



Review Article

Supporting parents in the transition to parenthood through wellbeing interventions; An international scoping review



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ABSTRACT

Problem: Many first-time parents experience poor wellbeing during the transition to parenthood.

Background: The transition to parenthood can be challenging, with consequences to wellbeing for many first-time parents. While parents are often well-supported to care for their children, there are minimal supports available to care for themselves. To support parents in caring for their children, they need to be supported in their own care.

Research question: What evidence-based universal interventions supporting parent wellbeing from conception to 12 months post birth exist?

Methods: A scoping search across four databases to identify studies measuring and reporting wellbeing outcomes of parents who participated in a prevention intervention aiming to improve wellbeing.

Findings: Seventy-four studies, reporting on 70 unique interventions, were included. Interventions were grouped into eight categories depending on their main mechanism of focus. Studies measured a range of wellbeing outcomes. Thirty-five studies provided evidence of effectiveness across all their reported outcomes. These interventions ranged across the different categories of focus, typically included mothers-only, were delivered post-birth, by a facilitator, in-person and individually.

Discussion: Wellbeing is complex and existing evidence demonstrates a range of intervention components that may effectively support parent wellbeing. Inconsistency in defining wellbeing and diversity in outcome measurements limits our ability to determine which components of these interventions are the most effective.

Conclusion: Findings from this review support a multifaceted approach to supporting parents' wellbeing during this transition, with considered intervention focus and design to support a universal population across all facets of wellbeing.

Introduction

The transition to parenthood is a life-changing experience entailing a series of social, psychological and physiological changes, which are challenging to adapt to (Epifanio et al., 2015, Gavin et al., 2005). During this transitional period, it is common for parents to experience diminished mental health including heightened stress, anxiety, psychological distress, depression and reduced ability for self-care (McCarthy et al., 2021, Miller et al., 2006, Baldwin et al., 2018). Rates of poor mental health are high for parents during this transition, with one quarter of

first-time parents experiencing mental health issues during pregnancy (~24% of women, ~28% men), and 21% in the postpartum period (26% women, 15% men) (Parfitt and Ayers, 2014). Experiencing poor mental health can negatively impact parents' own physical health, the health of their infant and their ability to parent (Matvienko-Sikar et al., 2021, Sloman et al., 2019).

Wellbeing is defined as a combination of feeling good, functioning effectively, having a sense of purpose, feeling some control over your life, and having positive relationships (Huppert, 2009, Ruggeri et al., 2020). Presence of wellbeing does not simply mean absence of mental or

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physical ill-health, it incorporates elements of positive mental and physical health, and a general feeling that life is going well (Ruggeri et al., 2020). Although presence of wellbeing is not dependent on absence of mental illness, these concepts are interrelated, and poor mental health has a significant impact on people's feeling of wellbeing (Huppert, 2009, Ruggeri et al., 2020). Protecting the physical and mental health of parents during the transitional period to parenthood is important for their long-term health and wellbeing, and the health, growth, and development of their children (Matvienko-Sikar et al., 2021, Slomian et al., 2019). Some groups are at higher risk of experiencing negative mental health and wellbeing and may require more targeted intervention, such as those experiencing domestic violence, substance use, very young parents, or those from minority cultural or linguistically diverse backgrounds (Russell et al., 2008, Muzik et al., 2015). However, all parents are at risk of experiencing poor wellbeing outcomes upon transitioning to parenthood.

Self-care practices play an important role in protecting and supporting health and wellbeing (Martínez et al., 2021). Self-care is defined as the ability to care for oneself through engaging in practices that achieve, maintain, or promote optimal health and wellbeing (Martínez et al., 2021). During the transition to parenthood, parents often prioritise caring for their infant, resulting in poor or lack of engagement in practices that support their own health and care needs (Young et al., 2022). This is perhaps reflective of the focus of education and care during pregnancy and the first 12-months of parenting on the infant's health, development, and growth (Ahlborg and Strandmark, 2001). During this time there is minimal focus on parents' own needs beyond physical assessments of the birthing parent during pregnancy and postpartum (Ahlborg and Strandmark, 2001). Further, addressing, improving, and supporting parents' mental health and wellbeing in this transitional period is not currently part of routine practice. This is particularly the case for fathers and coparents, who in many instances receive no support or assessment regarding their wellbeing, physical or mental health during this time (Baldwin et al., 2018, Genesoni and Tallandini, 2009).

Poor wellbeing outcomes are not inevitable for individuals transitioning to parenthood. Universal, preventive programs could provide timely support to parents during this transition. Preventive programs work by supporting, strengthening, or enhancing education, skills, practices, and behaviours to promote health and prevent the development of conditions, illness, or disease (Kirscht, 1983). For example, Family Foundations, a universal couple-focused prevention program aiming to support the transition to parenthood has shown promising impact for parent's health and wellbeing, family relationships and children's adjustment (Feinberg et al., 2016). Effective preventive programs that enhance and support the wellbeing of individuals transitioning to parenthood pose an opportunity to not only reduce experiences of ill-health for parents, but to improve the wellbeing of all family members as they transition into this life-stage.

Prior reviews have identified and described interventions that target specific components of wellbeing in parents, including depression, stress, and/or anxiety (Matvienko-Sikar et al., 2021, Liu et al., 2022, Song et al., 2015), or use specific intervention mechanisms of focus like social support (Small et al., 2011), yoga (Sheffield and Woods-Giscombé, 2016), mindfulness (Matvienko-Sikar et al., 2016) or art-based interventions (Crane et al., 2021). Others focus on interventions that employ specific modes of delivery like mobile or telehealth (Liu et al., 2022, Dol et al., 2020), or promote wellbeing in specific population groups such as adolescent mothers (Sangsawang et al., 2019), or disadvantaged populations (Khan et al., 2023). However, there are no reviews to our knowledge that capture an expansive understanding of wellbeing interventions, nor do they explore these interventions in universal parenting populations. To understand how best to support parents during the transitional period to parenthood, a scoping review of the published evidence on wellbeing interventions in pregnancy and the first 12-months of parenting in universal populations

was undertaken. This review sought to answer the following research question: What evidence-based universal programs and interventions supporting parent wellbeing from conception to 12 months post birth exist?

The objectives for the review were:

1. To identify interventions that support parent wellbeing from conception to 12-months post-birth.
2. To determine what outcomes are measured by interventions that support parent wellbeing.
3. To broadly assess identified interventions' effectiveness at achieving their desired outcomes for parent wellbeing, to identify 'evidence-based' interventions.

The authors acknowledge that there is diversity in those who parent, that not all who give birth identify as women or mothers, and not all coparents are men or fathers, or identify as such. Within this review, we use the term 'parent' to encompass primary caregivers, and use 'mothers' for parents who have birthed a child, and 'fathers' for parents who have not when presenting results, as these are the terms employed in included papers.

Statement of significance

Problem

First-time parents are experiencing poor wellbeing in their transition to parenthood.

What is already known

The transition to parenthood is a life-changing experience, that can have negative consequences on parents' wellbeing. First-time parents are often well supported in caring for their children but provided minimal support to care for themselves.

What this paper adds

A critical review and understanding of existing intervention trials that aim to support parent wellbeing in the transition to parenthood.

Methods

A scoping review of existing published literature was undertaken to identify key concepts and sources of evidence to answer our research question. This review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis-Scoping Review (PRISMA-ScR) Checklist. No published protocol exists for this review.

Study eligibility

To be included in this review, studies needed to measure and report wellbeing outcomes of parents who participated in a non-pharmaceutical prevention intervention aiming to improve wellbeing or self-care practices. There was no time limit on studies, as we wanted to ensure a comprehensive review without use of arbitrary date cut-offs. See Table 1 for full study eligibility against PICOS.

Information sources

The databases searched included PsycINFO (via Ovid SP), Medline Epub ahead of print (Via OVID SP), CINAHL and EmCare (Via OVID SP). These databases were chosen as they cover a comprehensive range of journals across different disciplines.

Search strategy

An initial limited search of PsycINFO was undertaken on February 28, 2023, to identify relevant articles. The titles, abstracts and key words of relevant articles were screened for possible search terms to include in the search strategy. A research librarian assisted in developing a search strategy that incorporated key words and their variants, for the population, intervention focus, outcomes and study design. The search strategy was run in PsycINFO and adjusted accordingly with controlled

Table 1
Study eligibility criteria against PICOS.

	Included	Excluded
Population	Primary caregivers (e.g., parents) >18 years of age, expecting a child (e.g., currently pregnant), or with a child less than <12 months of age at study enrolment	Parents/children with chronic health issues, severe illnesses, or adversities (e.g., disability, traumatic birth, addiction, diagnosed mental illness etc.) Occasional caregivers (e.g., grandparents who were not the primary caregiver, childcare staff) Studies where the population group were a specialised group (e.g., geographically, contextually or culturally specific groups such as those experiencing domestic violence, indigenous communities)
Intervention	Non-pharmaceutical prevention interventions that targeted parent wellbeing or self-care practices, defined as practices undertaken with the intention of supporting one's positive mental or physical health or wellbeing Provided during pregnancy or within the first 12-months of the child's life Targeted parents Be applicable to a universal population (e.g., intervention could be delivered to others without needing significant cultural, social or contextual adaptation, no specialised groups) Targeted >1 mental health condition (e.g., could not solely target postnatal depression)	Pharmaceutical interventions Treatment interventions Targeted those with diagnosed mental health conditions Exclusively focussed on pregnancy and childbirth, but were not applicable beyond these periods (e.g., after the birth of the child) Interventions applicable only to a specialised group (e.g., intervention would require significant cultural, social or contextual adaptation to be applicable to general population)
Comparator	No comparator Or 'no intervention', or waitlist control	N/A
Outcome	Parents' coping and self-care, defined as their ability to cope with daily tasks or engage in self-care practices, measuring functioning, coping strategies, self-care, self-compassion Parents' mental health/illness, defined as their mental health status, measuring anxiety, stress, depression, or psychological distress Parents' quality of life and wellbeing, defined as their perception of overall health, comfort, and happiness, measuring mood, fatigue, quality of life, mindfulness, wellbeing Parents' relationships and support, defined as the quality of their couple relationship or supports, measuring social support, relationship functioning, help-seeking practices	Parents' parenting skills or perceptions of their parenting skills (including capacity, satisfaction, confidence, or self-efficacy) Parents' physical health behaviours (e.g., diet, physical activity, weight status, blood pressure) Children's wellbeing or health outcomes
Study design	Experimental studies that evaluated and reported on relevant outcomes of interventions or programs (qualitatively or quantitatively) including randomised controlled trials, cohort studies, pre-post trials, quasi-experimental trials, pilot studies, feasibility studies etc.	Intervention implementation or process evaluations Protocols Scoping or systematic reviews Grey literature Studies not published in English

vocabulary, appropriate syntax and MeSH terms for each database. The search was run across each database on March 20, 2023 (see Supp File 1 for search strategy employed in PsycINFO).

Study selection

All identified citations from the four databases searched were uploaded into EndNote then exported to Covidence systematic review software. Duplicates were removed, and title and abstract screening undertaken against predetermined eligibility criteria by four independent reviewers (GM, SH, SM, AB). Conflicts were resolved through discussion. Full texts of relevant studies were reviewed by two independent reviewers (GM, SM, DD, SH) conflicts were resolved through consensus discussions.

Data extraction

Data related to the scoping review objectives were extracted from included studies by three reviewers (SM, DD, KMS), and checked by another (GM), using predetermined, pilot-tested data-extraction templates. Data were extracted on the study population, context and setting, geographical location, methodology and methods, intervention content and focus, relevant outcomes and evidence of effectiveness. Critical appraisal of articles was not conducted as per guidelines for conducting scoping reviews.

Synthesis of studies

To assist with synthesis of trial findings, interventions were categorised based on their main mechanism of focus. Some mechanisms were self-ascribed by intervention authors whilst others were categorised by the review team. Although some interventions contained several mechanisms, they were grouped according to what was perceived as the main mechanism of focus, making up the largest proportion of content. Eight categories of intervention focus were generated: 1) education and skills, 2) psychoeducation, psychotherapy, or cognitive behavioural therapy (CBT), 3) mindfulness, 4) support, 5) relationship, 6) self-care, 7) physical activity, and 8) fathering (see Table 2 for mechanism of focus descriptions). Two interventions could not be categorised due to their unique intervention content.

Outcome measures were clustered into outcome domains, where similar subjective measurement outcomes were grouped together to help with synthesis and presentation of findings (van Agteren et al., 2021). Four outcome domains were generated: coping and selfcare, mental health/illness, quality of life and wellbeing, and relationships and support (see Table 1 for included measures). To identify and present which outcomes were measured and reported by each trial, summary tables were generated. These tables also included a summary of trial results against each outcome domain, indicating significant or non-significant effects, and overall positive, negative, mixed or null effect, either between intervention or control groups, or within groups depending on study design. The results are presented narratively and supplemented with tables (Table 3, Supp File 2). As this is a scoping review, qualitative and quantitative data are presented together, and have not been transformed or synthesised further.

Results

Study inclusion

Seventy-four relevant studies, reporting on 70 unique interventions, were included in this review (Fig. 1).

Characteristics of included studies

Studies were conducted between 1993 and 2023, with 50%

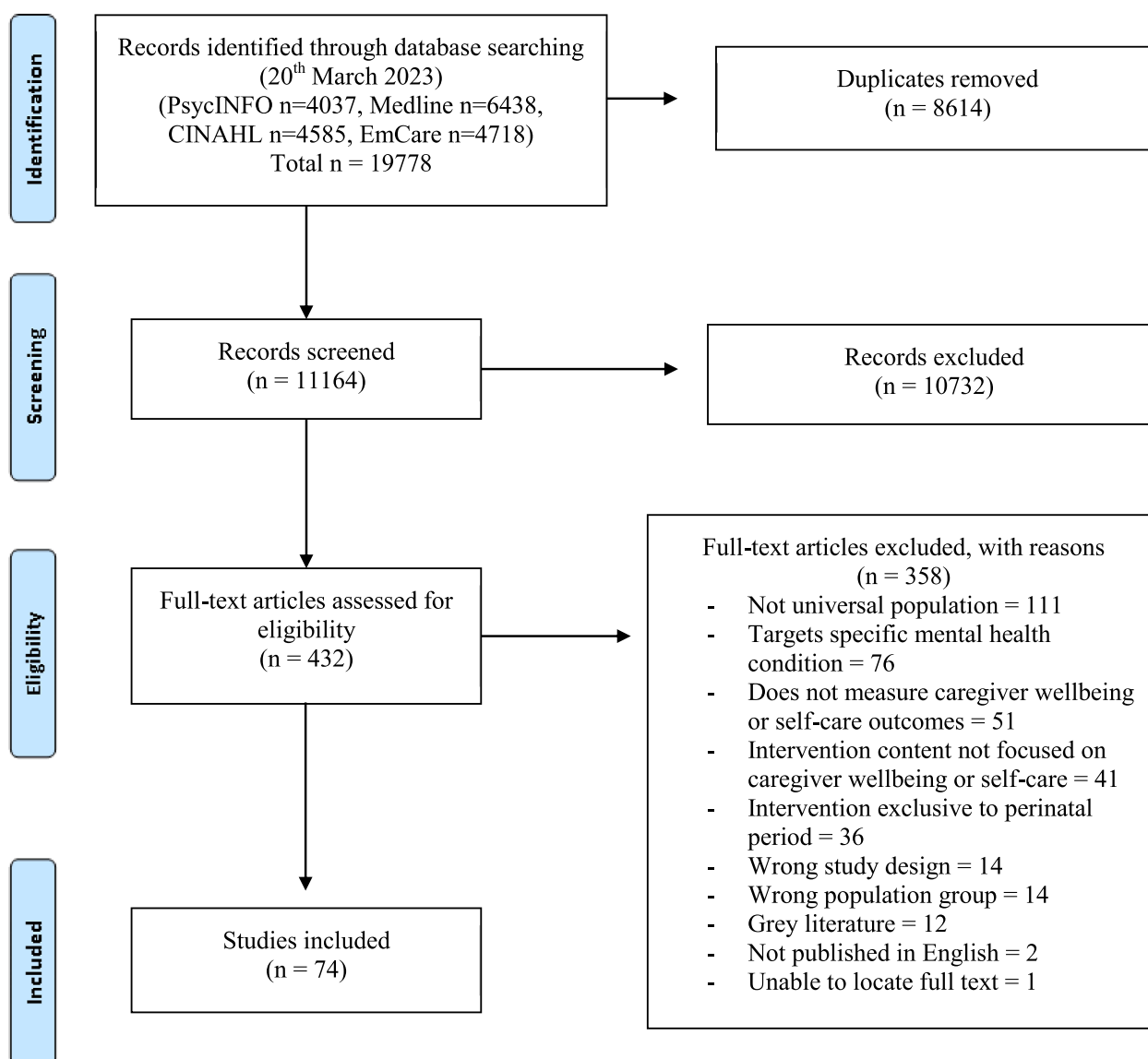


Fig. 1. PRISMA flowchart of search strategy and included papers.

conducted between 2020–2023. Of the included studies, 38 were randomised controlled trials (RCTs) (Daley-McCoy et al., 2015, Halford et al., 2010, McPherson et al., 2022, Ngai and Gao, 2022, Liu et al., 2021, Osman et al., 2014, Reid et al., 2002, Slade et al., 2021, Vargas-Porras et al., 2021, Krusche et al., 2018, Liu et al., 2022, Pan et al., 2019, Sajadian et al., 2022, Norman et al., 2010, Perales et al., 2015, Timlin and Simpson, 2017, Dol et al., 2022, Gammer et al., 2020, Haga et al., 2021, Ochoa et al., 2021, Pan et al., 2021, Black-Olien, 1993, Kavanagh et al., 2021, Matthey et al., 2004, Shorey and Ng, 2019, Shorey et al., 2019, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Giallo et al., 2014, Jiao et al., 2019, Nishi et al., 2022, Shorey et al., 2015, Shorey et al., 2015, Shorey et al., 2023, Urizar et al., 2019, Canbay and Seker, 2021, Chamangasht et al., 2021, Ghasvand et al., 2017, Kianpour et al., 2016), seven were pilot RCTs (Beattie et al., 2017, Dunn et al., 2012, Mannocci et al., 2022, Barrera et al., 2015, Monteiro et al., 2020, Monteiro et al., 2021, Qin et al., 2022), six were quasi-experimental (Gökşin and Ayaz-Alkaya, 2020, Watson et al., 2005, Diotaiuti et al., 2022, George, 2020, Guterman et al., 2018, Khatun et al., 2021), eight were pre-post trials (Koh et al., 2021, Barkin et al., 2021, Ishii et al., 2020, Warriner et al., 2018, Diemer, 1997, Rayburn and Coatsworth, 2021, Bryant et al., 2023, Mitchell

et al., 2018), seven were pre-post feasibility or pilot trials (Lox and Treasure, 2000, Steen et al., 2015, Baldwin et al., 2022, Barber and Masters-Awatere, 2022, Barrera et al., 2020, Peifer et al., 2022, Fletcher et al., 2017, Albanese et al., 2022), one was a case-controlled pilot (Philipp et al., 2020), and three were qualitative evaluations (Wadephul et al., 2019, Chartier et al., 2015, Carolan et al., 2012). Participant numbers ranged from six to 5,017. Sixty trials of interventions measured mental health outcomes (Daley-McCoy et al., 2015, Halford et al., 2010, McPherson et al., 2022, Ngai and Gao, 2022, Liu et al., 2021, Osman et al., 2014, Reid et al., 2002, Slade et al., 2021, Krusche et al., 2018, Liu et al., 2022, Pan et al., 2019, Norman et al., 2010, Perales et al., 2015, Timlin and Simpson, 2017, Dol et al., 2022, Gammer et al., 2020, Ochoa et al., 2021, Pan et al., 2021, Kavanagh et al., 2021, Matthey et al., 2004, Shorey and Ng, 2019, Shorey et al., 2019, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Giallo et al., 2014, Jiao et al., 2019, Nishi et al., 2022, Shorey et al., 2015, Shorey et al., 2015, Urizar et al., 2019, Kianpour et al., 2016, Beattie et al., 2017, Dunn et al., 2012, Mannocci et al., 2022, Barrera et al., 2015, Monteiro et al., 2020, Monteiro et al., 2021, Qin et al., 2022, Gökşin and Ayaz-Alkaya, 2020, Watson et al., 2005, Diotaiuti et al., 2022, George, 2020, Guterman et al., 2018, Khatun et al., 2021, Koh et al., 2021, Barkin et al., 2021, Ishii et al.,

2020, Warriner et al., 2018, Diemer, 1997, Rayburn and Coatsworth, 2021, Bryant et al., 2023, Mitchell et al., 2018, Lox and Treasure, 2000, Baldwin et al., 2022, Barber and Masters-Awatere, 2022, Barrera et al., 2020, Peifer et al., 2022, Fletcher et al., 2017, Albanese et al., 2022, Philipp et al., 2020, Chartier et al., 2015, Carolan et al., 2012), 36 measured quality of life or wellbeing outcomes (McPherson et al., 2022, Liu et al., 2021, Reid et al., 2002, Slade et al., 2021, Liu et al., 2022, Pan et al., 2019, Norman et al., 2010, Timlin and Simpson, 2017, Gammer et al., 2020, Haga et al., 2021, Pan et al., 2021, Black-Olien, 1993, Kavanagh et al., 2021, Matthey et al., 2004, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Giallo et al., 2014, Shorey et al., 2015, Shorey et al., 2015, Urizar et al., 2019, Ghiasvand et al., 2017, Beattie et al., 2017, Dunn et al., 2012, Monteiro et al., 2020, Monteiro et al., 2021, Gökşin and Ayaz-Alkaya, 2020, Khatun et al., 2021, Ishii et al., 2020, Warriner et al., 2018, Rayburn and Coatsworth, 2021, Bryant et al., 2023, Lox and Treasure, 2000, Steen et al., 2015, Barrera et al., 2020, Peifer et al., 2022, Fletcher et al., 2017, Wadehul et al., 2019, Chartier et al., 2015), 29 measured relationship and social support outcomes (Daley-McCoy et al., 2015, Halford et al., 2010, McPherson et al., 2022, Reid et al., 2002, Vargas-Porras et al., 2021, Liu et al., 2022, Dol et al., 2022, Kavanagh et al., 2021, Matthey et al., 2004, Shorey and Ng, 2019, Shorey et al., 2019, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Jiao et al., 2019, Shorey et al., 2015, Shorey et al., 2015, Shorey et al., 2023, Canbay and Seker, 2021, Dunn et al., 2012, Watson et al., 2005, Guterman et al., 2018, Koh et al., 2021, Ishii et al., 2020, Diemer, 1997, Bryant et al., 2023, Steen et al., 2015, Peifer et al., 2022, Philipp et al., 2020, Wadehul et al., 2019, Carolan et al., 2012) and 15 measured coping and self-care outcomes (Sajadian et al., 2022, Gammer et al., 2020, Pan et al., 2021, Chamgurdani et al., 2020, Giallo et al., 2014, Canbay and Seker, 2021, Chamangasht et al., 2021, Dunn et al., 2012, Monteiro et al., 2020, Monteiro et al., 2021, George, 2020, Khatun et al., 2021, Barkin et al., 2021, Diemer, 1997, Mitchell et al., 2018, Albanese et al., 2022). Across all studies, there were 89 unique survey instruments used, along with subscales of those instruments. See Table 2 for a summary of intervention characteristics.

Effectiveness of included studies grouped by outcome measure

Mental health/illness

The main mechanism of focus of the 60 studies that reported mental health outcomes were: education and skills $n=12$ (Dol et al., 2022, Gammer et al., 2020, Ochoa et al., 2021, Pan et al., 2021, Kavanagh et al., 2021, Matthey et al., 2004, Shorey and Ng, 2019, Shorey et al., 2019, Barrera et al., 2015, George, 2020, Baldwin et al., 2022, Barber and Masters-Awatere, 2022, Barrera et al., 2020), psychoeducation, psychotherapy or CBT $n=12$ (Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Jiao et al., 2019, Nishi et al., 2022, Shorey et al., 2015, Shorey et al., 2023, Urizar et al., 2019, Monteiro et al., 2020, Monteiro et al., 2021, Qin et al., 2022, Diotaiuti et al., 2022, Peifer et al., 2022), mindfulness $n=8$ (Krusche et al., 2018, Liu et al., 2022, Pan et al., 2019, Beattie et al., 2017, Dunn et al., 2012, Mannocci et al., 2022, Gökşin and Ayaz-Alkaya, 2020, Warriner et al., 2018), support $n=7$ (Liu et al., 2021, Osman et al., 2014, Reid et al., 2002, Slade et al., 2021, Barkin et al., 2021, Ishii et al., 2020, Chartier et al., 2015), relationship $n=6$ (Daley-McCoy et al., 2015, Halford et al., 2010, McPherson et al., 2022, Ngai and Gao, 2022, Koh et al., 2021, Philipp et al., 2020), physical activity $n=5$ (Norman et al., 2010, Perales et al., 2015, Timlin and Simpson, 2017, Watson et al., 2005, Lox and Treasure, 2000), fathering $n=4$ (Guterman et al., 2018, Diemer, 1997, Rayburn and Coatsworth, 2021, Fletcher et al., 2017), self-care $n=4$ (Khatun et al., 2021, Bryant et al., 2023, Mitchell et al., 2018, Albanese et al., 2022), not classified $n=2$ (Kianpour et al., 2016, Carolan et al., 2012). Overall, studies reporting on mental health/illness outcomes reported positive results (79% of summarised results; see Table 3), and majority of these reported at least one statistically significant finding (68% of

Table 2
Intervention characteristics of included studies.

Component	N studies		
Intervention country	United States of America (USA)	12	
	Australia	11	
	United Kingdom (UK)	9	
	China	6	
	Iran	5	
	Singapore	4	
	Canada	3	
	Ireland, Japan, Taiwan, Turkey, Italy	2 in each	
	Austria, Bangladesh, Colombia, India, Korea, Lebanon, New Zealand, Norway, Portugal, Spain	1 in each	
	Intervention population	Mothers only	49
Both parents		18	
Fathers only		3	
Timing of program	Pre-birth	27	
	Post-birth	24	
	Pre- and post-birth	19	
Delivery platform	In-person only	44	
	Virtual only	19	
	In-person and virtual	2	
	Physical resource	1	
	Two trial arms: In-person vs physical resource	2	
	Two trial arms: In-person vs virtual	1	
Delivery setting	Not reported	1	
	Individual only	36	
	Group only	24	
	Group and individual	9	
	Two trial arms: Individual vs group	1	
Delivery mode	Facilitated	48	
	Self-directed	16	
	Facilitated and self-directed	2	
	Two trial arms: Self-directed vs facilitated	4	
	Facilitator	Midwives	12
		Researchers	11
		Psychologists, psychiatrists, counsellors	8
		Nurses	8
		Other health professionals	7
		Other parents	7
Specifically trained facilitators		3	
Other (incl. fitness instructors, childbirth educators, home visitors, musicians)		6	
Not reported	2		
Intervention category and description	Education and skills: <i>Increasing knowledge or skills</i>	15	
	Psychoeducation, psychotherapy, or CBT: <i>Restructuring thought processes or cognitive pathways through therapy or counselling</i>	13	
	Mindfulness: <i>Mindfulness training or increasing mindfulness behaviours</i>	9	
	Support: <i>Providing support or assistance with support-seeking</i>	8	
	Relationship: <i>Strengthening couple relationships</i>	7	
	Self-care: <i>Parental self-care behaviours and activities</i>	6	
	Physical activity: <i>Physical activity or exercise classes</i>	5	
	Fathering: <i>Supporting fathering and father experiences</i>	5	

CBT = Cognitive behavioural therapy

summarised positive results). Self-care focused interventions reported the highest proportion of positive effects for mental health/illness outcomes (86% of summarised results). Interventions with the following delivery characteristics reported the highest proportion of positive effects for mental health/illness outcomes: group setting (81% of summarised results), post-birth (84%), virtual (82%), targeting mothers only (80%), and self-directed (86%).

Twenty-four interventions reported anxiety outcomes. Twelve reported improvements or between-group differences in anxiety scores

Table 3

Summary of included studies intervention characteristics and impact on outcomes of interest

*outcomes reported at first post-intervention data collection time point where possible and logical (not follow-up, or mid-intervention, unless statistical tests were only run across multiple follow-up time-points).

Intervention	Stage of birth	Duration	Delivery						Outcomes																		
			In-person	Virtual	Individual	Group	Self	Other	Mental health/illness					Quality of life and wellbeing				Relationship and support			Coping and self-care						
									Anx	Dep	MH	PD	STR	FT	MD	MF	QOL	WB	HS	RF	SS	CS	Func	SC	SCo		
Education and skills focused interventions (n=15)																											
Mothers only (n=10)																											
Positively pregnant (Barber and Masters-Awatere, 2022)	Pre	<6mths	✓	✓							+ve w/g	+ve w/g											+ve w/g				
The Mothers and Babies Internet Course (Barrera et al., 2015)	Pre	N/R	✓	✓								+ve b/g															
BabyText intervention program (Barrera et al., 2020)	Pre + post	<3mths	✓	✓							+ve w/g	- w/g															
Essential Coaching for Every Mother program (Dol et al., 2022)	Post	<3mths	✓	✓							+ve b/g	+ve b/g															
Kindness for Mums Online (KFMO) (Gammer et al., 2020)	Post	<3mths	✓	✓							+ve b/g	+ve b/g															
Group intervention (George, 2020)	Pre	<1wk	✓				✓					-/+ b/g															+ve b/g
Mamma Mia (Haga et al., 2021)	Pre + Post	<12mths	✓	✓																							
The Baby Books Intervention (Ochoa et al., 2021)	Pre + Post	>12mths		✓								+ve b/g															+ve w/g
Problem based learning pregnancy health education (Pan et al., 2021)	Pre	<3mths	✓	✓	✓	✓					+ve b/g	+ve b/g															+ve b/g
Mind Resilience Pilot programme (Steen et al., 2015)	Pre + Post	6mths	✓	✓	✓																						+ve w/g
Both parents (n=5)																											
Transition to Parenthood (Baldwin et al., 2022)	Pre + Post	<6mths	✓			✓					+ve w/g	+ve w/g															+ve w/g
Experimental Education program (Black-Olien, 1993)	Pre	<3mths	✓																								-/+ b/g
Baby Steps Wellbeing (Kavanagh et al., 2021)	Pre + Post	6mths	✓	✓								-/+ b/g															-/+ b/g
Empathy (Matthey et al., 2004)	Pre	<3mths	✓				✓					-/+ b/g															-/+ b/g
Supportive Educational Parenting Program (SEPP) (Shorey and Ng, 2019, Shorey et al., 2019)	Pre + Post	1mth	✓	✓							+ve b/g	+ve b/g															+ve Q
Psychoeducation, psychotherapy or cognitive behavioural therapy focused interventions (n=13)																											
Mothers only (n=11)																											
The Skills Training Approach (STA) (Chamgurdani et al., 2020)	Post	1mth	✓			✓																					+ve b/g
Psychoeducational intervention in prenatal classes (Diotaiuti et al., 2022)	Pre	<3mths	✓				✓					+ve b/g															
Interpersonal-psychotherapy (IPT)-oriented childbirth psychoeducation programme (Gao et al., 2010, Gao et al., 2012)	Pre + Post	N/R	✓				✓					+ve b/g															+ve b/g

(continued on next page)

Table 3 (continued)

Intervention	Stage of birth	Duration	Delivery						Outcomes																											
			In-person	Virtual	Individual	Group	Self	Other	Mental health/illness					Quality of life and wellbeing				Relationship and support			Coping and self-care															
									Anx	Dep	MH	PD	STR	FT	MD	MF	QOL	WB	HS	RF	SS	CS	Func	SC	SCo											
<i>Interpersonal-psychotherapy-oriented postnatal programme</i> (Gao et al., 2015)	Post	N/R	✓		✓			✓				+ve b/g															+ve b/g									
<i>Wide Awake Parenting (WAP)</i> (Giallo et al., 2014)	Post	1mth			✓			✓				+ve b/g	+ve b/g		+ve b/g	- b/g															+ve b/g					
			✓		✓			✓				+ve b/g	+ve b/g		+ve b/g	- b/g															+ve b/g					
<i>Psycho-education intervention</i> (Jiao et al., 2019)	Post	1mth	✓		✓			✓	✓			- b/g	-ve b/g																		+ve b/g					
				✓	✓			✓				- b/g	+ve b/g																		+ve b/g					
<i>Be a Mom</i> (Monteiro et al., 2020, Monteiro et al., 2021)	Post	<3mths		✓	✓			✓				+ve b/g	+ve b/g	+ve b/g	- b/g																	+ve b/g				
<i>Internet-based cognitive behavioral therapy for the prevention of depression during pregnancy in the postpartum period (iPDP)</i> (Nishi et al., 2022)	Pre	<3mths		✓	✓			✓																												
<i>CareMom program</i> (Qin et al., 2022)	Post	1mth		✓	✓			✓				+ve b/g	+ve b/g																							
<i>Postnatal psychoeducation programme (PPP)</i> (Shorey et al., 2015, Shorey et al., 2015)	Post	<3mths	✓		✓			✓					+ve b/g																			+ve b/g				
<i>Stress Management and Relaxation Training for Moms (SMART Moms)</i> (Urizar et al., 2019)	Pre	<3mths	✓				✓		✓																											
Both parents (n=2)																																				
<i>New Family Wellness Project's CBT intervention</i> (Peifer et al., 2022)	Post	3mths	✓		✓			✓				+ve w/g	- w/g		+ve w/g																					
<i>Supportive Parenting App (SPA)</i> (Shorey et al., 2023)	Pre + Post	<12mths		✓	✓			✓	✓			+ve b/g	- b/g																					+ve b/g		
Mindfulness focused interventions (n=9)																																				
Mothers only (n=8)																																				
<i>Mindfulness in Pregnancy Program (MiPP)</i> (Beattie et al., 2017)	Pre	<3mths	✓				✓		✓				+ve b/g																							
<i>Mindfulness-Based Cognitive Therapy (MBCT) programme</i> (Dunn et al., 2012)	Pre	<3mths	✓				✓		✓			+ve b/g	-/+ b/g																							
<i>Progressive muscle relaxation</i> (Gökşin and Ayaz-Alkaya, 2020)	Post	<3mths	✓		✓			✓					+ve b/g																							
<i>Be Mindful Online</i> (Krusche et al., 2018)	Pre	<3mths		✓	✓			✓				+ve b/g	+ve b/g																							
<i>We'll App</i> (Liu et al., 2022)	Post	<3mths		✓	✓			✓					+ve b/g																						+ve b/g	
<i>Happy Mama</i> (Mannocci et al., 2022)	Post	<1wk	✓		✓			✓					-ve b/g																							
<i>Mindfulness-based childbirth and parenting program (MBCP)</i> (Pan et al., 2019)	Pre	<3mths	✓				✓		✓				+ve b/g																							

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Table 3 (continued)

Intervention	Stage of birth	Duration	Delivery						Outcomes																						
			In-person	Virtual	Individual	Group	Self	Other	Mental health/illness					Quality of life and wellbeing					Relationship and support			Coping and self-care									
									Anx	Dep	MH	PD	STR	FT	MD	MF	QOL	WB	HS	RF	SS	CS	Func	SC	SCO						
<i>Abbreviated version of the Family Foundations programme</i> (Philipp et al., 2020)	Pre + Post	<6mths	✓			✓	✓		-ve b/g												-/+ b/g										
<i>Welcome to the World (WTTW)</i> (Wadephul et al., 2019)	Pre	<3mths	✓			✓	✓														+ve Q	+ve Q									
Self-care focused interventions (n=6)																															
Mothers only (n=6)																															
<i>The Postpartum Toolkit</i> (Albanese et al., 2022)	Post	<3mths		✓	✓		✓		+ve w/g	+ve w/g																+ve w/g					
<i>Joyus</i> (Bryant et al., 2023)	Pre + Post	1mth		✓	✓		✓		+ve w/g	+ve w/g											+ve w/g		+ve w/g								
<i>Early Self-care-Based Education program</i> (Chamangasht et al., 2021)	Post	<1mth	✓		✓		✓																				+ve b/g				
<i>Self-care program</i> (Ghiasvand et al., 2017)	Post	N/R	✓		✓		✓																					+ve b/g			
<i>Nurse-led postpartum self care (NLPSPC)</i> (Khatun et al., 2021)	Post	1mth	✓		✓		✓			- b/g																+ve b/g	+ve b/g				
<i>Brief online self-compassion intervention</i> (Mitchell et al., 2018)	Post	1mth		✓	✓		✓																					± w/g			
Physical activity focused interventions (n=5)																															
Mothers only (n=5)																															
<i>Water aerobics program</i> (Lox and Treasure, 2000)	Pre	<3mths	✓				✓																								
<i>Mother and Baby (M&B) Program</i> (Norman et al., 2010)	Post	<3mths	✓				✓			+ve b/g																		+ve b/g			
<i>Exercise program</i> (Perales et al., 2015)	Pre	<9mths	✓		✓		✓			+ve b/g																					
<i>Dru Yoga</i> (Timlin and Simpson, 2017)	Post	1mth	✓				✓																						+ve b/g		
<i>Pram walking group</i> (Watson et al., 2005)	Post	6mths	✓				✓																					+ve b/g Q			
Fathering focused interventions (n=5)																															
Fathers only (n=3)																															
<i>Prenatal web-based father education program</i> (Canbay and Seker, 2021)	Pre	<3mths		✓	✓		✓																					+ve b/g	+ve b/g	+ve b/g	
<i>The SMS4dads intervention</i> (Fletcher et al., 2017)	Pre + Post	<12mths		✓	✓		✓																						+ve w/g		
<i>Becoming Fathers</i> (Rayburn and Coatsworth, 2021)	Pre + post	<3mths	✓				✓			+ve w/g																		+ve w/g	- w/g		
Both parents (n=2)																															
<i>Father-focused discussion classes</i> (Diemer, 1997)	Pre	<3mths	✓				✓																					+ve b/g	-/+ b/g	-/+ b/g	+ve b/g
<i>Dads Matter</i> (Guterman et al., 2018)	Pre + post	<6mths	✓		✓		✓																						+ve b/g		

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Table 3 (continued)

Intervention	Stage of birth	Duration	Delivery				Outcomes																
			In-person		Virtual		Mental health/illness					Quality of life and wellbeing					Relationship and support			Coping and self-care			
			Individual	Group	Self	Other	Anx	Dep	MH	PD	STR	FT	MD	MF	QOL	WB	HS	RF	SS	CS	Func	SC	SCo
<p>Other interventions not classified (n=2) Mothers only (n=2) The Limerick Lullaby project (Carolan et al., 2012) Lavender Aromatherapy (Kianpour et al., 2016)</p>																							
	Pre	N/R	✓	✓	✓	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	Post	1mth	✓	✓	✓	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Key: -/+ = mixed impact on outcome, - = no change in outcome or similar scores between intervention and control group, +ve = program had positive impact on outcome or intervention had impact over control group, -ve = program had negative impact on outcome or control group had impact over intervention group, w/g = within group tests, b/g = between group tests, Q = qualitative results, blank = this outcome was not measured, **bolding** indicates at least one finding in this category was statistically significant

Abbreviations: CS = coping strategies, Func = functioning, SC = self-care, SCo = self-compassion, Anx = anxiety, Dep = depression, MH = mental health, PD = psychological distress, STR = stress, FT = fatigue, MD = mood, MF = mindfulness, QOL = quality of life, WB = wellbeing, HS = help-seeking, RF = relationship functioning, SS = social support, N/R = Not reported

favouring intervention participants, that reached statistical significance (McPherson et al., 2022, Liu et al., 2021, Dol et al., 2022, Pan et al., 2021, Shorey and Ng, 2019, Shorey et al., 2019, Giallo et al., 2014, Kianpour et al., 2016, Monteiro et al., 2020, Monteiro et al., 2021, Diotaiuti et al., 2022, Warriner et al., 2018, Baldwin et al., 2022, Albanese et al., 2022). One of these studies reporting on a relationship focused intervention involving both parents found a statistically significant between-group difference only for fathers (McPherson et al., 2022). Nine reported favourable scores post-intervention, although no between-group or within-group differences were statistically significant, and in many instances, mean differences and effect sizes were small (Krusche et al., 2018, Gammer et al., 2020, Shorey et al., 2023, Dunn et al., 2012, Qin et al., 2022, Bryant et al., 2023, Barber and Masters-Awatere, 2022, Barrera et al., 2020, Peifer et al., 2022). One reported qualitative results regarding beneficial impacts on participant's anxiety post-intervention (Carolan et al., 2012), one reported no change or between-group differences in anxiety scores post-intervention (Jiao et al., 2019), and another reported non-significant higher anxiety scores post-intervention compared with controls (Slade et al., 2021).

Forty-six interventions reported depression outcomes. Twenty-three reported a statistically significant improvement or between-group difference in scores favouring intervention participants (McPherson et al., 2022, Ngai and Gao, 2022, Liu et al., 2021, Krusche et al., 2018, Liu et al., 2022, Pan et al., 2019, Norman et al., 2010, Perales et al., 2015, Ochoa et al., 2021, Pan et al., 2021, Shorey and Ng, 2019, Shorey et al., 2019, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Giallo et al., 2014, Shorey et al., 2015, Shorey et al., 2015, Kianpour et al., 2016, Monteiro et al., 2020, Monteiro et al., 2021, Qin et al., 2022, Koh et al., 2021, Barkin et al., 2021, Warriner et al., 2018, Baldwin et al., 2022, Albanese et al., 2022). Two of these studies reporting on relationship focused interventions involving both parents found a statistically significant between-group difference (McPherson et al., 2022), or statistically significant change in scores at post-intervention (Koh et al., 2021) for mothers only. Ten reported favourable scores post-intervention, although no between-group or within-group differences were statistically significant, and in many instances, mean differences and effect sizes were small (Reid et al., 2002, Dol et al., 2022, Gammer et al., 2020, Jiao et al., 2019, Beattie et al., 2017, Barrera et al., 2015, Gökşin and Ayaz-Alkaya, 2020, Rayburn and Coatsworth, 2021, Bryant et al., 2023, Barber and Masters-Awatere, 2022). Nine reported minimal, no change, or no between-group difference post-intervention (Kavanagh et al., 2021, Matthey et al., 2004, Nishi et al., 2022, Shorey et al., 2023, Dunn et al., 2012, George, 2020, Khatun et al., 2021, Barrera et al., 2020, Peifer et al., 2022). Five reported higher depression scores at post-intervention for intervention participants, or between-group scores favouring control participants (Slade et al., 2021, Jiao et al., 2019, Mannocci et al., 2022, Ishii et al., 2020, Philipp et al., 2020), one of which reached statistical significance (Ishii et al., 2020).

Four interventions reported non-specific/general mental health outcomes. Two reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Monteiro et al., 2020, Monteiro et al., 2021, Peifer et al., 2022). One qualitative study reported beneficial impacts regarding participant's mental health post-intervention (Chartier et al., 2015). Another study reported no change in scores between baseline to follow-up for both intervention and control participants (Watson et al., 2005).

Eight interventions reported psychological distress outcomes. Four reported improvement or between-group difference in scores favouring intervention participants, that reached statistical significance (Daley-McCoy et al., 2015, Warriner et al., 2018, Mitchell et al., 2018, Lox and Treasure, 2000). One of these studies reporting on a mindfulness intervention involving both parents found a statistically significant change in post-intervention scores for mothers only (Warriner et al., 2018). Conversely, a study reporting on a relationship focused intervention involving both parents found a statistically significant

between-group result in fathers only (Daley-McCoy et al., 2015). One reported a non-significant between-group difference in post-intervention scores favouring intervention participants (Guterman et al., 2018). Three reported minimal change or between-group differences in scores post-intervention (Nishi et al., 2022, Monteiro et al., 2020, Monteiro et al., 2021, Fletcher et al., 2017).

Twenty-three interventions reported stress outcomes. Fifteen reported improvement or between-group difference in scores favouring intervention participants, that reached statistical significance (Halford et al., 2010, Osman et al., 2014, Krusche et al., 2018, Pan et al., 2019, Timlin and Simpson, 2017, Ochoa et al., 2021, Giallo et al., 2014, Kianpour et al., 2016, Mannocci et al., 2022, Koh et al., 2021, Warriner et al., 2018, Diemer, 1997, Baldwin et al., 2022, Barber and Masters-Awatere, 2022, Albanese et al., 2022). Two of these studies which involved both parents, one reporting on a relationship focused intervention (Koh et al., 2021) and another reporting on a mindfulness intervention (Warriner et al., 2018) found statistically significant changes post-intervention for mothers only. Conversely, a study reporting on a relationship focused intervention involving both parents found a statistically significant change post-intervention for fathers only (Halford et al., 2010). Four reported favourable results post-intervention, although no between-group or within-group differences were statistically significant, and in many instances, mean differences and effect sizes were small (Gammer et al., 2020, Urizar et al., 2019, Dunn et al., 2012, Rayburn and Coatsworth, 2021). Two reported qualitative results regarding beneficial impacts on participant's stress post-intervention (Beattie et al., 2017, Carolan et al., 2012). Three studies reported minimal change or no between-group difference in post-intervention scores (McPherson et al., 2022, Slade et al., 2021, Beattie et al., 2017).

Quality of life and wellbeing

The main mechanism of focus of the 36 included studies that reported quality of life or wellbeing outcomes were: education or skills $n=8$ (Gammer et al., 2020, Haga et al., 2021, Pan et al., 2021, Black-Olien, 1993, Kavanagh et al., 2021, Shorey and Ng, 2019, Shorey et al., 2019, Steen et al., 2015, Barrera et al., 2020), psychoeducation, psychotherapy or CBT $n=7$ (Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Giallo et al., 2014, Shorey et al., 2015, Shorey et al., 2015, Urizar et al., 2019, Monteiro et al., 2020, Monteiro et al., 2021, Peifer et al., 2022), mindfulness $n=6$ (Liu et al., 2022, Pan et al., 2019, Beattie et al., 2017, Dunn et al., 2012, Gökşin and Ayaz-Alkaya, 2020, Warriner et al., 2018), support $n=5$ (Liu et al., 2021, Reid et al., 2002, Slade et al., 2021, Ishii et al., 2020, Chartier et al., 2015), physical activity $n=3$ (Norman et al., 2010, Timlin and Simpson, 2017, Lox and Treasure, 2000), self-care $n=3$ (Ghiasvand et al., 2017, Khatun et al., 2021, Bryant et al., 2023), relationship $n=2$ (McPherson et al., 2022, Wadepful et al., 2019), fathering $n=2$ (Rayburn and Coatsworth, 2021, Fletcher et al., 2017). Overall, studies reporting on quality of life and wellbeing outcomes reported positive results (67% of summarised results; see Table 3), and the majority of these reported at least one statistically significant finding (68% of summarised positive results). Physical activity and self-care focused interventions reported the highest proportions of positive effects for quality of life and wellbeing outcomes (both 100% of summarised results). The interventions with the following delivery characteristics reported the highest proportion of positive effects for quality of life and wellbeing outcomes: group setting (81% of summarised results), post-birth (83%), in-person only (70%) or virtual only (70%), targeting mothers only (79%), and facilitated (72%).

Three interventions reported fatigue outcomes. Two reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Khatun et al., 2021, Lox and Treasure, 2000). The other study reported mixed results, with no statistically significant between-group differences in fatigue assessment or severity of symptoms scores at post-intervention (Giallo et al., 2014). Six interventions reported mood outcomes. Four reported

improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Timlin and Simpson, 2017, Urizar et al., 2019, Gökşin and Ayaz-Alkaya, 2020, Fletcher et al., 2017). One reported no significant differences between intervention and control group scores, but found mixed results for within-gender and between couple explorations (Black-Olien, 1993). Qualitative findings from another study reported the intervention positively influenced mood for some, but negatively influenced mood for others (Barrera et al., 2020).

Six interventions reported mindfulness outcomes. One reported a statistically significant within-group improvement in scores at post-intervention (Warriner et al., 2018). Three reported an improvement in scores or experiences post-intervention, although no between-group or within-group differences were statistically significant, and in many instances, mean differences and effect sizes were only small (Pan et al., 2019, Beattie et al., 2017, Dunn et al., 2012). Two qualitative studies reported beneficial impacts regarding participant's mindfulness post-intervention (Beattie et al., 2017, Dunn et al., 2012). Two reported minimal change in participant scores from pre- to post-intervention (Liu et al., 2022, Rayburn and Coatsworth, 2021).

Six interventions reported quality of life outcomes. Four reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Liu et al., 2021, Pan et al., 2021, Ghiasvand et al., 2017, Ishii et al., 2020). One of these studies reporting on a relationship focused intervention targeting both parents found a statistically significant change in post-intervention scores for fathers only (Ishii et al., 2020). One study reported no significant group by time interaction for quality-of-life outcomes (Kavanagh et al., 2021).

Nineteen interventions reported wellbeing outcomes. Seven reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Norman et al., 2010, Gammer et al., 2020, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Bryant et al., 2023, Lox and Treasure, 2000, Steen et al., 2015). Two reported mixed results regarding improvements, between-group differences, and statistical significance for different wellbeing subscales (Haga et al., 2021, Monteiro et al., 2020, Monteiro et al., 2021). Five qualitative studies reported a beneficial impact regarding participant's wellbeing post-intervention (Shorey and Ng, 2019, Shorey et al., 2019, Shorey et al., 2015, Shorey et al., 2015, Dunn et al., 2012, Wadepful et al., 2019, Chartier et al., 2015), and one reported non-significant favourable scores for participants at post-intervention (Fletcher et al., 2017). Two reported mixed or minimal change in scores between-groups at post-intervention (McPherson et al., 2022, Reid et al., 2002). One reported non-significant lower post-intervention scores for intervention participants compared to controls (Slade et al., 2021), and another reported statistically significant lower scores at post-intervention in a pre-post-trial (Peifer et al., 2022).

Relationship and support

The main mechanism of focus of the 29 included studies that reported relationship and support outcomes were: psychoeducation, psychotherapy or CBT $n=7$ (Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Jiao et al., 2019, Shorey et al., 2015, Shorey et al., 2015, Shorey et al., 2023, Peifer et al., 2022), relationship $n=6$ (Daley-McCoy et al., 2015, Halford et al., 2010, McPherson et al., 2022, Koh et al., 2021, Philipp et al., 2020, Wadepful et al., 2019), education or skills $n=5$ (Dol et al., 2022, Kavanagh et al., 2021, Matthey et al., 2004, Shorey and Ng, 2019, Shorey et al., 2019, Steen et al., 2015), support $n=3$ (Reid et al., 2002, Vargas-Porras et al., 2021, Ishii et al., 2020), fathering $n=3$ (Canbay and Seker, 2021, Guterman et al., 2018, Diemer, 1997), mindfulness $n=2$ (Liu et al., 2022, Dunn et al., 2012), physical activity $n=1$ (Watson et al., 2005), self-care $n=1$ (Bryant et al., 2023), not classified $n=1$ (Carolan et al., 2012). Just over half of these studies reported positive results for relationships and support outcomes (59% of summarised results; see Table 3); the majority of

which reported at least one statistically significant finding (68% of summarised positive results). Mindfulness, physical activity, and self-care focused interventions reported the highest proportion of positive effects for relationship and social support outcomes (all 100% of summarised results). The interventions with the following delivery characteristics reported the highest proportion of positive effects for relationship and support outcomes: individual (72% of summarised results), post-birth (71%), virtual (86%), fathers only (100%), and hybrid facilitated and self-directed (100%).

Only one intervention reported help-seeking outcomes (Shorey et al., 2015, Shorey et al., 2015). Two papers reporting on this postnatal psychoeducation program found participants had a better understanding of the importance of seeking help from others, and were more open and willing to clarify doubts and engage in open communication with others (Shorey et al., 2015, Shorey et al., 2015).

Thirteen interventions reported relationship functioning outcomes. Two reported statistically significant between-group differences in scores favouring intervention participants (Halford et al., 2010, Gao et al., 2010, Gao et al., 2012). Three reported mixed results regarding improvements, between-group differences, and statistical significance for different functioning subscales (Daley-McCoy et al., 2015, McPherson et al., 2022, Philipp et al., 2020). Two of these studies reporting on relationship focused interventions involving both parents found statistically significant between-group differences in mothers only (Daley-McCoy et al., 2015), or fathers only (McPherson et al., 2022). Another reported non-significant between-group differences (Guterman et al., 2018). One reported qualitative results of a beneficial impact regarding participant's relationship functioning (Wadephul et al., 2019). Six reported mixed or minimal change, or no between-group difference in scores at post-intervention (Kavanagh et al., 2021, Matthey et al., 2004, Koh et al., 2021, Ishii et al., 2020, Diemer, 1997, Peifer et al., 2022).

Twenty-one interventions reported social support outcomes. Twelve reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Vargas-Porras et al., 2021, Liu et al., 2022, Shorey and Ng, 2019, Shorey et al., 2019, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Jiao et al., 2019, Shorey et al., 2015, Shorey et al., 2015, Shorey et al., 2023, Canbay and Seker, 2021, Watson et al., 2005, Steen et al., 2015). Two reported non-significant improvements for intervention participants at post-intervention (Bryant et al., 2023, Peifer et al., 2022). Four reported qualitative results of beneficial impacts for participant's feelings of social support post-intervention (Shorey and Ng, 2019, Shorey et al., 2019, Dunn et al., 2012, Watson et al., 2005, Carolan et al., 2012). Five reported mixed or minimal change, or no between-group difference in scores at post-intervention (McPherson et al., 2022, Reid et al., 2002, Dol et al., 2022, Kavanagh et al., 2021, Diemer, 1997).

Coping and self-care

The main mechanism of focus of the 15 studies that reported coping and self-care outcomes were: self-care $n=4$ (Chamangasht et al., 2021, Khatun et al., 2021, Mitchell et al., 2018, Albanese et al., 2022), education or skills $n=3$ (Gammer et al., 2020, Pan et al., 2021, George, 2020), psychoeducation, psychotherapy or CBT $n=3$ (Chamgurdani et al., 2020, Giallo et al., 2014, Monteiro et al., 2020, Monteiro et al., 2021), mindfulness $n=2$ (Sajadian et al., 2022, Dunn et al., 2012), fathering $n=2$ (Canbay and Seker, 2021, Diemer, 1997), and support $n=1$ (Barkin et al., 2021). Overall, studies reporting on coping and self-care outcomes reported positive results (89% of summarised results; see Table 3), and majority of these reported at least one statistically significant finding (94% of summarised positive results). Most intervention categories that measured coping and self-care outcomes reported high proportions of positive effects (>80% of summarised results), except for mindfulness focused interventions (50%). Interventions with the following delivery characteristics reported the

highest proportion of positive effects for coping and self-care outcomes: hybrid individual and group setting (100% of summarised results), post-birth (92%), hybrid in-person and virtual (100%), targeting fathers (100%) or both parents (100%), and facilitated (92%).

One study reported coping strategies outcomes, reporting a significant group by time interaction for coping strategies, favouring the intervention group (Diemer, 1997). Seven interventions reported functioning outcomes (Sajadian et al., 2022, Chamgurdani et al., 2020, Canbay and Seker, 2021, George, 2020, Khatun et al., 2021, Barkin et al., 2021, Albanese et al., 2022). Six reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Sajadian et al., 2022, Chamgurdani et al., 2020, Canbay and Seker, 2021, Khatun et al., 2021, Barkin et al., 2021, Albanese et al., 2022). One reported non-significant lower rates of impaired functioning in intervention participants compared with controls (George, 2020). Five interventions reported self-care outcomes, and all reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Pan et al., 2021, Chamgurdani et al., 2020, Giallo et al., 2014, Canbay and Seker, 2021, Chamangasht et al., 2021, Khatun et al., 2021). Four interventions reported self-compassion outcomes. Three reported improvements or between-group differences in scores favouring intervention participants, that reached statistical significance (Gammer et al., 2020, Monteiro et al., 2020, Monteiro et al., 2021, Mitchell et al., 2018), although not across all subscales (Mitchell et al., 2018). Another reported no effect at post-intervention (Dunn et al., 2012).

Summary of effectiveness of included studies

Thirty-five studies across all outcome measures provided evidence of effectiveness, with 25 reporting positive, statistically significant between-group differences across all of their reported outcomes (Halford et al., 2010, Ngai and Gao, 2022, Osman et al., 2014, Vargas-Porras et al., 2021, Krusche et al., 2018, Pan et al., 2019, Sajadian et al., 2022, Norman et al., 2010, Perales et al., 2015, Timlin and Simpson, 2017, Gammer et al., 2020, Pan et al., 2021, Shorey et al., 2019, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Shorey et al., 2015, Shorey et al., 2015, Canbay and Seker, 2021, Chamangasht et al., 2021, Ghiasvand et al., 2017, Kianpour et al., 2016, Qin et al., 2022, Gökşin and Ayaz-Alkaya, 2020, Diotaiuti et al., 2022, Shorey et al., 2019) and ten reporting positive, statistically significant within-group differences across all of their reported outcomes (Ochoa et al., 2021, Urizar et al., 2019, Barkin et al., 2021, Warriner et al., 2018, Bryant et al., 2023, Lox and Treasure, 2000, Steen et al., 2015, Baldwin et al., 2022, Barber and Masters-Awatere, 2022, Albanese et al., 2022). The evidence-based interventions were found across each intervention mechanism of focus with between 1–6 effective interventions identified in every category. Evidence-based interventions were typically delivered to mothers only ($n=21$) (Liu et al., 2021, Osman et al., 2014, Vargas-Porras et al., 2021, Krusche et al., 2018, Pan et al., 2019, Sajadian et al., 2022, Norman et al., 2010, Timlin and Simpson, 2017, Gammer et al., 2020, Pan et al., 2021, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Shorey et al., 2015, Shorey et al., 2015, Shorey et al., 2015, Chamangasht et al., 2021, Ghiasvand et al., 2017, Kianpour et al., 2016, Qin et al., 2022, Gökşin and Ayaz-Alkaya, 2020, Diotaiuti et al., 2022), post-birth ($n=14$) (Liu et al., 2021, Osman et al., 2014, Vargas-Porras et al., 2021, Sajadian et al., 2022, Norman et al., 2010, Timlin and Simpson, 2017, Gammer et al., 2020, Chamgurdani et al., 2020, Gao et al., 2015, Shorey et al., 2015, Shorey et al., 2015, Chamangasht et al., 2021, Ghiasvand et al., 2017, Kianpour et al., 2016, Qin et al., 2022, Gökşin and Ayaz-Alkaya, 2020), by a facilitator ($n=19$) (Halford et al., 2010, Ngai and Gao, 2022, Liu et al., 2021, Osman et al., 2014, Vargas-Porras et al., 2021, Pan et al., 2019, Sajadian et al., 2022, Norman et al., 2010, Perales et al., 2015, Timlin and Simpson, 2017, Pan et al., 2021, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Shorey et al., 2015, Shorey et al., 2015, Ghiasvand

et al., 2017, Kianpour et al., 2016, Gökşin and Ayaz-Alkaya, 2020, Diotaiuti et al., 2022), in-person (n=18) (Halford et al., 2010, Ngai and Gao, 2022, Liu et al., 2021, Vargas-Porras et al., 2021, Pan et al., 2019, Sajadian et al., 2022, Norman et al., 2010, Perales et al., 2015, Timlin and Simpson, 2017, Pan et al., 2021, Chamgurdani et al., 2020, Gao et al., 2010, Gao et al., 2012, Gao et al., 2015, Shorey et al., 2015, Shorey et al., 2015, Chamangasht et al., 2021, Ghiasvand et al., 2017, Kianpour et al., 2016, Gökşin and Ayaz-Alkaya, 2020, Diotaiuti et al., 2022) and individually (n=16) (Halford et al., 2010, Ngai and Gao, 2022, Liu et al., 2021, Osman et al., 2014, Vargas-Porras et al., 2021, Krusche et al., 2018, Perales et al., 2015, Gammer et al., 2020, Pan et al., 2021, Shorey and Ng, 2019, Shorey et al., 2019, Gao et al., 2015, Shorey et al., 2015, Shorey et al., 2015, Canbay and Seker, 2021, Chamangasht et al., 2021, Ghiasvand et al., 2017, Kianpour et al., 2016, Qin et al., 2022, Gökşin and Ayaz-Alkaya, 2020).

Discussion

This scoping review aimed to identify existing evidence-based wellbeing interventions available to parents during pregnancy and the first 12 months of caregiving. Seventy unique interventions were identified with substantial variation in intervention focus and outcome measures, as well as mode of delivery, timing, setting, and target population. Half reported evidence of effectiveness against their reported outcome measures. When broken down into mechanism of focus, trials of self-care focused interventions had the most consistent positive effect across all four outcome domains. However, different mechanisms of intervention function impacted different components of wellbeing. These findings indicate that a universal prevention program to support parent wellbeing through the transition to parenthood needs to incorporate multiple mechanisms of function (van Agteren et al., 2021), and target outcomes within each wellbeing domain.

Our review identified eight distinctive intervention mechanisms of focus. This variation was not surprising given the broad definition of wellbeing we employed (Cooke et al., 2016). Identifying a high number of education and skills focused interventions was not unexpected, due to the fundamental importance of education for improvements in behaviour and wellbeing (Arlinghaus and Johnston, 2018). However, information provision alone is insufficient to change outcomes (Arlinghaus and Johnston, 2018). The broad range of other intervention mechanisms of focus included in this review, including psychotherapy or CBT, self-care, support, and relationships have been identified in previous reviews (Matvienko-Sikar et al., 2021, Alderdice et al., 2013), and tap into key mechanistic pathways by which wellbeing could be improved. For instance, social support and interpersonal relationships are central to parent wellbeing (McCarthy et al., 2021, Staneva et al., 2015) and so interventions that improve this are potentially beneficial. Cognitive Behavioural Therapy, which focuses on addressing and replacing maladaptive thoughts and coping strategies with adaptive strategies, is considered one of the most evidence-based approaches for improving wellbeing (Fontein-Kuipers et al., 2014). While the diversity of interventions speaks to attempts to address various aspects of perinatal wellbeing, this variability also highlights fragmentation in what aspects are targeted to improve parent wellbeing.

Similarly, there was heterogeneity in the outcomes reported, with 17 different outcomes identified. Trials measured and reported outcomes in one of four broad domains: 1) mental health/illness, 2) quality of life and wellbeing, 3) relationship and support, 4) coping and self-care. Although our inclusion criteria for outcome measures was intentionally broad, there was a predominant focus on mental health/illness. It is important to note that the presence of wellbeing is not just the absence of mental illness (Ruggeri et al., 2020) and, while we delineated these concepts intentionally in our review, measures of wellbeing that capture these broader components were reported far less frequently in included trials, which means they could have had positive impact beyond the narrow outcomes measured. For example, while several trials reported

higher scores of anxiety or depression post-intervention this does not mean the interventions caused parents to experience heightened anxiety or depression, but rather they did not fully ameliorate these common experiences during this transition (McCarthy et al., 2021, Miller et al., 2006, Baldwin et al., 2018). These findings emphasise the need to measure wellbeing concepts beyond ill-health, as it is more complex than absence of mental illness. Furthermore, by conflating mental health with wellbeing, we may exacerbate the stigma parents face through this period and further contribute to their reluctance to seek support (McCarthy et al., 2021, Staneva et al., 2015).

While the breadth and diversity in outcomes measured allowed for a robust assessment of effectiveness of these trials, the diversity in outcome measurement instruments used by trialists prevented comprehensive comparison between interventions (Prinsen et al., 2016). Although there are well developed and validated survey instruments for many of the outcomes reported, such as the Edinburgh Postnatal Depression Scale (EPDS), Perceived Stress Scale, and Prenatal Distress Questionnaire, these were not always used. Development and use of a core outcome set for parent interventions which includes an agreed set of outcomes considered most important by stakeholders that should be measured and reported in all trials, would be of benefit (Williamson et al., 2017). This will afford us the ability to capture breadth of outcomes, whilst allowing comparison of like with like.

This review found substantial variation in mode of delivery, timing, setting, and target population. Those delivered to mothers-only, post-birth, by a facilitator, in-person and individually were the most typical characteristics in evidence-based interventions. However, this was not the only formula for producing effective results. Interventions delivered in a group setting produced the highest proportion of positive results for mental health/illness and quality of life and wellbeing outcomes, compared to individual or hybrid delivery, which were more effective for relationship and support outcomes or coping and self-care outcomes. Facilitated interventions produced the highest proportion of positive effects for coping and self-care, quality of life and wellbeing outcomes, whereas self-directed or hybrid interventions were more effective for mental health/illness and relationship and support outcomes. This variation speaks to the need for trialists to consider tailoring intervention components targeted to their outcomes of interest, or that produce the most consistent results across all domains.

The need to consider delivery of universal interventions appropriately extends to the inclusion of coparents. Trials of interventions that targeted fathers reported the highest proportion of positive results across coping and self-care, and relationship and support domains, indicating that these interventions are possibly most effective for these outcomes. However, interventions that included fathers did not always result in significant positive effects for both parents. For example, one trial on a mindfulness focused intervention reported significant positive effects for mothers only against stress and psychological distress outcomes (Warriner et al., 2018), and several trials on relationship focused interventions reported significant positive effects for fathers (Daley-McCoy et al., 2015, McPherson et al., 2022, Ishii et al., 2020), or mothers only (Daley-McCoy et al., 2015, McPherson et al., 2022, Koh et al., 2021). These discrepancies are likely due to the lack of consistency in approach for including coparents in interventions. Fathers or coparents are often overlooked in examinations of parent health and wellbeing (Wee et al., 2015), which is clearly supported in our findings with only 16 interventions targeting coparents. Lack of consideration of coparent wellbeing is problematic, not only influencing their own health, but also their ability to support their partners (Baldwin et al., 2018, Genesoni and Tallandini, 2009). Thus, interventions should ensure that both parents are supported during this highly complex transitional period.

Strengths and limitations

The breadth of included studies and the variation in study

components required categorisation and simplification of results at multiple levels. Studies were summarised to present all results in a single study against each outcome, of which there could be >10 reported. Furthermore, effect sizes were not included. Variation in study numbers across the different categories of intervention, delivery component or outcome domains may have skewed effectiveness proportions. Finally, many studies may not have passed quality appraisal due to poor reporting. However, our search was thorough, including systematic searching across four databases and pearling reference lists. This review was intentionally comprehensive, allowing for deeper understanding of the potential impacts of these types of interventions. Including interventions that targeted coparents is another strength, particularly given the limited focus on coparent wellbeing within the literature. Similarly, consideration of wellbeing across the perinatal period is a strength, as wellbeing outcomes vary along this period.

Conclusion

Supporting parents' wellbeing in the transition to parenthood is a complex challenge. This review identified 70 unique interventions with the intention to support parents' wellbeing in the transition to parenthood. Half provided evidence of their effectiveness across their reported outcomes. Interventions with a self-care mechanism of focus consistently produced the highest proportion of positive effects across each outcome category, however, different mechanisms of intervention function impacted different components of wellbeing. Findings from this review support a multifaceted approach to supporting parents' wellbeing during this transition.

Ethics statement

Ethics approval was not required for this research, as it is a review of existing literature

CRedit authorship contribution statement

Georgia Middleton: Writing – review & editing, Writing – original draft, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Karen Matvienko-Sikar:** Writing – review & editing, Writing – original draft, Data curation. **Annette Briley:** Writing – review & editing, Methodology, Funding acquisition, Data curation, Conceptualization. **Dimity Dutch:** Writing – review & editing, Visualization, Data curation. **Samantha Morgillo:** Writing – review & editing, Visualization, Data curation. **Jacqueline Anderson:** Writing – review & editing, Conceptualization. **Natasha Schranz:** Writing – review & editing, Conceptualization. **Fiona Margrie:** Writing – review & editing, Conceptualization. **Rachel Kirby:** Writing – review & editing, Conceptualization. **Rebecca K Golley:** Writing – review & editing, Resources, Methodology, Funding acquisition, Conceptualization. **Sarah C Hunter:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Two of the authors (NS, JA) work for the agency (Preventive Health SA) that funded this work. The funding organisation approved the project design, reviewed findings and the final manuscript, but were not directly involved in collection or analysis of data.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.midw.2025.104296](https://doi.org/10.1016/j.midw.2025.104296).

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