

## Supplementary File 8. Characteristics of included studies

Study (year), country	Study design, setting	Study population	Sample size	mHealth service	mHealth intervention	Comparator	Evaluation	Reported psychosocial health outcomes
Avalos et al. (2020), US	Quasi-experimental, clinics	Postpartum women (up to 6 months) with moderate to moderately severe depressive symptoms	n = 27	App (Headspace)	Psychoeducation or therapy (mindfulness-based program)	N/A	Patient Health Questionnaire-8 (PHQ-8; adapted from PHQ-9 and excluded question regarding suicidal thoughts); Perceived Stress Scale (PSS)	PHQ-8 score improved significantly between baseline and 6-week follow-up (MD = -3.8, SD = 5.0, p = 0.004).  PSS score improved significantly between baseline and 6-week follow-up (MD = -6.0, SD = 7.9, p = 0.005).
Abroms et al. (2015), US	Quasi-experimental, general population	Pregnant women who were current smokers or had quit smoking in the last 4 weeks (gestational requirement not specified)	n = 20	SMS (Quit4baby)	Behavior change (smoking cessation program)	N/A	Attitude-Social Influence-Efficacy Model (ASE)	Average rating of self-efficacy was M = 3.6, SD = 1.2 at baseline and M = 4.8, SD 0.5 at the 4-week follow-up. However, this result was limited to 65% (13/20) of the participants due to the overall low response rate.
Baumel et al. (2018), US	Quasi-experimental, hospital	Mothers diagnosed with postpartum depression	n = 19	App (7Cups of Tea)	Psychoeducation or therapy (mindfulness-based program); communication and support (trained volunteers)	N/A	Edinburgh Postnatal Depression Scale (EPDS); Beck Depression Inventory II (BDI-II); Beck Anxiety Inventory (BAI)	Intent-to-treat analyses showed that among intervention group EPDS score was M = 17.32, SD = 5.96 at baseline and M = 13.53, SD = 4.65 at one-month follow-up (p = 0.005). BDI-II score was M = 26.11, SD = 13.34 at baseline and M = 19.18, SD = 9.23 at follow-up (p = 0.01). BAI score was M = 20.47, SD 13.15 at baseline and M = 16.65, SD 7.52 at follow-up (p = 0.11).  However, no significant difference in EPDS decrease over time was found between intervention and control group. However, there was a medium effect size favoring the intervention group (Cohen d = 0.58, p = 0.05).
Blackwell et al. (2020), US	Mixed methods, hospital	Pregnant women who are urban African American and Afro-Caribbean immigrants (gestational requirement not specified)	Qualitative: n = 9 Quantitative: n = 49	SMS (Text4baby)	Health education or promotion (via text messaging); communication and support	N/A	Qualitative: Focus group discussion (FGD) and in-depth interview (IDI)  Quantitative: Questionnaire evaluating attitudes, beliefs, perceived usefulness, perceived ease of use, compatibility, relative advantage, visibility, and behavioral intent	Qualitative: Three themes were identified (1) inadequate patient-provider engagement, (2) social support, and (3) acculturation.  Quantitative: Participants reported that the text messages allowed them to have greater control over the prenatal health care (pre = 28.6%, post = 51%, p = 0.02).

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Bogale et al. (2021), Palestine	RCT (cluster), primary healthcare clinics	Pregnant women in 38 weeks' gestation	n = 454 (131 clusters)	SMS	Registries/vital events tracking (tailored messages via SMS from MCH eRegistry)	Standard care	Cambridge Worry Scale 13-item (CWS) via interview	Unadjusted CWS score was M = 1.8, SD = 1.9 for intervention group and M = 2.0, SD = 1.9 for control group. After adjusting for the clustering effects, the MD was -0.16 (95% CI = -0.31 to -0.01) which was below the predefined non-inferiority margin of 0.3.
Brown et al. (2014), US	Qualitative, community health center	Low-income, adolescent, minority postpartum women (up to 6 months)	n = 5	SMS	Health education or promotion (via text blasts)	N/A	Semi-structured interviews	Participants described a sense of fulfillment, competence, and confidence from interacting with texts which provided validation of their motherhood role.
Carissoli et al. (2021), Italy	Quasi-experimental, hospital	Primigravida women in third pregnancy trimester	n = 74	App (BenEssere Mamma)	Psychoeducation or therapy (mindfulness-based program); Self-monitoring system (mood)	Standard care	Psychological Well-being (PWB) Scale 84-item	Sense of Autonomy component of the PWB Scale showed a significant increase in the intervention group (M = 4.29, SD = 0.52) compared to the control group (M = 4.43, SD = 0.71) immediately after the 4-week intervention (p = 0.05). Similar effectiveness was found at postpartum assessment between intervention (M = 4.40, SD = 0.60) and control group (M = 4.36, SD = 0.93, p = 0.046).  Self-acceptance component showed a significant increase in the intervention group (M = 4.84, SD = 0.60) compared to the control group (M = 4.33, SD = 1.13) at postpartum assessment (p = 0.011).
Cheng et al. (2008), Taiwan	RCT, hospital	Pregnant women between 14–18 weeks' gestation	n = 2782	SMS	Laboratory results (Down syndrome screening results via SMS)	Report at the time of routine clinic appointment	State-Trait Anxiety Inventory (STAI)	For pregnant women who received negative results for Down Syndrome screening, STAI-S scores did not significantly differ between intervention and control groups before screening (M = 38.9, SD = 9.9 vs. M = 37.8, SD = 11.3, p = 0.51) and three days after the appointed clinic (M = 35.3, SD = 12.5 vs. M = 34.9, SD = 9.8, p = 0.37). However, it declined significantly on the second occasion (when the SMS report had already been sent to intervention group) for the intervention group (M = 33.8, SD = 7.9) compared to the control group (M = 39.1, SD = 10.1) (p = 0.02).  For pregnant women who received positive results for Down Syndrome screening, STAI-T scores did not significantly differ between intervention group (M = 38.7, SD = 8.8) and control group (M = 40.1, SD = 13.2, p = 0.57). STAI-S scores did not significantly differ between the intervention and control groups before screening (M = 39.2, SD = 11.4 vs. M = 39.9, SD = 9.4, p = 0.66), second occasion (M = 44.1, SD = 13.4 vs. M = 42.9, SD = 11.5, p = 0.21), and three days after the appointed clinic (M = 43.4, SD = 9.6 vs. M = 43.1, SD = 10.6, p = 0.52).

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Choi et al. (2016), US	RCT (pilot evaluation), clinics and communities	Pregnant women between 10–20 weeks' gestation with a sedentary life style	n = 30	App	Behavior change (physical activity)	Fitbit Ultra only (No app)	Self-Efficacy for Physical Activity (SEPA); Social Support and Exercise Survey; Center for Epidemiologic Studies Depression Scale (CES-D)	SEPA score was M = 18.7, SD = 4.4 for intervention group and M = 17.1, SD 5.2 for control group at 12-week follow-up (p = 0.58).  Social Support and Exercise Survey score for family support was M = 42.0, SD = 11.5 for intervention group and M = 38.5, SD = 10.4 for control group (p = 0.28). For friend support, it was M = 37.2, SD = 9.6 for intervention group and M = 32.1, SD = 8.6 for control group at 12-week follow-up (p = 0.64).  CES-D score was M = 8.8 (SD 2.7) for intervention group and M = 11.1 (SD 6.9) for control group (p = 0.56) at 12-week follow-up.
Chyzy et al. (2020), Canada	Descriptive (drawn from pilot RCT), general population	Pregnant adolescent women over 28 weeks' gestation	n = 16	SMS and voice calling	Communication and support (peer support)	N/A	Peer Support Evaluation Inventory (PSEI)	Participants perceived positive support from their peer mentors such as trustworthiness (94%), acceptance (75%), empathy (81%), and commitment (81%). All of the participants were satisfied with their peer support experience.
Connor et al. (2018), US	Qualitative, general population	Pregnant and postpartum women (up to 6 months)	n = 16	App	N/A (general use of mHealth)	N/A	Semi-structured interviews	Participants felt supported when they used mHealth apps because the information was personalized and they could use the apps to connect with family and the online community.
Constant et al. (2014), South Africa	RCT, NGOs and primary care clinics	Women scheduled to undergo early medical abortion	n = 469	SMS	Health education or promotion (via automated SMS)	Standard care (receiving abortion counseling and administration of mifepristone)	Hospital Anxiety and Depression Scale (HADS); Adler's 12-item emotional scale; Impact of Event Scale-Revised (IES-R)	For anxiety measured by HADS, intention-to-treat analysis showed that anxiety decreased more in the intervention group from baseline (MD = -3.6, SD = 5.3) than the control group (MD = -2.3, SD = 5.0, p = 0.013).  For IES-R scores, two subscales of avoidance (IES-A) and intrusion (IES-I) did not show any significant difference for intervention group (IES-A: M = 13.1, SD = 7.3; IES-I: M = 9.0, SD = 9.1) and control group (IES-A: M = 14.4, SD = 7.4; IES-I: M = 9.5, SD = 8.3). Both IES-A (p = 0.085) and IES-I (p = 0.541) were not statistically significant. However, when IES-A scores was adjusted for baseline anxiety, it was lower for the intervention group than the control group ( $\beta = -1.8$ , 95% CI = -3.2 to -0.4, p = 0.015), however this was not the case of adjusted IES-I scores ( $\beta = -1.4$ , 95% CI = 2.9 to 0.2, p = 0.083).
Dalton et al. (2018), Australia	Quasi-experimental, tertiary hospital in low socioeconomic community	Pregnant women between 10–14 weeks' gestation	n = 124	App (Health-e Babies)	Health education or promotion	Those who did not complete the exit questionnaire	EPDS; STAI; Generalized Anxiety Disorder (GAD-7); Parenting Sense of Competence (PSoC)	No significant difference change between EPDS, GAD-7, STAI scores, before and after the intervention.  For PSoC scores, there were no significant difference between the intervention (M = 39.4, SD = 1.9) and control (M = 39.9, SD = 1.1) groups.

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Deave et al. (2019), UK	Cohort, maternity units	Primigravida women between 12–16 weeks' gestation	n = 488	App (Baby Buddy)	Health education or promotion (via personalized daily messages); Reminders (appointment); Decision guideline (list of questions to ask at appointment); Self-monitoring system (via diary)	Non-app users	Tool to Measure Parenting Self-Efficacy (TOPSE); Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)	No significant difference in TOPSE scores (AOR = 1.12, 95% CI = 0.59 to 2.13, p = 0.730) and WEMWBS scores (AOR = 1.02, 95% CI = 0.55 to 1.89, p = 0.943) were found between baseline and 3-month follow-up.
Dennis-Tiwary et al. (2017), US	RCT (pilot evaluation), urban hospital	Pregnant women between 19–29 weeks' gestation	n = 29	App	Psychoeducation or therapy (attention bias modification training)	Placebo training version of app	Depression, Anxiety, and Stress Scale (DASS-21); Hamilton Anxiety Scale (HAM-A)	No significant differences in DASS-21 anxiety score and HAM-A score were found at one-month follow-up: DASS-21 anxiety score: intervention (M = 3.20, SD = 3.00) and control (M = 2.07, SD = 3.60); HAM-A score: intervention (M = 9.20, SD = 6.71) and control (M = 6.93, SD = 9.10) (p-value was not reported). No significant change in DASS-21 depression score at follow-up: intervention (M = 2.07, SD = 2.63) and control (M = 2.29, SD = 3.20) (p-value was not reported). No significant changes in DASS-21 stress score at follow-up: intervention (M = 6.00, SD = 2.83) and control (M = 4.36, SD = 4.18) (p-value was not reported).
Fujioka et al. (2012), Japan	Quasi-experimental (descriptive), hospitals and clinic	Pregnant women over 20 weeks' gestation who were current smokers	n = 52	e-learning using cell phone internet	Behavior change (smoking cessation program)	N/A	Japanese version of the Self Efficacy Scale from the Life-Span Perspective	Self-efficacy was much higher in the group that quit smoking than those who continued to smoke first and third months of post-intervention (not statistically significant and data were narratively reported).
Gallegos et al. (2014), Australia	RCT, general population	Breastfeeding postpartum women with infant younger than 3 months	n = 200	SMS (MumBub Connect)	Health education or promotion (via automated two-way text messaging system); Communication and support (breastfeeding counselor)	Standard care	Breastfeeding Self-Efficacy Scale (BSES), Ways of Coping Checklist (WCCL): current levels of social support from family, peers, professionals, and organizations	For breastfeeding self-efficacy, there was +0.15 change between baseline (M = 4.00, SD = 0.74) and 8-week follow-up for intervention group (M = 4.15, SD = 0.72) and a +0.07 change for the control group (M = 4.22, SD = 0.66 vs. M = 4.29, SD = 0.67), but this was not statistically significant (p = 0.25). For perceived social support, there was +0.24 change between baseline (M = 3.64, SD = 1.05) and 8-week follow-up for intervention group (M = 3.86, SD = 0.88) and a -0.02 change for the control group (M = 3.91, SD = 0.86 vs. M = 3.89, SD = 0.68), which was statistically significant (p < 0.001). For active coping, there was +0.33 change between baseline (M = 3.51, SD = 0.89) and eight weeks follow-up for intervention group (M = 3.78, SD = 0.76) and a -0.25 change for the control group (M = 3.76, SD = 0.65 vs. M = 3.51, SD = 0.31), which was statistically significant (p = 0.01). Moreover, for emotion-focused coping there was -0.23 change between baseline (M = 3.28, SD = 0.74) and eight weeks follow-up for intervention group (M = 3.07, SD = 0.85) and a -0.86 change for the control group (M = 3.17, SD = 0.79 vs. M = 2.32, SD = 0.46), which was also statistically significant (p = 0.001).

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Garfield et al. (2016), US	RCT (pilot evaluation), neonatal intensive care unit (NICU)	Postpartum parents of very low-birth-weight infants	n = 90	App (NICU-2-Home)	Health education or promotion (via curated multimedia); Decision guideline (discharge checklist); Self-monitoring system (mood and daily activities)	Standard care	PSoC	No significant difference in the PSoC scores between intervention (M = 71.8, SD = 10.5) and control (M = 69.8, SD = 10.0) groups (p = 0.369). However, PSoC scores showed 7% improvement among intervention group compared to control group when accounting for actual mean app usage.
Globus et al. (2016), Israel	Quasi-experimental, tertiary NICU	Postpartum parents of infants hospitalized in NICU	n = 178	SMS	Electronic health records (daily update of preterm infant's health status via SMS)	Pre-SMS implementation (pre/post)	York Hospital NICU Discharge Survey	Anxiety scores improved after the intervention in two questions that measure anxiety: question 1) current anxiety: pre (M = 2.7, SD = 2.6) and post (M = 3.1, SD = 2.8); question 2) anxiety in anticipation of infant's discharge: pre (M = 3.1, SD = 2.8) and post (M = 2.5, SD = 2.5). However, both question 1 (p = 0.30) and question 2 (p = 0.15) were not statistically different.
Goetz et al. (2020), Germany	Quasi-experimental (pilot evaluation), hospital	Hospitalized, high-risk pregnant women between 24–34 weeks' gestation	n = 68	App (mindmom)	Psychoeducation or therapy (mindfulness-based program)	N/A	EPDS; STAI; Pregnancy-Related Anxiety Questionnaire abridged version (PRAQ-R)	No significant change in EPDS scores were reported between baseline (M = 8.41, SD = 4.77) and after completing the intervention (M = 8.62, SD = 4.13, p = 0.71).  STAI-S (State scale) score were significantly lower compared to baseline (M = 46.65, SD = 11.35) and after intervention (M = 43.81, SD = 10.09, p = 0.03).  No significant change in PRAQ-R scores were reported between baseline (M = 21.63, SD = 6.08) and after completing the intervention (M = 20.69, SD = 6.09, p = 0.20).  However, participants who completed more than 50% of the program modules reported significantly lower PRAQ-R scores (M = 18.74, SD = 4.49) compared to participants who had low app engagement (M = 22.54, SD = 6.90, p < 0.05).
Hannan et al. (2016), US	RCT, hospital	Low-income first-time mothers and their infants	n = 129	SMS and voice calling	Communication and support (healthcare provider)	Standard care	Multidimensional Measure of Perceived Social Support (MSPSS); Perceived Stress Scale (PSS)	Mothers in the intervention group (M = 74.5, SD = 12.6) reported significantly higher perceived social support compared to the control group (M = 67.3, SD = 17.1, p < 0.05).  No significant difference in PSS scores between intervention (M = 10.0, SD = 6.1) and control groups (M = 11.9, SD = 7.9, p not reported).

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Hantsoo et al. (2018), US	RCT, hospital	Pregnant women with depressive symptoms and low socioeconomic status, less than 32 weeks' gestation	n = 72	App	Self-monitoring system (mood); Communication and support (healthcare provider)	Standard care app	PHQ-9; GAD-7	As gestational age increased, women in the intervention group reported that they can manage their own health significantly higher than the control group ( $p = 0.007$ ) after eight weeks of intervention. Women in the intervention group who received contact from providers reported significantly higher scores on PHQ-9 in Weeks 1-4 and GAD-7 in Weeks 3-4 ( $p < 0.05$ for both comparisons).
Harrington et al. (2019), Kenya	Qualitative, hospitals serving a predominantly low-to-middle income rural population	Pregnant and postpartum women (up to 6 months); men who had a pregnant female partner	Women: n = 15 Men: n = 35	SMS (Mobile WACH platform)	Health education or promotion (via tailored SMS); Communication and support (healthcare provider)	N/A	FGD	Both female and male participants felt that receiving family planning-focused messages and including men would be beneficial and may stimulate good communication within couples.
Jallo et al. (2017), US	Quasi-experimental, hospitals obstetrical antepartum high-risk unit	High-risk, pregnant women between 22-37 weeks' gestation	n = 15	App (Picture Wellness)	Psychoeducation or therapy (guided imagery stress coping program via audio files on app)	N/A	PSS; Visual Analog Stress Scale (VASS); Coping Self-Efficacy Scale 26-item (CSES)	For maternal stress, when comparing before and after listening to the app, the VASS scores significantly dropped by 22 points between pre ( $M = 44.13$ , $SE = 4.90$ ) and post ( $M = 22.04$ , $SE = 4.92$ , $p = 0.0001$ ) intervention. However, there were no changes in PSS scores between pre (median = 22.0, range 17 to 28) and post (median = 22.0, range 16 to 26, $p = 0.75$ ) intervention.  For stress coping, there was no significant change on the CSES scores between pre (median = 148.5, range 32 to 245) and post (median = 155, range 110 to 241, $p = 0.875$ ) intervention.
Jannati et al. (2020), Iran	RCT, healthcare centers	Postpartum women (up to 6 months) who scored 13 or higher on the EPDS scale	n = 75	App (Happy Mom)	Psychoeducation or therapy (cognitive-behavioral therapy based)	Standard care	EPDS	EPDS scores were significantly lower in the intervention group ( $M = 8.18$ , $SD = 1.5$ ) compared to the control group ( $M = 15.05$ , $SD = 2.9$ ) after the intervention ( $p = 0.001$ ).
Jareethum et al. (2008), Thailand	RCT, hospital	Pregnant women less than 28 weeks' gestation	n = 68	SMS	Health education or promotion (via tailored text messages)	Standard care	Tested questionnaires using Visual Analog Scale (VAS) (specific scales used were not indicated)	For confidence level, higher levels of confidence were reported among intervention group ( $M = 8.91$ , $SD = 0.86$ ) than the control group ( $M = 7.79$ , $SD = 1.45$ ) during the antenatal period ( $p = 0.001$ ). However, the difference was not significant during the perinatal period ( $M = 8.94$ , $SD = 0.95$ vs. $M = 8.38$ , $SD = 1.43$ , $p = 0.074$ ).  For anxiety level, lower levels of anxiety were reported among intervention group ( $M = 2.78$ , $SD = 2.06$ ) than the control group ( $M = 4.93$ , $SD = 2.89$ ) during the antenatal period ( $p = 0.002$ ). However, the difference was not significant during the perinatal period ( $M = 4.78$ , $SD = 2.45$ vs. $M = 5.79$ , $SD = 2.60$ , $p = 0.122$ ).

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Kodama et al. (2021), Japan	RCT, clinics	Primigravida women less than 12 weeks' gestation	n = 39	SMS	Health education or promotion (via automated text messages)	Standard care	STAI	No significant differences were found in STAI scores between intervention and control group after the intervention. However, the STAI-S (State scale) was significantly lower after the intervention than at the baseline in the intervention group ( $p = 0.03$ ).
Kubo et al. (2021), US	Quasi-experimental (single arm), clinics	Pregnant women less than 28 weeks' gestation and scored between 10 to 19 in PHQ-9 (moderate-to-moderately severe depressive symptoms)	n = 27	App (Headspace)	Psychoeducation or therapy (mindfulness-based program)	N/A	PHQ-8 (adapted from PHQ-9); PSS	PHQ-8 score improved significantly between baseline and 6-week follow-up (MD = -6.0, SD = 5.5, $p < 0.001$ ).  PSS score improved significantly between baseline and 6-week follow-up (MD = -5.6, SD = 7.3, $p = 0.0027$ ).
Litterbach et al. (2017), Australia	Qualitative, general population	Pregnant women in 30+ weeks' gestation or parent/main carer of an infant aged under 3 months	n = 24	App and website (Growing Healthy Program)	Health education or promotion (via videos and automated personalized text messages); Communication and support	N/A	Semi-structured telephone interviews	Women who engaged in the program reported that it helped increase their confidence in feeding decisions. They also reported that the program provided nonjudgmental support.
Musiimenta et al. (2021), Uganda	Qualitative (drawn from a pilot RCT), hospital	Illiterate pregnant women initiating antenatal care	n = 30	App (MatHealth)	Health education or promotion (personalized information via video/audio); Reminders (appointment); Communication and support (healthcare provider)	N/A	Semi-structured face-to-face interviews	Participants reported that the app enhanced support and involvement from their spouses. This support included being escorted to the clinic for appointments, providing feeding support, purchasing essentials required for delivery, providing transportation means, and permission to the clinic for antenatal services and delivery.
Özkan Şat et al. (2018), Turkey	Descriptive, hospital	Pregnant women between 25–40 weeks' gestation	n = 230	App	N/A (general use of mHealth)	Pregnant women who did not use apps or blogs during pregnancy	Prenatal Self Evaluation Questionnaire (PSEQ)	For total PSEQ score, women who used apps (M = 129.75, SD = 21.77) had a better psychosocial adaptation to pregnancy than those who did not use apps (M = 135.94, SD = 26.40), but it was not statistically significant ( $p = 0.059$ ). In the mean subscale score of PSEQ, women who used apps (M = 13.28, SD = 4.22) had a lower score in relationship with husband than those who did not (M = 15.69, SD = 5.41) which was statistically significant ( $p = 0.001$ ). Women who used apps (M = 18.99, SD = 3.88) had a lower score in acceptance of pregnancy than those who did not (M = 20.86, SD = 6.12) which was also statistically significant ( $p = 0.005$ ).

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Rhodes et al. (2020), UK	Mixed methods, general population	Expectant and recent parents (under 24 weeks)	Qualitative: n = 13 pregnant women and n = 19 recent parents  Quantitative: n = 436	App (Baby Buddy)	Health education or promotion (via personalized daily messages); Reminders (appointment); Decision guideline (list of questions to ask at appointment); Self-monitoring system (via diary)	N/A	Qualitative: telephone interviews  Quantitative: web-based survey consisting of questions assessing the impact of COVID-19 on experiences, attitudes, and needs	Of the 436 web-based survey respondents, 88.5% (n = 386) reported that the pandemic increased their levels of anxiety around pregnancy, birth, and being a new parent. Pregnant (25%; 61/244) and postnatal (19.8%; 38/192) respondents reported using the app more during the pandemic. Both pregnant (79.1%; 193/244) and postnatal (87.0%; 167/192) respondents found that the app was helping in providing access to reliable information, mainly because the app provided information from the National Health Service (NHS).  In the telephone interview, participants found the app to be valuable in the absence of support from health care professionals and baby groups due to the COVID-19 pandemic.
Seo et al. (2021), Korea	Mixed methods, general population	Mothers with a score of 9 or more on the EPDS	n = 4	App (Happy Mother)	Psychoeducation or therapy (cognitive-behavioral therapy based)	N/A	Qualitative: face-to-face interviews  Quantitative: usability testing	In the interview, mothers with mild postpartum depression reported that the app had encouraged them to think positively and was helpful in their self-management of depression.
Seshu et al. (2021), India	Qualitative, rural community	Mothers who were screened to be positive for perinatal depression	n = 9	Interactive Voice Response System (IVRS)	Health education or promotion (via audio dramas)	N/A	IDIs and FGD	Participants reported that listening to the IVRS content had a soothing effect and helped them improve their mood.
Seyyedi et al. (2021), Iran	RCT, clinic	Mothers who intended to breast feed and had their firstborn child aged less than 3 months	n = 80	App	Health education or promotion (via breastfeeding education program)	Standard care	Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF)	BSES-SF scores increased more in the intervention group (MD = 26.85, SD = 7.13) than the control group (MD = 0.40, SD = 5.17) with significant difference between the two groups (p < 0.001).



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Shorey et al. (2017), Singapore	RCT, tertiary teaching hospital	First-time parents	n = 250	App (Home-but-not Alone)	Psychoeducation or therapy; Communication and support (healthcare providers)	Standard care	Parenting self-efficacy scale, Perceived Social Support for Parenting Scale (PSSP), EPDS	For parenting self-efficacy, parents who received the intervention showed an improvement of self-efficacy at post-test (MD = 11.8, SD = 23.7) compared with baseline. The control group had a decrease in self-efficacy scores (MD = -11.9, SD = 21.9) over the same four-week intervention. There was a significant change in adjusted scores at post-test when comparing intervention and control group (MD = 23.20, 95% CI = 16.44 to 29.95, $p < 0.001$ ). For social support score, the scale measured social support from spouse and other sources. For social support from spouse, there was an improvement in post-test scores in the intervention group (MD = 0.31, SD = 23.3) from baseline. However, there was decrease in scores in the control group from baseline (MD = -27.4, SD = 22.3). This resulted in an overall significant difference between the intervention and control group in social support received from spouses (MD = 27.08, 95% CI = 20.94 to 34.8, $p < 0.001$ ). For social support from other sources, the results were similar. There was an improvement in post-test scores in the intervention group (MD = 4.3, SD = 29.3) but a decrease in the control group (MD = -22.0, SD = 22.5). This resulted in an overall difference between the intervention and control group in social support received from other sources (MD = 27.23, 95% CI = 19.06 to 35.40, $p < 0.001$ ). For EPDS scores, there was a MD of 7.0 (SD = 81.5) in the intervention group and 7.6 (SD = 76.1) in the control group at post-test compared with baseline. Among the intervention group, there was a smaller absolute change of EPDS scores which declined compared with the control group with a MD of -0.33 (95% CI = -1.21 to 0.53), however it was not statistically significant ( $p = 0.450$ ).
Simpson et al. (2021), Zambia	Mixed methods, clinics in urban communities	Adolescent pregnant women between 24–34 weeks' gestation and living with HIV	n = 61	SMS (Insaka)	Communication and support (peer support groups)	N/A	Qualitative: FGD  Quantitative: MSPSS; Rosenberg Self Esteem Scale (RSES) via interviews	MSPSS scores increased after the intervention compared to baseline (MD = 1.7, 95% CI = -10.8 to 14.1), however it was not statistically significant ( $p = 0.8$ ).  RSES scores decreased after the intervention compared to baseline (MD = -0.3, 95% CI = -9.0 to 8.3), however it was not statistically significant ( $p = 0.9$ ).
Skar et al. (2018), Norway	Qualitative (interpretative phenomenological analysis), diabetes outpatient clinics	Women diagnosed with gestational diabetes mellitus (GDM)	n = 17	App (the Pregnant+)	Health education or promotion (via tailored information); Self-monitoring system (automatic transfer of blood glucose values from the measurement device to app)	N/A	Semi-structured interviews	Women who used the app reported an increase in their confidence of self-managing GDM and some reported that the app gave them a feeling of control.

Study (year), country	Study design, setting	Study population	Sample size	mHealth service	mHealth intervention	Comparator	Evaluation	Reported psychosocial health outcomes
Song et al. (2013), US	Quasi-experimental, underserved communities	Low income pregnant women living in inner city of Milwaukee	n = 20	SMS (TuTalk)	Health education or promotion; Communication and support (via two-way automated text messaging system)	N/A	RAND Mental Health Inventory (MHI5), PSS, and CES-D	The text messaging system significantly reduced depressive symptoms ( $t(19) = 2.991, p < 0.01$ ) and perceived stress ( $t(19) = 2.226, p < 0.05$ ). Women also reported improvement in their overall mental well-being ( $t(19) = -4.241, p < 0.001$ ). (Detailed results of statistical analyses were not provided)
Stonbraker et al. (2020), Dominican Republic	Mixed methods, clinic	Postpartum adolescent women (up to 6 months)	n = 58	Instant messaging service (WhatsApp Messenger)	Health education or promotion (via informational messages and associated images); Communication and support (intervention moderators)	N/A	Qualitative: IDI Quantitative: PROMIS	PROMIS scales Social Isolation, Instrumental Support, and Companionship increased after the intervention compared to baseline with an average increase of 1.3 points. Emotional Support and Informational Support scales decreased with an average decrease of 0.6 points. However, all changes were not statistically significant (p-value and details of scores were not reported).
Sun et al. (2021), China	RCT, clinics	Pregnant women between 12–20 weeks' gestation who were screened positive in depressive symptoms (EPDS score > 9 or PHQ-9 score > 4)	n = 168	App	Psychoeducation or therapy (mindfulness-based program)	Regular health consultation via instant messaging service (WeChat)	EPDS; GAD-7; PSS	Based on intention-to-treat analysis, EPDS scores (positive depressive symptoms) decreased in the intervention group compared to the control group (OR = 0.391, 95% CI = 0.164–0.930, $p = 0.02$ ). Moreover, intervention group showed a significant reduction on EPDS scores compared to the control group with OR ranging from 3.471 to 27.986.  GAD-7 scores decreased at 4-week follow-up and continued to decrease at 8-week and 18-week follow-up among the intervention group. However, the scores increased at 8-week and 18-week follow-up among the control group. Medium between-group effect size was reported at the 18-week follow up ( $d = 0.46, 95\% \text{ CI} = 0.04\text{--}0.87$ ).  No significant difference was found on PSS scores.
Takeuchi et al. (2016), Japan	RCT, hospitals and clinics	Primigravida women between 30–33 weeks' gestation	n = 161	Smartphone website	Health education or promotion (perineal massage); Communication and support (peers and healthcare providers); Reminders	Paper-based leaflet	Childbirth Self Efficacy Scale	No significant difference of childbirth self-efficacy score between the intervention group ( $M = 93.4, SD = 13.81$ ) and control group ( $M = 94.1, SD = 16.79$ ) at 3-weeks follow-up ( $p = 0.587$ ).

Study (year), country	Study design, setting	Study population	Sample size	mHealth service	mHealth intervention	Comparator	Evaluation	Reported psychosocial health outcomes
Trude et al. (2021), Brazil	Mixed methods, hospitals	Mothers with children between 12 to 18 months of age	n = 30	Instant message service (WhatsApp Messenger)	Communication and support (maternal support group)	N/A	Qualitative: IDI via video conference  Quantitative: Social Support Questionnaire (SSQ); EPDS; Parental Self-Efficacy 17-item (specific scale not indicated)	13.3% point decrease was found in the prevalence of maternal depression symptoms between pre- and post-intervention ( $p = 0.045$ ),  Median score for maternal social support increased with a moderate effect ( $d = 0.28$ ), however it was not statistically significant ( $p = 0.241$ ). Moreover, no significant difference of self-efficacy was reported ( $p = 0.992$ ).
Yee et al. (2020), US	Qualitative, hospital-based clinic providing care for low-income women	Women with publicly funded prenatal care and diagnosed with type 2 diabetes mellitus or gestational diabetes mellitus	n = 31	SMS (Texting for Diabetes Success)	Psychoeducation or therapy (messages based on Health Belief Model, Self-Efficacy Theory, Cognitive Load Theory); Reminders (appointment)	N/A	IDI	Participants reported: 1) Increase in connectedness with healthcare providers 2) Information provided helped them better manage their diabetes 3) Improvement in motivation