



# Women's views and experiences of pregnancy yoga. A qualitative evidence synthesis<sup>☆</sup>

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## ABSTRACT

**Background:** Pregnancy yoga is a holistic practice to support the physiological and psychological changes women experience in pregnancy, with the potential to be offered by mainstream maternity services. Evidence suggests benefits of pregnancy yoga are reduced anxiety and stress, enhanced mood and sleep, with reported improvements in physical and overall wellbeing. Women report that yoga in pregnancy assists in their birth preparation and self-efficacy in labour, with improved labour and birth experience. To date, a Qualitative Evidence Synthesis (QES) of qualitative studies of women's experiences of pregnancy yoga has not been undertaken and accordingly, the literature lacks a high-level synthesis of women's first-hand accounts.

**Methods:** This qualitative systematic review aims to synthesise and present new evidence about women's views and experiences of pregnancy yoga. Qualitative studies reporting women's views and experiences of practising pregnancy yoga as a sole intervention, were eligible for inclusion. Systematic searches of eight academic databases, AMED, ASSIA, CINAHL, EMBASE, MEDLINE, MIDIRS, PsycInfo and Web of Science, accompanied by extensive searches of Grey Literature, and evidence libraries, took place in May 2022. The methodological quality of included studies was formally evaluated, independently, by two reviewers using an adapted quality assessment tool. Data extraction followed and thematic synthesis, using the Thomas and Harden 2008 framework, was the validated method for the development of six analytical themes.

**Results:** Seven studies, providing the experiences of 92 pregnant women, were included in the review. The methodological quality of the studies was mixed, with three of the seven scoring highly and two scoring medium for weight of evidence. The three key synthesised themes were: *Equilibrium*; *Personal Autonomy in Healthcare*; and *Connection*. There were six analytical subthemes: intuitive knowing, embedding the practice of yoga practice, practical toolkit, holistic care, baby bonding and peer social support.

**Conclusion:** Synthesis of pregnant women's voices identified what women want - *easy access to the holistic benefits of pregnancy yoga*; what they recommend - *pregnancy yoga provided as mainstream maternity support* and what should be provided - *pregnancy yoga for all women, not only those who can afford to pay*; Paying attention to what women identify as important, brings us closer to a woman-centred maternity service.

## Background

Yoga is an ancient, well-established mind-body-spirit practice, originating in India over 5000 years ago. Most western countries have developed yoga into 3 key practices, involving physical postures 'asanas', breath-control 'pranayama' and meditation 'dhyana' (Mallinson and Singleton 2016). Practice rates vary, with the Centre for Disease Control reporting 1 in 7 adults in the USA practising yoga in 2017

(Clarke et al., 2018). A recent meta-analysis included 22 trials with 1826 pregnant women and provides positive evidence regarding the characteristics and effectiveness of pregnancy yoga, with no evidence of adverse events in any of the trials (Corrigan et al., 2022).

The benefits of yoga are well documented; Yoga practice is associated with reducing the risk of non-communicable diseases; diabetes, cardiovascular disease and stroke, as well as promoting general physical and mental health (WHO 2018; Sharma et al., 2022). Yoga practice

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contributes to 'integrative care' by combining physical benefits arising from body awareness, philosophical benefits through the development of contemplative capacity and expanding perception of totality (biological, psychological, sociological and spiritual dimensions) with social benefits evident also (Barros et al., 2014).

A specific definition of pregnancy yoga did not exist in the literature; however, pregnancy yoga for most women differs from yoga used by the general population in terms of pace, content and use of modified postures to support the unique physiological needs of pregnant women (Battle et al., 2015).

Pregnancy yoga is a low-cost, innovative practice offering a highly effective tool to empower women in pregnancy and labour (Enchelmaier et al., 2019; Van der Riet et al. 2020). Opportunities for empowerment through pregnancy yoga are multi-factorial. Women report yoga is more enjoyable, and more sustainable than other forms of exercise in pregnancy (Battle and Fritzson 2018); yoga increases body awareness and food choices (Green et al., 2021); and is associated with physical strength, flexibility and pain management (Cheshire and Cartwright 2021).

The potential benefits of pregnancy yoga are well documented (Hu et al., 2021); however, exploration of the utility and acceptability of pregnancy yoga from the woman's perspective needs to be explored (Van der Riet et al. 2020).

In response to the requests of researchers to help answer questions regarding utility, in terms of women's satisfaction, acceptability of pregnancy yoga for women, and to build evidence in the field, we undertook a Qualitative Evidence Synthesis based on the review question, 'What are women's views and experiences of yoga in pregnancy?'

## Methods

Primary research studies were eligible for inclusion if they met the following participants, exposure, outcomes and study type criteria:

**Participants:** Women who practised Yoga while pregnant; women of any age, gestation and parity.

**Exposure:** Pregnancy Yoga (as a sole intervention).

**Outcomes:** Data representing views, perceptions and experiences of pregnant women practising Pregnancy Yoga.

**Study Type:** Primary qualitative studies of any design; reported qualitative components of mixed methods & action research where qualitative data were reported separately.

Survey designs with open-ended questions that provided qualitative data were not considered for inclusion.

## Search strategy

To identify relevant records, a search of the following electronic databases, from their date of inception to May 15th 2022 was undertaken: AMED, ASSIA, CINAHL, EMBASE, MEDLINE, MIDIRS, PsycInfo and Web of Science, along with grey literature and using the PEOS framework: population, exposure, outcomes. Results were further screened for 'study type' at title and abstract stage. The search concepts used to identify research of relevance to the review question were: 'pregnant women'; 'yoga'; 'experience'

Supplementary file 1 contains the finalised search strings used and is provided in the interest of transparency.

No limitations were applied during database searches ensuring all appropriate studies were captured. Language did not present as a bias at title and abstract stage, as all abstracts were presented in the English language. There was no time limit applied to the search, to ensure inclusion of seminal works and also in recognition that yoga is an ancient tradition. A grey literature search was undertaken to reduce publication bias (Table 1). The search selection was performed independently by two reviewers (OC and VB).

**Table 1**

Grey literature search.

- 'GreyLit.org'; DANS EASY (ex OpenGrey) and SCOPUS; alongside POPLINE reproductive health database and Mednar, which is a 'Deep Web Search Engine' for both black and grey medically-focused resources.
- ProQuest, JSTOR and ResearchGate were all searched for relevant articles. Conference proceedings related to Irish maternity services and the Pregnancy Yoga industry in Ireland were searched for on the platform 'Google Scholar'.
- Ascendancy and descendancy bibliographic searches were undertaken stemming from reference lists of reviewed articles.

## Quality assessment

The purpose of critical appraisal of methodological quality is to determine if the study has addressed potential biases, at the design, conduct and analysis stages (JBI 2020). Following consideration regarding approaches to quality assessment of qualitative studies, Brunton et al. (2011) adapted quality assessment tool for qualitative research studies was chosen. The tool was piloted on two selected included studies ahead of usage for the full review, a commitment from our 'a priori' protocol. Following discussion, we elected to design an adapted tool, based on Brunton et al.'s criteria, however substituting 'trustworthiness' for 'reliability'; and 'utility' for 'validity' (Stenfors et al., 2020). We chose trustworthiness of data collection tools/methods to signify credibility, dependability and reflexivity; while utility was assessed via confirmability and transferability, based on Stenfors et al. (2020) cited key criteria for evaluating qualitative research. Quality assessment was performed independently by each reviewer and agreed by both (OC and VB).

## Data extraction and synthesis

A data extraction form was piloted and used for each study to compile data in advance of data synthesis, as recommended by Bettany-Saltikov & McSherry (2016). Extracted data consisted of: reference details, the aim of the study, study design & setting, sample size, sampling method & participant data, inclusion/exclusion criteria, data collection & analysis methods, followed by the findings of relevance to the research question. Thematic synthesis, described by Thomas & Harden (2008) was chosen as the validated method and involved three stages; 1. Inductive Coding; 2. Grouping of Codes and Development of Descriptive Themes and 3. Abstraction of descriptive themes to develop Analytic themes. As described by Thomas & Harden (2008) the objective of analytical theme development is to marry the parts into a whole, which adds more to understanding about the chosen topic, in this case, pregnancy yoga, than exists from having a number of primary study outcomes in isolation (Riese et al., 2014).

The first stage involved becoming immersed in the data and keeping a reflective diary as the process unfolded. Line by line coding ensued, with both primary and secondary constructs intermingled to build emerging descriptive themes relevant to the review question, from within the data. The next stage, thematic analysis, is a step further than the explicit description associated with content analysis, instead reflecting upon and drawing out the implicit meaning available once depth of understanding is applied (Vaismoradi et al., 2016). To translate analytical subthemes into the final three analytical themes, we returned to the existing literature on pregnancy yoga and examined the data in a new light, with our emerging themes in mind. Readers are directed to Table 6, located in the results section, to assist with understanding the process and flow involved in translating codes into descriptive themes and how those themes fit with the emerging synthesis.

## Assessment of confidence in the review findings ENTREQ and GRADE-CERQual

Application of the ENTREQ statement demonstrates all stages of the

QES pertinent to this review question (Tong et al., 2012) (Supplementary File 2).

We applied the Grading of Recommendations Assessment, Development and Evaluation-Confidence in the Evidence from Reviews of Qualitative research (GRADE-CERQual) to assess confidence in the QES findings (Colvin et al., 2018; Lewin et al., 2018a, 2018b; Munthe-Kaas et al., 2018). The GRADE-CERQual was applied independently by OC and VB, conflicts were discussed and an overall judgement for each finding of High, Moderate, Low or Very Low confidence was agreed (Lewin et al., 2018a, 2018b).

Results are presented in Table 5 in the Results section.

## Results

### Search and selection

The combined searches of all 8 aforementioned academic databases, based on the PEOS for this review question, yielded a total of 794 studies, summarised in Table 2 below.

Stage 1, the title and abstract phase, involved independent screening by each reviewer (OC and VB), and identified 324 studies which were found to be irrelevant. Reasons for exclusion included 'Wrong Study Type', 'Wrong population', 'Not Pregnancy Yoga' and 'Not views or experiences'. Sixty studies remained. Reasons for exclusion of full texts are reported via schematic representation provided in Fig. 1.

### Description of included studies

Seven studies involving 92 participants, ranging from the birth stories of an experienced yoga practitioner and midwife (Parvati Baker 1986) to the views of 24 'new to yoga' pregnant women (Hobek Akarsu et al. 2022) were eligible for inclusion in this QES.

All research was conducted and published in English, with the exception of the article by Hobek Akarsu et al. (2022), translated by the researchers and a translator, from Turkish to English. The summary characteristics of each included study can be found in Table 3 below.

The results of the quality assessment are presented in Table 4.

Table 5 GRADE-CERQual (Confidence in Evidence from Reviews of Qualitative Research)

### Findings

Thematic synthesis of seven studies on 'women's views and experiences of pregnancy yoga' that were eligible for inclusion in this QES revealed three analytical key themes 1. Equilibrium, 2. Personal Autonomy in Healthcare 3. Connection.

Table 6 represents a schematic formatting of the development of example codes through descriptive themes, into analytical subthemes and finally three analytical key themes.

Table 7 contains the studies contributing data to themes and subthemes

**Table 2**  
Summary of academic databases searched.

Database	Years searched	Studies Yielded
AMED	Inception to 15/5/22	10
ASSIA	Inception to 10/5/22	126
CINAHL	Inception to 15/5/22	113
EMBASE	Inception to 15/5/22	234
MEDLINE	Inception to 12/5/22	105
MIDIRS	Inception to 12/5/22	90
PsycINFO	Inception to 10/5/22	34
WoS	Inception to 10/5/22	82

### Theme 1 equilibrium

The first of three key themes, 'Equilibrium' emerged from all seven studies. The theme of equilibrium is a synthesis of 2 analytical subthemes, which relate to a) the perceived positive influence by practising yoga and gaining confidence in her own 'Intuitive Knowing'; and b) the manner by which women felt replicating their practise of yoga helped them embed physical techniques, breathwork and a mindset to support pregnancy and birth 'Embedding the Practice of Yoga Practice'.

#### Sub theme: intuitive knowing

All seven studies reported on how women appreciated the importance of their yoga practice in helping them to 'Support Adaptation' to their pregnancies, by managing stress and anxiety, physical complaints and by offering a positive narrative for women around the time of change associated with pregnancy. The result for many women was a sense of confidence; confidence in self, body, a sense of confidence about birth and motherhood, but mainly a sense of confidence in their 'Intuitive Knowing'.

'Yoga has been, I would say, a fundamental ally in this process of inner listening, of understanding and of welcoming my own inner reality, being physical, psychic, emotional and spiritual. I would believe that if I had distanced myself from this practice, I would be far removed from contact with myself and would probably not feel ready for childbirth and motherhood' (de Campos et al. 2020 p3).

'Intuitive Knowing' highlighted women's use of yoga to re-establish confidence in their body's capability, to trust in themselves and in nature, to achieve a sense of 'equilibrium' for their pregnancy and birth experience.

'I was just completely in trust of my body...It was just as though my body knew exactly what to do' (Campbell and Nolan 2019 p79).

#### Sub theme: Embedding the Practice of Yoga Practice

The second analytical subtheme for Equilibrium is 'Embedding the Practice of Yoga Practice'. Women described the importance of repetition of their yoga practice until it became embedded in their tissue memory and psyche.

'—I needed it to get me ready for 'the game' and I felt like that was my game practice' (Kinser and Masho 2015 p322).

'it is the constant repetition that aids learning when preparing for childbirth' (Fields 2008 p32).

A sense of being connected to the body, described as 'somatic awareness' in Campbell & Nolan's study was interlaced throughout the themes and not solely affiliated to the theme of 'Equilibrium'.

'I feel like one of the interesting things about doing yoga and especially repeating it every week was learning how your body had changed each week... so that made you connect more with what you were doing' (Kinser and Masho 2015 p322).

Attaining equilibrium to support pregnancy and birth requires input from women themselves but also input from the services designed to support them, leading us into the second key analytical theme.

### Theme 2 personal autonomy in healthcare

#### Sub theme: practical toolkit

'Practical Toolkit' was one of two analytical subthemes which comprised the main theme 'Personal Autonomy in Healthcare'; the second analytical theme is 'Holistic Care'. Many women participating in the research reported that practising pregnancy yoga brought relief from physical and psychological concerns and stimulated improvements in wellbeing.

'At the beginning, my entire body was in pain. But then, yoga physically relieved my body. My sleep problems have decreased' (Hobek Akarsu et al. 2022 p21).

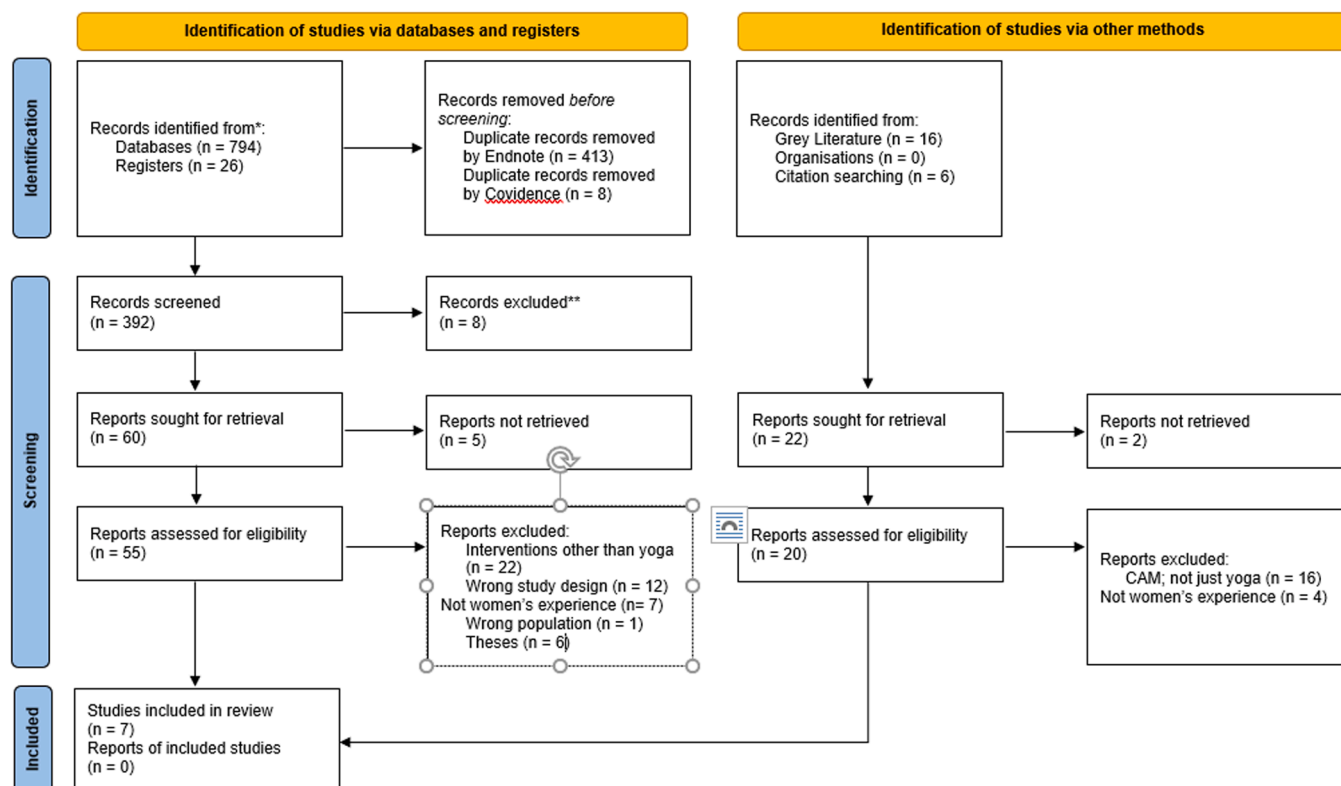


Fig. 1. Screening and selection.

Along with the mainstream supports provided by maternity services, women appreciated yoga practice as a tool to self-manage their physical complaints, provide some relief from stress and anxiety or increase autonomy in labour.

'You go in upset, by the time you finish, it's the opposite feeling' (Styles et al., 2019 p7).

Personal autonomy for some women involved making sound or learning to breathe, taking control of aspects of themselves which had impacted on their health.

'I enjoyed making sound in the class, and found this invaluable while in labour. It gave me the focus ... and enabled me to hold my space and take myself deep inside my body. I felt totally in control' (Fields 2008 p31).

Learning yoga techniques and practising them in advance of labour was considered useful for managing the 'unknown' of labour, the toolkit of coping techniques increased self confidence in labour.

'I've got a little arsenal of tricks and things that I can try and pull together...So I feel confident that I've got enough that I can sort of try and keep myself occupied' (Campbell and Nolan 2019 p78).

Participating women developed confidence in their practical toolkit, but needed the support of open, integrated and holistic care.

#### Sub theme: holistic care

Holistic care, as grasping the interdependence of the body, mind and spirit of an individual and interaction with healthcare providers (Tiran 1999), is reflected in the women's views and experiences of pregnancy yoga.

'The pregnant women had broad aims for attending Yoga for Pregnancy, seeing it as a holistic therapy which could help with various physical and emotional aspects of the antenatal, intrapartum and post-natal period' (Campbell and Nolan 2019 p76).

Within the included studies, women viewed pregnancy and childbirth as being a holistic experience which requires holistic supports put

in place through their investment in support of self and they appreciate those healthcare professionals who support them in their pregnancy journeys.

'Giving birth is an holistic experience, mentally, physically and emotionally. Mentally we work on concentration, the ability to focus and to have an open mind; physically, we stretch, strengthen, tone and relax the whole body; and emotionally, we work on balance' (Fields 2008 p32).

Women identified how yoga helped build self-confidence and self-belief which in turn countered the rhetoric some experienced from media, negative birth stories and over-stretched maternity services.

'I feel that having my children has taken me on a journey into yoga and into myself. Yoga has given me extra confidence with my abilities, and helped me to birth two children naturally at home with no medical intervention' (Fields 2008 p2).

The link with holistic care reflects women's preference to be actively involved in their birth preparation which they reportedly experienced when undertaking yoga practice.

'With yoga—you're active, you're engaged. But in childbirth education classes, you're just sitting there listening to someone talk about childbirth... you just can't be as engaged with it' (Kinser and Masho 2015 p323).

Women reported their desire for pregnancy yoga as integral to holistic antenatal care.

Women were aware that healthcare professionals recognised how well they coped in labour with the support of their yoga practice.

'The midwife kept saying to me, "Oh you're being so instinctive, everything you are doing is so instinctive" and I didn't correct her, but I just thought: if I hadn't been taught any of this, I wouldn't have been able to do it...It kept me calmer for longer, definitely' (Campbell and Nolan 2019 p79).

One woman reported a negative experience, where she remained calm though she felt unheard when requesting additional pain relief in labour.

'I wish I'd been a bit more forceful, because they said that I didn't need [an epidural, that]... I'd be fine and it would all be over soon... By the end I



**Table 3**

Summary characteristics of included studies.

Author, year & country	Aim	Year study conducted	Participants	Setting	Data Collection	Data Analysis	Yoga Specifics
<a href="#">Campbell and Nolan 2019</a> UK	To generate a theory, grounded in women's voices, about which aspects of Yoga for Pregnancy are effective in enhancing women's ability to manage labour, ie, are effective in enhancing self-efficacy for labour and birth.	Aug 2014 – Aug 2015	12 antenatal women, followed up postnatally. All signed up & paid for pregnancy yoga classes. Aged 29–48yrs.	Yoga for Pregnancy classes (National Childbirth Trust facilitated)	3 Phone interviews. Pre-yoga class; Post Yoga class but pre-birth & postnatal. Questions added as interviews progressed.	Grounded theory. 3 separate data analysis timeframes.	<b>Yoga Specific study with women opting to practise yoga prior to study.</b>
<a href="#">deCampos et al. 2020</a> Brazil	To understand the meanings and perceptions of women regarding the practice of yoga in pregnancy.	Feb -Sep 2018	9 antenatal women. All signed up & paid for pregnancy yoga classes. 14–37 weeks. Aged 22–37	Yoga studio in Sao Paolo, Brazil.	Individual semi-structured interviews	Thematic analysis. No details of guidance / framework.	<b>Yoga Specific study with women opting to practise yoga prior to study.</b>
<a href="#">Fields 2008</a> UK	No aim provided. Pregnancy yoga teacher tips and 2 birth stories.	Not provided.	2 women narrate their experience of pregnancy yoga. Aged 39 & unknown.	Community pregnancy yoga class, UK	Birth stories relayed by author.	No analysis provided.	<b>Yoga Specific but not a research paper. Chose &amp; paid for yoga.</b>
<a href="#">Hobek Akarsu et al. 2022</a> Turkey	To identify experiences and expectations of pregnant women associated with the practice of yoga in pregnancy.	May – Aug 2018	24 women, gestation 14–26 weeks, aged 20–35, singleton spontaneous pregnancy, low risk pregnancy. 11 primips & 13 multips	Public maternity hospital, Central Antolia, Turkey.	One to one semi-structured interview after completion of 8 week course.	Thematic analysis using MAXQDA18 for data analysis.	<b>Yoga Specific study with women recruited to practise yoga for the study.</b>
<a href="#">Kinser and Masho 2015</a> USA	To describe the experience of pregnancy yoga by women partaking of community-based yoga classes.	Not provided.	14 women, aged 18–36, 43% pregnant at interview & 57% postnatal having undertaken preg yoga within 6 mths.	Community based antenatal yoga classes, Virginia, USA	3 focus groups (4–5 women) over 90 mins in private room, moderated 1 researcher with open-ended questions.	Qualitative descriptive exploratory. Content analysis via hermeneutic circle.	<b>Yoga Specific study with women opting to practise yoga prior to the study</b>
<a href="#">Parvati Baker (1986)</a> USA	No aim provided. Pregnancy yoga teacher guidance and her birth stories.	1974–1986	A midwife / yoga teacher narrates her experience of yoga during a number of pregnancies. Age unknown.	At home	Own birth stories relayed by author.	No analysis provided.	<b>Yoga Specific but not a research paper. Self-practitioner of yoga.</b>
<a href="#">Styles et al., 2019</a> Australia	To explore the acceptability and perceived benefits of prenatal yoga for young women.	Oct 2014 – March 2016	30 Adolescents / women deemed to be a mature minor, to the age of 24yrs completed survey. 16 of whom were interviewed.	Royal Women's Hospital, Melbourne, Australia	Choice of face to face at the maternity unit or phone, provided by researcher not known to participants. Audio-recorded, transcribed. Performed at approx. 35 weeks. No minimum number of sessions required	Brief interviews (5–10 mins) meant in-depth thematic analysis not possible, therefore content analysis undertaken by 3 researchers via consensus. Coding and frequency analysis.	<b>Yoga Specific study with women recruited to practise yoga for the study.</b>

*definitely wasn't in control, I was begging for help and absolutely shattered, and just desperate for somebody to do something'* ([Campbell and Nolan 2019](#) p.79).

The theme of personal autonomy in healthcare relates to the resources provided by practising yoga in pregnancy. Women report that practising yoga increases autonomy, empowerment and self-efficacy, supporting women to get the best out of available services, to meet their own and hence, their baby's needs. The sense of holistic care experienced, ties us to the final theme synthesised from the 7 studies, appropriately entitled 'connection'.

### Theme 3 connection

Baby Bonding and Peer Social Support are the analytical subthemes supporting the final theme of Connection.

### Sub theme: baby bonding

Five out of the seven studies emphasised how practising yoga increased connection with baby during pregnancy.

In these five studies, women described listening, talking and connecting with their unborn babies, and recognised practising yoga as time facilitated to relate with baby and to encourage bonding.

*'I found the yoga gentle and relaxing and looked forward to the class for the special connection time with my baby'* ([Fields 2008](#) p31).

For some women, it was a new experience, to connect and talk to or listen to their baby.

*I've never imagined my baby before. In fact, she can feel me. I wasn't aware of that before. I learned to talk to her through yoga'* ([Hobek Akarsu 2022](#) p21).

[Parvati Baker \(1986\)](#) does not refer specifically to the use of yoga for

**Table 4**

Methodological quality of included studies  
Summary of the qualitative assessment results.

	Campbell & Nolan (2019) UK	de Campos et al. (2020) Brazil	Fields (2008) UK	Hobek Akarsu et al. (2022) Turkey	Kinser & Masho (2015) USA	Parvati Baker (1986) USA	Styles et al. (2019) Australia
Aims	1	1	0	1	1	0	1
Sampling methods	0.5	0.5	0	1	1	0	1
Sampling frame	1	0	0	1	0	0	0.5
Participants	1	1	0.5	1	1	1	1
Age	1	1	0.5	1	1	0	1
Socio-economic status	0	0	0	0	0.5	0	0
Trustworthiness of data collection	1	0.5	0.5	0.5	1	0.5	0.5
Utility of data collection	1	0.5	0.5	0.5	1	0.5	0.5
Accessing people's views	1	1	0	1	1	0.5	0.5
Relevance to the review question	1	1	0.5	1	1	0.5	1
Overall quality rating	<b>8.5</b>	<b>6.5</b>	<b>2.5</b>	<b>8</b>	<b>8.5</b>	<b>3</b>	<b>7</b>
Weight of Evidence*	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>High</b>	<b>High</b>	<b>Low</b>	<b>Medium</b>

bonding with baby, however she describes throughout her book a connection with her unborn babies from conscious conception right through to communicating with them on their birth day. 'Chitt' used in the quote below, is a term used in yoga and is Sanskrit for 'consciousness'.

*'When I would meditate with my baby, my thoughts would almost stop completely as I imagined my baby's mind and mine being one; my baby didn't think at all – no chitt or thought waves yet in his mind. My baby was my guru or spiritual teacher. All messages I received from this little one were positive'* (Parvati Baker 1986 p78).

As displayed in Parvati Baker's quote above, practising yoga in pregnancy was also found to have a spiritual component, which was found in 4 out of the 7 studies.

*'Both times (births) I felt an immense connection with ancestral spirit, tuning into all the millions of women who had given birth before me as well as tuning into my own body'* (Fields 2008 p31).

The link with spirituality did not only feature in the studies involving seasoned yoga practitioners; a 'beginner to yoga' also found spiritual benefit.

*'I felt the positive energy of the universe in my body. Yoga made me feel very comfortable'* (Hobek Akarsu 2022 p21).

For one of the participants in Kinser & Masho's descriptive exploratory study (2015), practicing yoga in pregnancy brought a combination of baby bonding, connecting with self and peer support, which brings us to our final analytical subtheme, 'peer social support'.

*'I just liked that you were there, you were doing your own thing, you were connecting with your baby, but you had the strength of all the other women around you at the same time'* (Kinser and Masho 2015 p322).

#### Sub theme: peer social support

Six out of the seven studies reported on the supportive nature of practising yoga with other mothers in pregnancy. Peer support was cited by women as a reason for undertaking yoga in pregnancy, and sharing commonalities with other pregnant women.

*'All the women in the world should experience this type of bond! I made sisters of the heart!'* (deCampos et al. 2020 p4).

*'Since I've become pregnant there's a need to sort of surround yourself with people ...going through exactly the same. Those things that you sit and worry about, they are worrying about as well'* (Campbell and Nolan 2019 p77).

It could be assumed that peer support comes simply from the group nature of pregnancy yoga class; however there appeared to be more to peer bonding than attendance at a class together. Participants in one study reported attending group classes in pregnancy such as meditation and CenteringPregnancy, which they perceived as less beneficial with

regards to 'a sense of community' (Kinser and Masho 2015 p323).

The group of young women in Australia in the study by Styles et al. (2019) felt that the opportunity to make face-to-face social connection and real friends was of equal importance to the perceived benefits of yoga for their labour. The authors describe a key finding in their study, related to the high-risk nature of young pregnant women as, 'an opportunity to engage these young women in social connections, which in turn they saw as enhancing their own parenting connections' (Styles et al., 2019 p10).

Connection not only referred to bonding with baby or peer support but also connecting with self. Connecting with self was the vital self-care component from all seven studies in this review. In four of the studies this involved increased body awareness, through physical stretches, breath awareness and meditation (Kinser and Masho 2015; Styles et al., 2019; Campbell and Nolan 2019; Hobek Akarsu et al. 2022).

*'just be in touch with being pregnant and being'* (Kinser and Masho 2015 p322).

The remaining three studies relay women's reports of a deeper connection with self (Baker Parvati 1986; Fields 2008; de Campos et al. 2020).

*'Yoga has taught me to listen, love myself and embrace life'* (Fields 2008 p31).

*'When you begin to see the world from within and approach the roots that generate the mental patterns of which you observe yourself to be conditioned, you begin a journey of no return: from self-knowledge and deep understanding of all that we call "self"'* (de Campos et al. 2020 p3).

## Discussion

### Equilibrium

'Equilibrium' covered the many aspects for which women found support from practising yoga. All seven studies reported on aspects of pregnancy yoga relating to 'balance', a word synonymous with yoga. A synthesis of the evidence showed that women found support for their mind, for their body, for their spirit and for their pregnancy; with the practice of yoga providing equilibrium of self.

For some, yoga in pregnancy was about physical exercise, weight control, increasing flexibility and stamina in preparation for childbirth. Many were aware there was something deeper, *'It definitely made a difference'* (Campbell and Nolan 2019 p74), with some women recognising the benefits without knowing why *'I don't know how exactly yoga creates a feeling of goodness. I feel so good and healthy'* (Hobek Akarsu et al. 2022 p19).

Women reported using pregnancy yoga to maintain control on a psychological and emotional level throughout their pregnancies and in labour. Some women reported how yoga in pregnancy helped them to let

**Table 5**  
GRADE cerqual.

Finding	Contributing reports	Methodological limitations	Coherence	Adequacy	Relevance	Overall Confidence	Explanation of CERQual assessment
<b>Analytical theme:</b>							
<b>Balance</b>							
Practicing yoga supported women's adaptation to being pregnant; contributed to increased body awareness; led to positive perception of pregnancy.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F); however there were no concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.
Women discovered the capability of their bodies through yoga practice; found it a safe exercise; helped reduce fears & anxiety; Yoga practice led to confidence building for women.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.
Women associated pregnancy yoga practice with increasing their chances for natural birth; pregnancy yoga provided the safe space to be able to exert control and or let go of control.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.
Repeated yoga practice led to women feeling actively involved in their pregnancy; gives women confidence in their ability and embeddedness developed with yoga practice.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.
<b>Analytical theme:</b>							
<b>Autonomy</b>							
Women reported physical, emotional and psychological benefits through breathwork, physical postures and meditation associated with pregnancy yoga; appreciated having a practical toolkit to which they could resource.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.
Women commonly reported improvement in pregnancy wellbeing; greater flexibility; increased relaxation and appreciated active engagement in the practice.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.
Women drew support from the holistic approach of yoga practice, their yoga teacher and yoga class structure creating autonomy and avoidance of medical intervention.	A, B, C, D, E, F, G	Moderate limitations.	Minor concern, 1 study has partial fit as solo practitioner with no teacher / class involvement.	Minor concerns related to quantity of participants in 2 studies(C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>Moderate confidence</b>	This finding was graded as moderate confidence because of moderate methodological concerns; with minor concerns regarding coherence and adequacy.
<b>Analytical theme:</b>							
<b>Connection</b>							

(continued on next page)

Table 5 (continued)

Finding	Contributing reports	Methodological limitations	Coherence	Adequacy	Relevance	Overall Confidence	Explanation of CERQual assessment
Women reported experiencing increased space and time to connect with baby while practising pregnancy yoga; improvements in baby bonding.	C, D, E, F, G	Moderate limitations.	Moderate concerns. 2 studies did not explicitly report women's views regarding baby bonding / connection (A,B).	Minor concerns related to quantity of participants in 2 studies (C,F). Moderate concerns regarding richness of relevant data to this finding, as 2 studies did not explicitly address this finding (A, B).	Moderate concerns as 2 studies did not relay explicit data regarding this review finding (A,B).	<b>Low confidence</b>	This finding was graded as low confidence because of moderate concerns regarding methodology and coherence and minor / moderate concerns regarding adequacy and relevance.
Women appreciated the opportunity yoga classes provided for sharing concerns; hearing others' stories; validation from others that yoga helped in the birth process.	A, B, E, G	Minor limitations.	Minor concerns; this finding was fully supported by 4 out of the 7 studies (A, B,E,G), partially by 2 (C,F) and not addressed in 1 (D).	No concerns related to quantity of participants in studies. Minor concerns regarding richness of relevant data to this finding, as 1 study did not address this finding (D).	Minor concerns as 1 study did not relay data regarding this review finding (D).	<b>High confidence</b>	This finding was graded as high confidence because of minor methodological concerns, with minor concerns regarding coherence, adequacy and relevance.
Connection with self and with other pregnant women was a benefit women attributed to attending yoga classes; making friends which extended beyond pregnancy; helped maintain mental health and social connections.	A, B, C, D, E, F, G	Moderate limitations.	No concerns.	Minor concerns related to quantity of participants in 2 studies (C,F). No concerns regarding richness of relevant data to this finding, across all 7 studies.	No concerns.	<b>High confidence</b>	This finding was graded as high confidence because of moderate methodological concerns but with only one minor concern regarding adequacy.

A: Campbell and Nolan 2019.

B: de Campos et al. 2020.

C: Fields 2008.

D: Hobek Akarsu et al. 2022.

E: Kinser and Masho 2015.

F: Parvatti Baker 1986.

G: Styles et al., 2019.

go of their need to feel control, and connected with part of themselves that enabled ease and wellbeing. A qualitative narrative study into embodied wellbeing and perceptions of control in labour using Complementary and Alternative Medicine (CAM), and involving 14 women in the UK (McClean and Mitchell 2018) revealed that women use CAM, including yoga, to regain a sense of wellbeing and personal control over pregnancy and labour.

'Intuitive knowing' and 'embedding the practice of yoga practice' were the subthemes leading to the key theme of 'equilibrium'. Women reported that practising yoga enabled them to listen to their inner voice, create moments of genuine silence, and gain confidence in their own 'Intuitive Knowing'. When looking to the wider literature, intuition has been explored from the perspective of mothers (Odent 2015) and perhaps more often, regarding midwives' intuition (Gaskin 1996; Levy 2005), but rarely with regards to pregnancy yoga. Svenningsen & Almeida (2020) is one of the few studies which refers specifically to how yoga in pregnancy is perceived to galvanize a woman's intuition, in particular as she prepares herself for birth. This subtheme is a good example of how synthesis of women's views in the included seven studies, has produced 'Intuitive Knowing' as new evidence regarding the nature of women's experiences of pregnancy yoga (Fleming 2021).

#### Personal autonomy in healthcare

The second analytical theme, 'Personal Autonomy in Healthcare' also reflects the concept of balance. On one side of the equation, studies show the benefits of a practical toolkit to encourage self-efficacy and agency. The woman's autonomy in turn is reinforced by a holistic support system of care provided by yoga teachers, health professionals, her

peers and her own self-care. The data related to women's use of yoga as a practical toolkit is well-established in the wider literature, regarding physical and psychological benefits of practising yoga to improve wellbeing providing self-efficacy and autonomy for the birth process (Levett et al., 2016; Holden et al., 2019; Yeboah 2020).

Being prepared on all levels involves lots of regular yoga practice. The majority of the studies in this review reported how women elected to practice yoga at home, in addition to designated class time to self-care. Investment in self, in the baby and in preparing for labour by taking time to practice, was reported to be crucial for reaping the reported benefits of yoga. Fields (2008) in introducing pregnancy yoga from the perspective of a yoga teacher explains that '*one wouldn't run a marathon or climb Mount Everest without good preparation – giving birth is no exception*' (p30).

Wise words, compassion and practical techniques from yoga teachers, alongside creation of suitable space for sharing birth stories, opening up about stresses and feeling supported by peers were all facilitative; reflected in reports by participants regarding the environment created at yoga class. In terms of barriers to practising yoga in pregnancy, women views across three studies lamented the influence of technocratic childbirth and called for an integrative, holistic maternity service to support and offer yoga classes for pregnant women. In support of this finding are a number of qualitative studies providing women's accounts of the therapeutic relationship achieved with a CAM practitioner which was in stark contrast to the medicalised encounters they experienced in maternity services (Doran and Hornibrook 2013; Harahap and Afiyanti 2019; Mitchell 2016; Mitchell and McClean 2014). If women request holistic service provision with pregnancy yoga as an example of holistic support, health services need to pay attention and recognise the part we



**Table 6**  
Development of the three key analytical themes.

Example codes	Descriptive themes	Analytical sub-themes	Analytical main themes
Yoga led to positive perception of pregnancy; Gives confidence in ability; Helps maintain control; letting go of need to control; 'My baby will decide when she wants to come'.	Support adaptation to being pregnant	Intuitive Knowing	Equilibrium
Repeated techniques for preparedness; Reduce fears; Safe exercise; Build strength & self-care; Body awareness.	Active Participant in Pregnancy	Embedding the practice of Yoga Practice	
Physical & psychological benefits; Breathwork; Relaxation; Actively engaged in class/ process; Wellbeing.	Improvement in Pregnancy Issues	Practical toolkit	Personal Autonomy in Healthcare
Strengthened hopes for natural birth; Avoid medical intervention; 'Teacher was great'; Integrative Care; More benefit than other classes; Access to midwife.	Service Provision	Holistic Care	
Communication time & techniques; Being calm & listen to baby; Special connection time; Dedicated time for baby; Spiritual influence.	Space & time to connect with baby	Baby Bonding	Connection
Shared birth stories; Evidence that Yoga worked; Space to ask & share; Making friends; Connection with Self; Helped maintain mental health.	'Sisters of the heart'	Peer Social Support	

can play in being true advocates for women's needs (Mitchell and McClean 2014).

### Connection

Time spent 'connecting' was the final theme, which encompassed communicating with baby, listening to baby and connecting in a manner not experienced before by some women prior to undertaking pregnancy yoga. Kluny & Dillard (2022) extol the importance of love, connection and attachment to create wellbeing for both mothers and babies and to reduce the effect of the human stress response during pregnancy.

Self-care and connecting with self are expressed repeatedly throughout these seven studies and reflect the need for pregnant women to prepare, be proactive, participate and engage fully in their individual

pregnancies and birthing processes. Green et al. (2021) link yoga associated self-care and connection with self to increased awareness of food choices and general health in pregnancy. Outside of pregnancy, Kinser et al. (2013) used interpretative phenomenology to suggest that the practice of yoga helps women with depression engage in self-care, reduce stress and rumination, while facilitating a safe environment for connectedness and shared experience. In this review, connecting with other pregnant women, sharing birth stories or simply sharing the same space, as women focus on their yoga, themselves and their baby ties the whole synthesis together as a care bundle in its own right.

### Strengths and limitations

The main reason for undertaking this QES was the call for utility and acceptability of pregnancy yoga to be better understood, with qualitative synthesis providing an appropriate avenue to appreciate women's voices and synthesise their views and experience. This QES will provide collateral evidence, which when combined with the current evidence regarding impacts (van der Riet et al. 2020) and effectiveness of pregnancy yoga (Corrigan et al., 2022) provides an integrated overview (Fleming and Noyes 2021) for the introduction of pregnancy yoga as an adjunct to current maternity service provision.

The findings of this QES indicate that pregnant women of various ages and backgrounds confirm the utility and acceptability of pregnancy yoga. The purpose of this QES was to explore women's views and experiences of pregnancy yoga, by synthesising qualitative evidence from studies that met the inclusion criteria for this review question. On balance, that evidence was found to be very positive, with few dissenting voices expressing disappointment in or poor experience regarding pregnancy yoga.

Disadvantages and barriers to undertaking pregnancy yoga were rarely reported, with no safety issues expressed. Quality appraisal of the seven studies, found a combination of low, medium and high-quality studies regarding weight of evidence.

Yoga is a well-recognised form of CAM, but it was often difficult to extrapolate yoga specific details from the above studies. It has been argued that focusing on one form of CAM as we have done in this review, denies exploration of the complexity of CAM user's beliefs and practices (McClean and Mitchell 2018), and this is a potential limitation of this review.

This QES found acceptance and benefits reported by women across socio-economic fronts and age-groups, although limited variation in ethnicity was evident in the overall cohort. Evidence exists to support introduction of 'free yoga classes in pregnancy', provided by yoga experts at maternity units or through community centres (Kinser et al., 2019; Westbury 2019). Evidence also exists as to the acceptability of pregnancy yoga for women of ethnic minority (Kinser and Masho 2015b; Spadola et al., 2017). Synthesis of the evidence from this review, along with appropriate resources and enthusiasm will hopefully bring about the opportunity for women to access pregnancy yoga at their local maternity and health centres.

**Table 7**  
Studies contributing data to themes and subthemes.

Key Themes Identified	Campbell & Nolan (2019) UK	de Campos et al. (2020) Brazil	Fields (2008) UK	Hobek Akarsu et al. (2022) Turkey	Kinser & Masho (2015) USA	Parvati Baker (1986) USA	Styles et al. (2019) Australia
Intuitive Knowing	✓	✓	✓	✓	✓	✓	✓
Embedding the Practice with Yoga Practice	✓	✓	✓	✓	✓	✓	✓
Practical toolkit	✓	✓	✓	✓	✓	✓	✓
Holistic care	✓	✓	✓	✓	✓	✓	✓
Baby bonding	x	x	✓	✓	✓	✓	✓
Peer social support	✓	✓	✓	x	✓	✓	✓

## Conclusion

This is the first QES undertaken to date regarding women's perspectives on a popular and therapeutic intervention in pregnancy. This corroboratory evidence provides context and content to guide decision-makers in maternity services who are interested in establishing women's experiences of yoga in their pregnancy.

The aims and objectives of this QES have been achieved, with evidence formulated regarding the highly positive views and experiences of women who undertake pregnancy yoga. Women identified benefits on a holistic level; physical, emotional, spiritual and psychological improvements in wellbeing, finding balance at a time of great change and adjustment. Commonality existed in women's experiences across all seven studies and assisted with the development and synthesis of our conclusion: Pregnancy yoga is evidenced to provide women with equilibrium, personal autonomy in healthcare and connection, through their pregnancies, birth experiences and maybe even beyond.

## Authors' contributions

OC conceived the review question, conducted the search, independently screened studies for inclusion, undertook quality appraisal of the included studies, extracted and coded extracted data, performed data synthesis, undertook GRADE CERQual assessment, drafted the manuscript, and agreed and approved the final version of the manuscript for submission.

VB conceived the review question, conducted the search, independently screened studies for inclusion, undertook quality appraisal of the included studies, reviewed extracted data, discussed and agreed data synthesis, drafted the manuscript, and agreed and approved the final version of the manuscript for submission.

## Declaration of Competing Interest

The authors have no conflict of interest.

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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.2023.103857](https://doi.org/10.1016/j.midw.2023.103857).

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