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An evaluation of digital intervention for perinatal depression and anxiety: A systematic review
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Abstract

Digital intervention has been shown to be helpful in improving perinatal mental health. However, the design characteristics of such interventions have not been systematically reviewed. Considering that a lack of support—especially from a partner—is one of the major contributing factors to perinatal depression and anxiety, it is crucial to determine whether digital interventions have included partner participation. In this review, we systematically examined the design characteristics of digital interventions related to perinatal depression and anxiety and aimed to determine whether partner participation was incorporated as part of the interventions. Based on the PRISMA 2020 guidelines, five databases (PubMed, EBSCO, Cochrane, ProQuest, and Scopus) were searched. Narrative results of design characteristics were developed to provide a framework for the design and evaluation of the studies. A total of 12 intervention studies from China, Sweden, Australia, New Zealand, Singapore, Norway, and the United Kingdom were included. Across all studies, internet cognitive behavioral therapy and mindfulness therapy were overwhelmingly utilized as the major intervention approaches. While all studies reported reduced depressive symptoms after the intervention, only four studies reported subsequent decreased levels of both depressive and anxiety symptoms. Only one study included partner support in the intervention. Cognitive behavioral therapy and mindfulness therapy, two of the most common intervention approaches, were found to be effective in alleviating perinatal depression and anxiety. Partner participation should be prioritized in designing digital interventions to ensure comprehensive and easily accessible social support for persons in need. © 2024 the Author(s), licensee AIMS Press. This is an open access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>)

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anxiety; depression; digital; intervention; partner; perinatal

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References

- Korja, R, Nolvi, S, Kataja, EL
The courses of maternal and paternal depressive and anxiety symptoms during the prenatal period in the FinnBrain Birth Cohort study
(2018) *PLoS One*, 13, p. e0207856.
- Earls, MF, Yogman, MW, Mattson, G
Committee on Psychosocial Aspects of Child and Family Health. Incorporating recognition and management of perinatal depression into pediatric practice
(2019) *Pediatrics*, 143, p. e20183259.

- Dennis, CL, Falah-Hassani, K, Shiri, R
Prevalence of antenatal and postnatal anxiety: Systematic review and meta-analysis
(2017) *Br J Psychiatry*, 210, pp. 315-323.
- Yeaton-Massey, A, Herrero, T
Recognizing maternal mental health disorders: Beyond postpartum depression
(2019) *Curr Opin Obstet Gynecol*, 31, pp. 116-119.
- Abd Rahman, FN, Wong, YY, Khalib, AQ
Relationship between postnatal depression of mental health patients and the psychological health of their offspring
(2022) *Front Psychiatry*, 12, p. 772744.
- Rees, S, Channon, S, Waters, CS
The impact of maternal prenatal and postnatal anxiety on children's emotional problems: A systematic review
(2019) *Eur Child Adolesc Psychiatry*, 28, pp. 257-280.
- Ryan, J, Mansell, T, Fransquet, P
Does maternal mental well-being in pregnancy impact the early human epigenome?
(2017) *Epigenomics*, 9, pp. 313-332.
- Oh, S, Chew-Graham, CA, Silverwood, V
Exploring women's experiences of identifying, negotiating and managing perinatal anxiety: A qualitative study
(2020) *BMJ Open*, 10, p. e040731.
- Pebryatie, E, Paek, SC, Sherer, P, Meemon, N
Associations between spousal relationship, husband involvement, and postpartum depression among postpartum mothers in West Java, Indonesia
(2022) *J Prim Care Community Health*, 13, p. 21501319221088355.
- Durankuş, F, Aksu, E
Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: A preliminary study
(2022) *J Matern Fetal Neonatal Med*, 35, pp. 205-211.
- Patabendige, M, Gamage, MM, Weerasinghe, M
Psychological impact of the COVID-19 pandemic among pregnant women in Sri Lanka
(2020) *Int J Gynaecol Obstet*, 151, pp. 150-153.
- Zimmermann, M, Peacock-Chambers, E, Merton, C
Equitable reach: Patient and professional recommendations for interventions to prevent perinatal depression and anxiety
(2023) *Gen Hosp Psychiatry*, 85, pp. 95-103.
- Beerli, J, Ehlert, U, Amiel, RT
Internet-based interventions for perinatal depression and anxiety symptoms: An ethnographic qualitative study exploring the views and opinions of midwives in Switzerland
(2022) *BMC Primary Care*, 23, p. 172.
- Mao, F, Sun, Y, Li, Y
Internet-delivered mindfulness-based interventions for mental health outcomes

among perinatal women: A systematic review

(2023) *Asian J Psychiatr*, 80, p. 103321.

- Ashford, MT, Olander, EK, Ayers, S
Computer- or web-based interventions for perinatal mental health: A systematic review
(2016) *J Affect Disord*, 197, pp. 134-146.
- Müller, M, Matthies, LM, Goetz, M
Effectiveness and cost-effectiveness of an electronic mindfulness-based intervention (eMBI) on maternal mental health during pregnancy: The mindmom study protocol for a randomized controlled clinical trial
(2020) *Trials*, 21, p. 933.
- Zingg, A, Carter, L, Rogith, D
Digital technology needs in maternal mental health: A qualitative inquiry
(2021) *Stud Health Technol Inform*, 281, pp. 979-983.
- Sprenger, M, Mettler, T, Osma, J
Health professionals' perspective on the promotion of e-mental health apps in the context of maternal depression
(2017) *PLoS One*, 12, p. e0180867.
- Haga, SM, Kinser, PA, Wentzel-Larsen, T
Mamma Mia—A randomized controlled trial of an internet intervention to enhance subjective well-being in perinatal women
(2020) *J Posit Psychol*, 16, pp. 446-454.
- Saleem, M, Kühne, L, Karolina, K
Understanding engagement strategies in digital interventions for mental health promotion: Scoping review
(2021) *JMIR Mental Health*, 8, pp. e30000-e30000.
- Page, MJ, McKenzie, JE, Bossuyt, PM
The PRISMA 2020 statement: An updated guideline for reporting systematic reviews
(2021) *BMJ*, 372, p. n71.
- Kmet, LM, Lee, RC, Cook, LS
(2014) *Standard quality assessment criteria for evaluating primary research papers from a variety of fields*,
- Sjömark, J, Svanberg, AS, Larsson, M
Effect of internet-based cognitive behaviour therapy among women with negative birth experiences on mental health and quality of life—a randomized controlled trial
(2022) *BMC Pregnancy Childb*, 22, p. 835.
- Bear, KA, Barber, CC, Medvedev, ON
The impact of a mindfulness app on postnatal distress
(2022) *Mindfulness*, 13, pp. 2765-2776.
- Sun, Y, Li, Y, Wang, J
Effectiveness of smartphone-based mindfulness training on maternal perinatal depression: Randomized controlled trial
(2021) *J Med Internet Res*, 23, p. e23410.

- Chan, KL, Leung, WC, Tiwari, A
Using smartphone-based psychoeducation to reduce postnatal depression among first-time mothers: Randomized controlled trial
(2019) *JMIR Mhealth Uhealth*, 7, p. e12794.
- Shorey, S, Ng, ED
Evaluation of a technology-based peer-support intervention program for preventing postnatal depression (Part 2): Qualitative study
(2019) *J Med Internet Res*, 21, p. e12915.
- Haga, SM, Drozd, F, Lisøy, C
Mamma Mia-A randomized controlled trial of an internet-based intervention for perinatal depression
(2019) *Psychol Med*, 49, pp. 1850-1858.
- Yang, M, Jia, G, Sun, S
Effects of an online mindfulness intervention focusing on attention monitoring and acceptance in pregnant women: A randomized controlled trial
(2019) *J Midwifery Womens Health*, 64, pp. 68-77.
- Guo, L, Zhang, J, Mu, L
Preventing postpartum depression with mindful self-compassion intervention: A randomized control study
(2020) *J Nerv Ment Dis*, 208, pp. 101-107.
- Loughnan, SA, Butler, C, Sie, AA
A randomised controlled trial of 'MUMentum postnatal': Internet-delivered cognitive behavioural therapy for anxiety and depression in postpartum women
(2019) *Behav Res Ther*, 116, pp. 94-103.
- Krusche, A, Dymond, M, Murphy, SE
Mindfulness for pregnancy: A randomised controlled study of online mindfulness during pregnancy
(2018) *Midwifery*, 65, pp. 51-57.
- Forsell, E, Bendix, M, Holländare, F
Internet delivered cognitive behavior therapy for antenatal depression: A randomised controlled trial
(2017) *J Affect Disord*, 221, pp. 56-64.
- Milgrom, J, Danaher, BG, Gemmill, AW
Internet cognitive behavioral therapy for women with postnatal depression: A randomized controlled trial of MumMoodBooster
(2016) *J Med Internet Res*, 18, p. e54.
- Mu, TY, Li, YH, Xu, RX
Internet-based interventions for postpartum depression: A systematic review and meta-analysis
(2021) *Nurs Open*, 8, pp. 1125-1134.
- Lau, Y, Htun, TP, Wong, SN
Therapist-supported internet-based cognitive behavior therapy for stress, anxiety, and depressive symptoms among postpartum women: A systematic review and meta-analysis
(2017) *J Med Internet Res*, 19, p. e138.

- Nishi, D, Imamura, K, Watanabe, K
The preventive effect of internet-based cognitive behavioral therapy for prevention of depression during pregnancy and in the postpartum period (iPDP): A large scale randomized controlled trial
(2022) *Psychiat Clin Neuros*, 76, pp. 570-578.
- Maguire, PN, Clark, GI, Cosh, S
Exploring experiences, barriers and treatment preferences for self-reported perinatal anxiety in Australian women: A qualitative study
(2023) *Aust Psych*, 59, pp. 46-59.
- Stentzel, U, Grabe, HJ, Schmidt, S
Mental health-related telemedicine interventions for pregnant women and new mothers: A systematic literature review
(2023) *BMC Psychiatry*, 23, p. 292.
- Cox, G, Hetrick, S
Psychosocial interventions for self-harm, suicidal ideation and suicide attempt in children and young people: What? How? Who? and Where?
(2017) *Evid Based Ment Health*, 20, pp. 35-40.
- Kumar, V, Sattar, Y, Bseiso, A
The effectiveness of internet-based cognitive behavioral therapy in treatment of psychiatric disorders
(2017) *Cureus*, 9, p. e1626.
- Li, X, Laplante, DP, Paquin, V
Effectiveness of cognitive behavioral therapy for perinatal maternal depression, anxiety and stress: A systematic review and meta-analysis of randomized controlled trials
(2022) *Clin Psychol Rev*, 92, p. 102129.
- Chen, C, Wang, X, Xu, H
Effectiveness of digital psychological interventions in reducing perinatal depression: A systematic review of meta-analyses
(2023) *Arch Womens Ment Health*, 26, pp. 423-439.
- Neo, HS, Tan, JH, How, W
Internet-delivered psychological interventions for reducing depressive, anxiety symptoms and fear of childbirth in pregnant women: A meta-analysis and meta-regression
(2022) *J Psychosom Res*, 157, pp. 110790-110790.
- Martinengo, L, Stona, AC, Griva, K
Self-guided cognitive behavioral therapy apps for depression: systematic assessment of features, functionality, and congruence with evidence
(2021) *J Med Internet Res*, 23, p. e27619.
- Wang, C, Pan, R, Wan, X
A longitudinal study on the mental health of general population during the COVID-19 epidemic in China
(2020) *Brain Behav Immun*, 87, pp. 40-48.
- Rogers, MA, Lemmen, K, Kramer, R
Internet-delivered health interventions that work: Systematic review of meta-

analyses and evaluation of website availability

(2017) *J Med Internet Res*, 19, p. e90.

- Clinkscales, N, Golds, L, Berlouis, K
The effectiveness of psychological interventions for anxiety in the perinatal period: A systematic review and meta-analysis
(2022) *Psychol Psychother*, 96, pp. 296-327.
- Suchan, V, Peynenburg, V, Thiessen, D
Transdiagnostic internet-delivered cognitive behavioral therapy for symptoms of postpartum anxiety and depression: Feasibility randomized controlled trial
(2022) *JMIR Form Res*, 6, p. e37216.
- Jannati, N, Mazhari, S, Ahmadian, L
Effectiveness of an app-based cognitive behavioral therapy program for postpartum depression in primary care: A randomized controlled trial
(2020) *Int J Med Inform*, 141, pp. 104-145.
- Zhao, L, Chen, J, Lan, L
Effectiveness of telehealth interventions for women with postpartum depression: Systematic review and meta-analysis
(2021) *JMIR Mhealth Uhealth*, 9, p. e32544.
- Mahoney, A, Shiner, CT, Grierson, AB
Online cognitive behaviour therapy for maternal antenatal and postnatal anxiety and depression in routine care
(2023) *J Affect Disord*, 338, pp. 121-128.
- Morgan, C, Mason, E, Newby, JM
The effectiveness of unguided internet cognitive behavioural therapy for mixed anxiety and depression
(2017) *Internet Interv*, 10, pp. 47-53.
- Akbay, AS
How does spousal support affect women's quality of life in the postpartum period in Turkish culture?
(2018) *Asian Women*, 34, pp. 29-45.
- Stoll, CRT, Izadi, S, Fowler, S
The value of a second reviewer for study selection in systematic reviews
(2019) *Res Synth Methods*, 10, pp. 539-545.

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