaneous administration of the Rosenberg self-esteem scale in 53 nations: exploring the universal and culture-specific features of global self-esteem. *J Pers Soc Psychol*. 2005;89(4):623–642. <https://doi.org/10.1037/0022-3514.89.4.623>
- Schulz KF, Altman DG, Moher D; CONSORT Group. CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. *PLoS Med*. 2010;7(3):e1000251. <https://doi.org/10.1371/journal.pmed.1000251>
- Seo JM, Kim SJ, Na H, Kim JH, Lee H. The development of the postpartum depression self-management mobile application “happy Mother.” *CIN - CIN: Computers, Informatics, Nursing*. 2021;39(8):439–449. <https://doi.org/10.1097/CIN.0000000000000738>
- Seo JM, Kim SJ, Na H, Kim JH, Lee H. Effectiveness of a mobile application for postpartum depression self-management: evidence from a randomised controlled trial in South Korea. *Health Care (Don Mills)*. 2022;10(11):2185. <https://doi.org/10.3390/healthcare10112185>
- Sharkey KM, Iko IN, Machan JT, Thompson-Westra J, Pearlstein TB. Infant sleep and feeding patterns are associated with maternal sleep, stress, and depressed mood in women with a history of major depressive disorder (MDD). *Arch Women Ment Health*. 2016;19(2):209–218. <https://doi.org/10.1007/s00737-015-0557-5>
- Stewart DE, Vigod S. Postpartum depression. *N Engl J Med*. 2016;375(22):2177–2186. <https://doi.org/10.1056/NEJMcpl607649>
- Sun M, Tang S, Chen J et al. A study protocol of mobile phone app-based cognitive behaviour training for the prevention of postpartum depression among high-risk mothers. *BMC Public Health*. 2019;19(1):710. <https://doi.org/10.1186/s12889-019-6941-8>
- Ugarte AU, López-Peña P, Vangeneberg CS et al. Psychoeducational preventive treatment for women at risk of postpartum depression: study protocol for a randomized controlled trial, PROGEA. *BMC Psychiatry*. 2017;17(1):13. <https://doi.org/10.1186/s12888-016-1162-5>
- Ulya NA, Rahayu HSE, Sulistyono D. The effect of Al-Qur’an Murottal therapy on anxiety in third trimester pregnant women. *Study Literature Reviews*. 2022;1033–1042. [https://doi.org/10.2991/978-2-38476-118-0\\_119](https://doi.org/10.2991/978-2-38476-118-0_119)
- van der Zee-van den Berg AI, Reijneveld SIA, Boere-Boonekamp MM. Impact of postpartum depression on care use and work. *Ned Tijdschr Geneesk*. 2021;165
- Vithani T, Kumar A. Modeling the mobile application development lifecycle. 2014. [https://www.iaeng.org/publication/IMECS2014/IMECS2014\\_pp596-600.pdf](https://www.iaeng.org/publication/IMECS2014/IMECS2014_pp596-600.pdf) (accessed 9 January 2023)
- Walker AL, Peters PH, de Rooij SR et al. The long-term impact of maternal anxiety and depression postpartum and in early childhood on child and paternal mental health at 11–12 years follow-up. *Front Psychiatry*. 2020;11:562237. <https://doi.org/10.3389/fpsyt.2020.562237>
- Wang F, Zhu H, Yang X, Liao F. Effects of internet-based cognitive behavioral therapy on postpartum depression: a protocol for systematic review and meta-analysis. *Medicine* 2022;101:9. <https://doi.org/10.1097/MD.00000000000028964>
- Wang Z, Liu J, Shuai H et al. Mapping global prevalence of depression among postpartum women. *Translational Psychiatry*. 2021;11:1. <https://doi.org/10.1038/s41398-021-01663-6>
- Yolanda D, Rahmadhani P, Merianti L. Al Qur’an muratal therapy and postpartum blues. *Int Health J*. 2023;1:1
- Zainiyah Z, Susanti E. Anxiety in pregnant women during coronavirus (Covid-19) pandemic in East Java, Indonesia. *Majalah Kedokteran Bandung*. 2020;52(3). <https://doi.org/10.15395/mkb.v52n3.2043>
- Zhang MWB, Ho RCM, Loh A, Wing T, Wynne O, Chan SWC, Car J, Fung DSS. Current status of postnatal depression smartphone applications available on application stores: an information quality analysis. *BMJ Open*. 2017;7(11):e015655. <https://doi.org/10.1136/bmjopen-2016-015655>



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