International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Does the Practice of Prenatal and Postnatal Yoga Reduce the Prevalence of Postnatal Depression? A Systematic Review

MonaLiza Hayes

Physiotherapist – Lecturer, University of Namibia

Abstract

Medical interventions which include mind and body are recommended for the management of depression. Yoga is one of the most frequently recommended complementary therapies to manage depression. The aim of this systematic review (SR) was to assess and analyse the effects of yoga on postnatal depression. A systematic and replicable search of CINAHL, Medline, PubMed and PsycINFO databases was undertaken using a wide range of MeSH terms including 'pregnancy', 'postnatal', 'depression', 'anxiety', 'mental health', 'yoga'. Author reference list were searched and Google Scholar used to find further studies, and grey literature was examined. A total of 9 studies which evaluated the effects of yoga on postnatal depression were selected. The overall findings of all the studies showed positive effects in the reporting of reduction in anxiety, depressive symptoms and increasing practice of mindfulness amongst the women who were studied.

Background

Severe depressive episodes, mild mood changes, which are often, referred to as "baby blues", arise in the postnatal period and are increasingly common (Merkitch et al., 2017). In the UK at least 10-15 of 100 pregnant women are affected, more in ethnic minorities, those with lower income and unmarried being at greater risk (Royal College of Obstetricians and Gynaecologist (RCOG), (2011)).

The World Health Organisation (WHO), further defines the postnatal period from the first few days up to 1 year after giving birth to a child (NICE, 2015 and WHO, 2013). The aetiology and related neurobiological mechanisms of postnatal depression remains poorly understood, despite the high prevalence of the condition (Ming and Shinn-Yi, 2016). When women are confronted with stressful life event, such as caring for a baby or being responsible for a baby alone, this can activate dormant depressive behaviours containing negative feelings toward themselves and the baby. Smith et al 1990, Ming and Shinn-Yi (2016) suggest that both psychological and biological effects that trigger postnatal mood instabilities are also present perinatally.

There are genetic predispositions and environmental issues contributing to postnatal depression as with other mental health conditions, there is no single cause of the condition (Kendler et al., 2001). Indicative of more reason to explore the susceptibility, the risk factors for postnatal depression to implement best clinical practice. Suicide has been identified to be one of the leading causes of death, citing psychiatric disorders contributing to 12% of maternal deaths (UK confidential 2000-2002). A UK based confidential enquiry identified suicide being the risks factor in the year 2000-2002. Between 2006 – 2008, 1.27 maternal deaths per 100 000 deliveries were recorded and the main cause was mental health problems in

the UK (NICE, 2015). The suggested care pathway for depression in the UK includes psychotherapy and pharmacotherapy (e.g., antidepressants) (NICE 2014). Post-natal psychological disorders are also managed with interventions such as CBT, exercise and drug therapy (Cohen et al. 2001). Understandably, varying results are recorded for these treatments. Although, antidepressant drugs therapy may prove larger effect size, the lasting effects of prenatal and postnatal drug exposure to the development of the baby continues to be a fear (Pearlstein, 2013). There are studies that show there is no transfer of current antidepressant drug therapy use to the infant through breast feeding, and mothers are generally advised to stay on their medication (Field, 2008). Debatably, this does not remove the fear mothers may have on possible side effect these drug therapies can cause. This subsequently reduced the intake of drugs associated with mental health treatment (Goodman 2009; Buttner et al. 2015). Thus, posing a risk that women not receiving antidepressant drug therapy would be inadequately treated for their mental health.

Therefore, an increased consideration is being placed on the use of complementary therapy for the intervention of perinatal and postnatal depression. Arguably, complementary therapy is possibly a safe choice as its approaches are generally natural and refrain from the use of pharmaceuticals. Complementary therapy is defined as an alternative to medicine, referring to therapies which have a diverse range of healthcare practices used for health promotion, disease prevention and mindfulness, which is an alternative to western medicine (Deligiannidis and Freeman 2014). Complementary therapy includes various techniques and approaches. It includes Tai Chi; acupuncture; various massages; St John's Wort; bright light therapy; yoga and Pilates, though this list is not exhaustive (Deligiannidis and Freeman 2014).

Yoga is one of the fast-growing complementary therapies of choice amongst women (Field et al. 2013). There is a growing interest recorded in the practice of yoga as an intervention for women with perinatal and postnatal depression (Field et al., 2013). The popularity of yoga is that in part it promotes self-awareness in the form of mindfulness (Davis et al., 2015). Ueberlacker et al., (2017); Schuver and Lewis (2016) have carried out research on the efficacy of yoga for depression in the general population and found positive long-term effects with yoga on patient-reported severity of depression.

Yoga is described as an ancient practice which finds its origins in India; it is a movement which involves respiration, concentration and meditation (Balasubramaniam et al. 2013). Modern therapies such as physiotherapy combine yoga as strength and conditioning exercise and for increasing flexibility and mindfulness. The most common practice of yoga includes physical posture control, knowns as the "asanas", there are a variety of yoga practises in the modern world; "Iyengar" yoga, this form of yoga solely includes "asanas" or "Kriya" yoga which includes meditation (Goyeche 1979). There is evidence to support that yoga practices offer an insight for the prevention and treatment of mental health disorders and some physical disorders, also desirable effects on coping with stress through influencing psychometric parameter through mindfulness (Montgomery 2000; Patterson 2003).

Encouraging positive effects of yoga are reported for pregnant women. Women felt less stress, anxiety and pain throughout their pregnancy and reduced pregnancy related complications (Chuntharapat et al. 2008). Time in labour is reported to be reduced with less pain and trauma for the women practising yoga during pregnancy (Chuntharapat et al. 2008).

There appears to have been no comprehensive SR of yoga intervention for managing postnatal depression. Therefore, this review will evaluate the effects of yoga interventions prenatally and postnatally to treat postnatal depression.

Methods

This SR was guided by the Centre for Reviews and Dissemination's (CRD, 2009) structure for SR protocol, to establish and critically appraise known literature on the review topic; does the practice of prenatal yoga reduce the prevalence of post-natal depression? This search was conducted on three electronic databases as shown in Table 1.

Databases	Coverage
Allied and Complementary Medicine Database (AMED)	Professions allied to medicine Alternative and complementary medicine
Cumulative Index to Nursing and Allied Health Literature (CINAHL)	Nursing and allied health
Medical Literature Analysis and Retrieval System Online (MEDLINE)	General medical biomedical sciences. Includes medicine, dentistry, nursing, allied health

Table 1 - Databases used for the searches

For reasons of practicality published papers in the English language between 2000 and 2017 were the limits applied to the searches. The PICOS (population, intervention, comparator, outcomes, study) tool (Thomas et al., 2009) was developed to define the individual elements of the research question and the inclusion and exclusion criteria Table 2 and Table 3.

Review question	Does the practice of prenatal yoga reduce the prevalence of post-natal depression?
Population/Participants	Prenatal and postnatal women of any age and background with, or at risk of, postnatal depression
Intervention	Any form of yoga practice
Comparison	All physical activity in the form of exercises ("non- yoga") interventions, except comparison with pharmaceutical drugs
Outcomes	Change in depression status / screening score / symptomology
Study Types	RCTs, qualitative studies, review articles of surveys and questionnaires, evaluations studies, mixed method studies

Table 2 - Review question defined within the PICOS abbreviation

Inclusion	Exclusion
Pregnant women (previously diagnosed with postnatal depression) and postnatal women of any age and background diagnosed with postnatal depression practising yoga Any parity	Postnatal women with other medical conditions. institutionalised postnatal women

Article Published from 2000 to present	Articles published before 2000
All studies including physical agents / exercise, yoga	All studies using pharmaceutical drugs to treat postnatal depression
All qualitative and quantitative research papers written in English from all countries	Research articles not in English, letters, editorials, case reports, historical reports, reviews, non-surveys research papers

Table 3 - Search for inclusion exclusion criteria

This review included studies which observed the population of pregnant women or postnatal women reporting feelings of depression. Studies which included women with a reported diagnosis of postnatal depression, with no specific parity are also considered. Studies that used yoga as an intervention on both prenatal and postnatal women as a treatment and preventative measure were accepted. The studies included yoga classes delivered by any professional in a health and fitness setting, be it a midwife or another healthcare professional suggesting participation in the teaching/promotion or practising of yoga for the reason to reduce the symptoms of postnatal depression. Preferably, a comparator with yoga as an intervention with a clinical substitute treatment, with similar indication would have provided a more suitable comparison and possibly reduce bias. However, there is already a lack of substantial amount of studies evaluating yoga against postnatal depression; therefore studies comparing yoga intervention against "non-yoga" treatments were included, except the use of anti-depressant drug therapy. Details are given of some of the studies which were excluded from the selection though meeting some of the inclusion criteria; these are illustrated in Table 4.

Study	**Reason for exclusion**
Javnbakht et al (2009)	Pregnant women not included in the study
Field (2012)	Not assessing perinatal depression
Smith et al (2016)	General population of women, pregnant women not included in the study
Kinser and Masho	Qualitative interview, assessing the perception of women who practised yoga in the past for postnatal depression
Field et al (2012)	Pregnancy related musculoskeletal problems, lower back pain, already known to cause depressive symptoms, unable to determine if depression is caused by lower back pain or stress relating to pregnancy
Muzik et al (2012)	Compared yoga with antidepressants

Table 4 - Excluded Studies

The PRISMA statement was used to guide the reporting process (Moher et al., 2009). The initial search of electronic databases produced 3366 records: A total 557 references from the databases search were acknowledged, 347 records were excluded by their title and 5 were duplicates from already selected studies. 40 papers were nominated for the full review and from applying the PICOS and inclusion criteria to each study 9 were recognised as appropriate for inclusion in the full review. The total of the papers selected were found in the following database AHMED (N=20), CINAHL (N=1) AND MEDLINE (N=4). From the selected papers 2 were identified from the pilot search in (AHMED; CINAHL and MEDLINE)

illustrated in Figure 2.

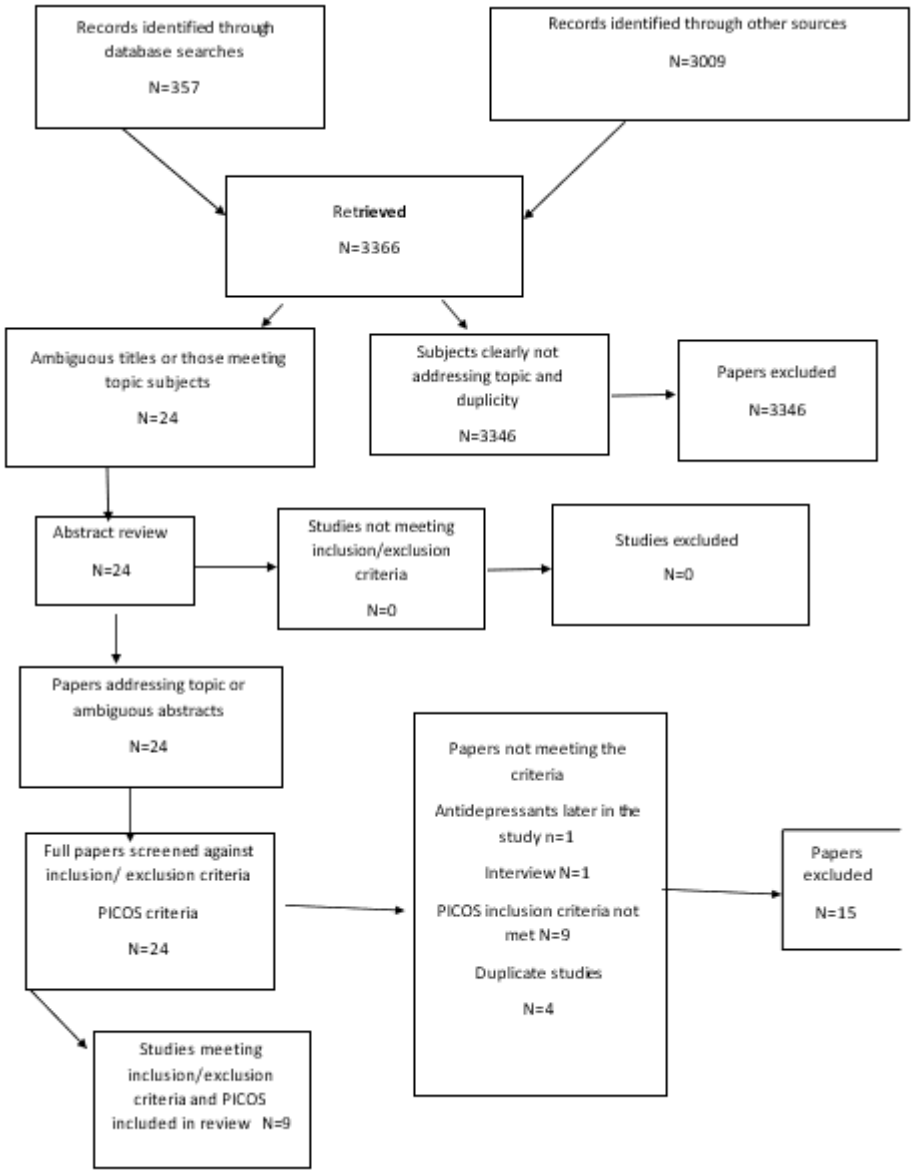

Figure 2 - Flow diagram based on PRISMA recommendations reporting literature search and selection of studies

The methodological quality of individual studies meeting the inclusion criteria were appraised using the Scottish Intercollegiate Guidelines Network (SIGN,2014) quality assessment tool. A prompt assessment was made for each study, based on the procedural quality of each included study and the reasonableness of the review findings, reliability and consistency. The results of the SIGN checklist displayed in Appendix 1 including a summary of each selected study. Data were extracted using a piloted data extraction tool based on the Cochrane Collaboration data collection form (Higgins and Green, 2008). A meta-analysis of the data was not possible due to the variety in the papers selected. A narrative synthesis approach, using a systematic method, considered each paper, aiming to reduce bias by not inappropriately stressing the results of one paper over another. In this SR, a thematic approach is presented for the synthesis of the findings. The methods in this SR are listed in Table 5. The thematic synthesis help reviews to stay adjacent

to the results of the primary studies, and aims to synthesising in a transparent manner and simplifying the unambiguous production of new observations and hypotheses (Thomas and Harden, 2008).

Findings

Data for the 9 articles in this review (Table 6) were from 4 sources. In selected articles, representing two data sources and the authors examined separate research questions. For simplicity of interpretation our results, we refer to the review articles as 9 studies unless otherwise stated. The description of the included 9 studies all examined data from developed countries. From the studies included five were conducted in the United States of America, one in Ireland (UK), two in Taiwan and China, one in India. The n=9 studies included met the requirement to report qualitative research within varying methods. From the studies n=4 were non-randomised controlled trials and n=5 were randomised controlled trials. All the selected studies adequately defined the background and aim of the research being carried out. The n=9 studies selected demonstrated a clear recruitment process. They provided an adequate description of data collection methods, however very brief and with flaws. Overall participants were 456 across the various studies (Battle et al., 2014; Beshadsky et al., 2014; Ko et al., 2008; Ko et al., 2015; Field et al., 2013; Buttner et al., 2015; Davis et al., 2015; Timlin and Simpson 2016; Satyapriya et al., 2013). Most of the participants were from maternity wards, community through leaflets and antenatal clinics. From the studies selected, it is clear that there is no more appropriate time to practise yoga to prevent or treat postnatal depression. It seems to be feasible from the results to practise anytime at any stage of pregnancy as long as there is medical clearance from an obstetrician. Table 7 shows the gestational stages and outcomes from the nine studies.

Themes

Meta theme	**Sub-theme**	**Mechanisms with examples**	**Evidence source SIGN (number of studies)**	**Rated**
Physical aspects of care	Ability to care for child and self	Support from midwives for the women on the labour ward (Ko et al. 2008; 2013)	Moderate	Cultural beliefs of not doing anything for the month postnatally, did not motivate some women to do anything.
Psychological	Promotion of well-being Reduction of depressive symptoms -Reduction of anxiety -Mood changes -Coping strategies	Through the practise of yoga education and advise, sharing of experiences Social support All 9 studies	Moderate	Moderate – due to selection bias in some studies, author involvement, convenient sampling
Social	Recognition of needing help or	Field et al (2013) free flowing verbal	low	Low quality – the sessions were not

	seeking help	conversations between the women		guided, so it was possible women were sharing inaccurate information More positive effect if its scripted and educational
Organisation and structure of intervention	Appropriate HCP Recruitment Co-ordination and continuity of care	Authors in some of the studies taught the classes Timlin and Simpson 2017; Ko et al 2008 and 2013 The other studies had qualified/registered prenatal yoga instructors	Moderate	Author involvement – bias in the final results. Acceptable low

Meta theme	**Sub-theme**	**Mechanisms with examples**	**Evidence source SIGN (number of studies)**	**Rated**
Partner involvement	Follow up or telephone interview of perception	None of the partners were involved in any of the studies	Not applicable	Acceptable low
Yoga and intensity	TYPE DURATION DVD Follow up care/phonecalls	Hatha, Asana, Kriya Postural Sitting Kneeling Stretching Breathing All the studies used the types of yoga interchangeably	Moderate	Positive effects with the practise of yoga overall Moderate
Women's perception to yoga for postnatal depression	Through follow up, questionnaires	Not assessed by any of the studies	Low	Low

Table 5 - Themes reflecting the effectiveness of the intervention of yoga

Author	Title	Outcome measures used	Findings
Ko et al., (2008)	Effects of post partum exercise program on fatique and depression during "doing-the-month" period	Fatigue symptoms checklist (FSC) psychological fatigue subscale physical fatigue subscale fatigue symptoms subscale Construct validity Centre for epidemiologic studies depression scale Chinese version (CES-D)	Most of the reductions where seen in the improvements of fatigue p<.01
Field et al (2013)	Yoga and social support reduce prenatal depression, anxiety and cortisol	The centre for Epidemiology studies depression scale (CES- D) Edinburgh Postnatal depression scale (EPDS) Profile of mood states (POMS) State Anxiety Inventory (STAI) State Anger Inventory (STAXI) The Relationship Questionnaire Cortisol, estriol and progesterone	There were overall reductions in the yoga group, over not a clinically significant result was found p=.001

Author	Title	Outcome measures used	Findings
Satyapriya et al (2013)	Effects of integrated yoga on anxiety, depression and wellbeing in normal pregnancy	Pregnancy Experience Questionnaire (PEQ) State trait anxiety inventory (STAI) Hospital Anxiety Depression Scale (HADS)	Both groups p<0.001 Anxiety reduced by 15.65% in yoga group Both groups p<0.001 8.97% reduction in yoga and increased 5.02% in control group Both groups p<0.001 Depression reduced n yoga by 30.67%
Battle et al (2014)	Potential for prenatal yoga to serve as an intervention to treat depression during pregnancy	Credibility Expectancy Questionnaire (CEQ) Client satisfactory Questionnaire (CSQ-8) Physical Activity	Again, as the other studies just give a significant figure of improvement, only EPDS, IDS were clinically significant

		Questionnaire (PAQ) Five facet Mindfulness Questionnaire (FFMQ) Edinburgh Postnatal Depression Scale (EPDS) Quick Inventory of Depressive Symptomatology (QIDS)	p<.05
Bershadsky et al (2014)	The effect of prenatal Hatha yoga on affect, cortisol and depressive symptoms	Derogatis affects balance scale (DABS) Saliva and cortisol collections	Study is not clearly stating the results specific to the outcome measures used, they are only stating, changes in negative affect and reduction of most of the depressive symptoms

Author	**Title**	**Outcome measures used**	**Findings**
		Epidemiology studies depression scale (CES- D) Postpartum depression questionnaire	
Ko et al (2015)	Integrated Pilates and Yoga program for decreasing postpartum depression in women	Edinburgh Postnatal Depression Scale (EPDS)	Improvement in psychological health p=0.003 not clinically significant if singled out
Davis et al (2015)	A randomised controlled trial of yoga for pregnant women with symptoms of depression and anxiety	Demographic information questionnaire Structured clinical interview for DSM disorders research version (SCID-RV) Engagement, credibility and satisfaction and affective response to yoga – Yoga diary Treatment tracking sheet International Physical Activity Questionnaire (IPAQ) Client satisfaction questionnaire (CSQ-8)	Greater reports in the reduction of negative effects, however not clinically significant p=.011

		Credibility scale (CS) Edinburgh *Perinatal* Depression Scale (EPDS) The state-trait anxiety inventory (STAI-T)	

Author	**Title**	**Outcome measures used**	**Findings**
		The positive and negative affect schedule negative subscale (PANAS-N) Yoga adherence scale	
Buttner et al (2015)	Efficacy of yoga for depressed postpartum women: A randomised controlled trial	Patient Health Questionnaire (PHQ-9) Hamilton Depression Rating Scale (HDRS) Inventory of Depression and Anxiety Symptoms (IDAS) The Medical Outcomes study 36 item short form Health Survey (SF-36) 5.	More improvement recoded in HDRS $p<0.001$ Questioning the need for so many outcome measures if one can give an accurate result
Timlin and Simpson (2017)	A preliminary randomised control trial of the effects of dru yoga on psychological well being in Northern Irish first time mothers	Physical activity readiness questionnaire (PAR-Q) Perceived stress scale (PSS) The positive and negative affect schedule negative subscale (PANAS) Brief cope questionnaire	PANAS showed greater improvement

Table 6 - shows the various outcome measures used and their findings

Author	Stages of pregnancy	Risks and benefits
Battle et al., 2014;	12-26 weeks gestation	Increased self-awareness in mindfulness, better coping strategies learnd
Beshadsky et al., 2014;	12-19 weeks gestational	Positive effects increase significantly and cortisol levels were reduced, which can help with the overall reduction of depressive symptoms and premature labour
Ko et al., 2008;	1 month postnatal	Reduced fatigue levels and increased activity involvement
Ko et al., 2015;	7-12 weeks postnatal	Reduction in fatigue levels and

		increase in psychological well- being
Field et al., 2013	22 weeks gestation	A reduction of cortisol and intrauterine artery resistance could have increased gestational stage and reduce premature labour in turn. Due to the practice of yoga
Buttner et al., 2015	1 year postnatal	Health related quality of life improved and panic sypmtoms significantly compared to wait list Group
Davis et al., 2015	28 weeks gestation	Slight discomfort as the tummy was growing with some of the positions of yoga. However, reduced symptoms and no adverse effects reported
Timlin and Simpson 2016;	6weeks to 1 year postnatal	Improved coping strategies and reduced perceived stress
Satyapriya et al., 2013).	18 to 20 weeks	Improvement on social relationships and psychological well-being. Improvement in Pregnancy experiences questionnaire

Table 7 - Stages of pregnancy with the practise of yoga

Discussion

The sociodemographic background of the women was clearly stated in the studies of Battle et al., 2014; Beshadsky et al., 2014; Ko et al., 2008; Ko et al., 2015; Field et al., 2013; Buttner et al., 2015; Davis et al., 2015; Timlin and Simpson 2016; Satyapriya et al., 2013. The women recruited in the studies were from diverse backgrounds; from single, married, educated, high earners and women with low income, even those who were unemployed. The American studies had white, Hispanic and African American women in their studies. Timlin and Simpon (2016) study is the only study where the ethnicity of the women was not specified. Sample sizes of 456 women were recruited across the selected studies. Selection took place from maternity wards, antenatal clinics and leaflets in the community. Response rate was ranging from 35% to 100% in the selected studies. Taiwanese and Chinese tradition requires women to rest for a month without doing anything after giving birth. This seemed to be a problem for the study of Ko et al., (2008) and Ko et al., (2015), attendance dropped once the women were discharged from the maternity ward, as they had to move to rural areas for recuperation. The response rates increased when the authors took more measures such as social media advertising, mobile phone applications and telephone reminders etc. Davis et al., (2015) encourage attendance by paying the subjects 80 American dollars for attending; however, they found in their study that some of the women only came for the screening to receive the payment. Davis et al., spread the payments out in four sections, attendance for screening, taking part in the intervention and to final data collection, this raises an issue of bias. Researchers need to be mindful when conducting studies in a manner that shows participants their values get observed. It leaves a reminder about how the researcher values participant's time and efforts. Not paying the women would have helped to avoid the bias that might have resulted from the omission of the women who declined to participate. It was evident the monetary incentive was the only motivator for the women to participate.

The selected studies all reported significant improvement in depressive symptoms in prenatal, perinatal and postnatal women practicing yoga, compared to those who did not take part in the practice of yoga. The selected studies had similar findings in terms of reporting the reduction of symptoms in postnatal depression, however, not without flaws. Some of the studies did not have a control group, raising a bias in the validity of the results. If there is no experimental control group, it can be challenging to conclude the effects of the independent variable on the dependent variable in research. This can give inaccuracies to the final findings. This SR demonstrated that the selected 9 studies reported significant association with reduction of depression symptoms, through mindfulness. However, for studies to accurately measure the connection between variables, a study would typically require a sample of hundreds or even thousands of subjects. The various sample sizes of the studies are recorded in Appendix 2, the average sample size was n=50 from the 9 studies. If there was a larger sample size, it would have allowed the estimate of the connections less likely to be biased. This would require a larger participation rate from randomly selected samples. The strength of data and potential for bias within each study must be considered. The lack of blinding and concealment in the selected studies raised a concern of bias. Although, common methodological limitations failed to control the outcomes; bias is also reduced if the subjects are randomly assigned to interventions, if investigators/authors are blinded or if interventions are concealed. Understandably, there are types of intervention where blinding is not possible, however, it would have given the studies such as Battle et al., 2014; Beshadsky et al., 2014; Ko et al., 2008; Ko et al., 2015; Field et al., 2013; Buttner et al., 2015; Timlin and Simpson 2016 more credibility and to reduced blinding bias, if they had attempted to conceal or blind the authors from the interventions. Davis et al., (2015) and Satypriya et al., (2013) are the only studies who attempted to blind researchers from certain aspects of the process.

There is a difference in how pregnant women respond to identical stressful stimuli which can depend on genetic factors and previous experiences (Bennet et al., 2004). Bershadsky et al., (2014) evaluated the effects of yoga on antepartum and postpartum depressive symptoms. They were testing 3 things: cortisol, ante-partum depression and postpartum depression. However, the study fails to mention at which stage they would allow or accept a change in depressive symptoms. The two groups in their study were not comparable.

They were different in social demographics and they concluded these did not affect the effects in their study, however state in the beginning that yoga is mostly practised by those in a high social setting, greater education and most possibly married. That is more evident that there would be a high difference in the final outcomes, because if there is a high income, support from partner, and greater level of education then there is very little to be stressed about. The studies selected did not investigate if the women enjoyed the class and what they benefit they derived from doing yoga. This knowledge could encourage future engagement and information sharing amongst pregnant women, increasing awareness subsequently. The selected studies identified different types of yoga practices. Hatha/Dru, the physical form of yoga which is mostly practised in the West was used in conjunction with simple stretches, the main benefit was mindfulness in the yoga practice. Mindfulness will generate beyond the classes that were taught, by reducing negative self-judgment and concentrating on the now and not the past or the unknown future. This does not sound very realistic, if the mother to be is not in a good financial situation or possibly fear complications during labour, there will be a chance she will be anxious and increase her anxiety levels, thus increasing the risks of postnatal depression.

Conclusion

This SR provides a cautious account that yoga reduces postnatal depression or the risks of postnatal depression. The studies selected had many variables. Some of them did not explicitly explain the types of yoga they were practising and why they had different stages for the same intervention. The collective findings reported are that there is reduction in the symptoms of postnatal depression with the practise of yoga. The studies have found yoga increases positive coping strategies and problem solving through mindfulness in those who practise yoga twice a week. The exercises are similar at baseline in the studies that has used other forms of physical activity such as stretching exercises. Women learned how to be mindful of their situation and were more self-aware of the surroundings, therefore adjusting and developing better coping strategies with their new life with baby. The referral for yoga is currently not on the mainstream NHS pathway and currently provided at community leisure centres locally. It would be beneficial for the women to be routinely referred as there appears to be increased benefits with yoga practise. Midwives can refer women with prenatal and postnatal depressive symptoms to the women's health physiotherapy outpatients as with other antenatal and postnatal physiotherapy care. Furthermore, well designed studies on yoga especially mindfulness are vital in order to devise a practical pathway for the local health service providers.

References

1. Balasubramaniam M., Telles S., Doraiswamy PM. (2013) Yoga on our minds: a systematic review of yoga for neuropsychiatric disorders. *Front Psychiatry*. Vol 25 (3) 117
2. Battle C.L, Uebelacker L.A, Magee S.R, Sutton K.A, Miller I.W (2015) Potential for prenatal yoga to serve as an intervention to treat depression during pregnancy. Womens Health Issues 25(2): 134–41. https://doi. org/10.1016/j.whi.2016.12.03.
3. Beck A.T. (1987) Cognitive Models of depression. Journal of Cognitive Physiotheray, 1,5-37
4. Bershadsky S., Trumpfheller L., Beck Kimble H., Pipaloff D., Yim I. (2014) The effect of prenatal Hatha yoga on affect, cortisol and depressive Symptoms Complementary Therapies in Clinical Practice 20 (2014), pp 106-113
5. Buttner M.M., Brock R.L., O'Hara M.W., Stuart S. (2015) Efficacy of yoga for depressed postpartum women: A randomised controlled trial, ComplementaryTherapies in Clinical Practice Journal, vol. 21, pp 94 - 100
6. Centre for Reviews and Dissemination (2008) Systematic reviews: CRD's guidance for undertaking reviews in health care. University of York Centre for Reviews and Dissemination, York Dennis CL,
7. Centre for Reviews and Dissemination (2009) Systematic reviews: CRD's guidance for undertaking reviews in health care. University of York Centre for Reviews and Dissemination, York Dennis CL,
8. Chuntharapat S., Petpicetchian W., Hatthakit U. (2008) Yoga during pregnancy: Effects on maternal comfort, labour pain and birth outcomes, Complementary Therapies in Clinical Practice Journal, vol. 14, pp105-115
9. Cochrane Review Library: available on http://www.cochranelibrary.com/cochrane- database-of-systematic-reviews/ Accessed 18 August 2016
10. Confidential Enquiries into Maternal Deaths and Morbidity 2000–2012. National Perinatal Epidemiology Unit, Oxford Lancaster CA,
11. Davis K., Goodman S.H., Leiferman J., Taylor M., Dimidjian S. (2015) A Randomised controlled trial of yoga for pregnant women with symptoms of depression and anxiety, Complementary Therapies in

Clinical Practice Journal, vol. 21, pp 166-172
12. Deligiannidis K.M. and Freeman (2014) GABAergic neuroactive steroids and resting- state functionalconnectivity in postpartum depression: a preliminary study. J. Psychiatr. Res. 47, 816–828
13. Department of Health www.gov.uk/government/publications/2010-to-2015-government- policy-mental-health-service-reform/2010-to-2015-government-policy-mental-health- service-reform accessed 27/04/2017
14. Field T., Diego M., Hernandez-Reif M., Fiqueiredo B., Deeds B., Ascencio O., Kuhn C. (2010) Comorbid depression and anxiety effects on pregnancy and neonatal outcome. Infant Behaviour Development Journal, vol. 33, pp 23-29
15. Field T., Diego M., Delgado J., Medina L (2013) Peer support and interpersonal psychotherapy groups experienced decreased prenatal depression, anxiety and cortisol. Early Hum Dev 89 (9) pp 621–4. https://doi.org/10.1016/j. earlhumdev.2017.04.006
16. Field T., Diego M., Delgado J., Medina L (2013) Yoga and social support reduce prenatal depression, anxiety and cortisol. J Bodyw Mov Ther 17(4): 397–403
17. Goodman J.H (2009) Women's attitudes, preferences and perceived barriers to treatment for perinatal depression, Birth Issues, Perinatal Care Journal, vol. 36, pp 60- 69
18. Ko Y.L., Lin P.C., Yang C.L., Chiang L.C (2008) Effects of postpartum exercise program on Fatigue and depression during "doing-the-month", Journal of Nursing, vol 16,3
19. Ko Y.L., Lin P.C., Yang C.L., Chen C.P., Shih H.J (2015) Pilot study on an integrated Pilates and yoga program for decreasing postpartum depression in women, Open Journal of Nursing, vol 5, 885-892
20. Merkitch K.G., Jonas K.G., O'Hara M.W (2017) Modeling trait depression amplifies the effects of childbearing on postpartum depression, Journal of Affect Disord, vol 223, pp 65 - 75
21. Ming L.I. and Shinn-Yi C. (2016) Modelling postpartum depression in rats: theoretic and methodological issues, Zoological research, vol 27, 4, pp229-236
22. Muzik M., Hamilton S.E., Rosenblum K.L., Waxler E., Hadi Z. (2012) Mindfulness yoga during pregnancy for psychiatrically at-risk women: preliminary results from
23. a pilot feasibility study. Complement Ther Clin Pract (4):235-40.
24. National Institute for Health and Care Excellence (2014) Antenatal and postnatal mental health: clinical management and service guidance. www.nice.org.uk/ guidance/cg192 (accessed 17 April 2017)
25. National Institute of Clinical Excellence (2007) Antenatal and postnatal mental health: clinical management and service guidance. Available on www.nice.org.uk/guidance/cg45 accessed 10 March 2016
26. O'Hara M.W., McCabe J.E. (2013) Postpartum depression: current status and future directions. Annu Rev Clin Psychol vol 9, pp379–407
27. Pearlstein T. (2013) Use of psychotropic medication during pregnancy and the postpartum period.Women's Health, 9 Vol 6, pp605- 615.
28. Pearlstein T., Howard M., Salisbury A., Zlotnick C. (2009) Postpartum depression, American Journal of Obstetrics and Gynecology, 200, vol (4), pp 357- 364
29. Royal College of Obstetricians and Gynaecologist (2011) Management of women with mental health issues during pregnancy and the postnatal period, Good Practice Guide No.14, pp 1-8
30. Satyapriya M., Nagarathna R., Padmalatha V., Nagendra H.R.(2013) Effect of integrated yoga on anxiety, depression & wellbeing in normal pregnancy. Complement Ther Clin Pract. 2013

Nov;19(4):230–236.]
31. Scottish Intercollegiate Guidelines Network (2014) www.sign.ac.uk/methodology/checklists.html Accessed 03 March 2016
32. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2981887/
33. Thomas, J., Harden, A., 2008. Methods for the thematic synthesis of qualitative research in systematic reviews. BMC Med. Res. Methodol. 8 (1), 45.
34. Javnbakht, M., Hejazi-Kenari R., Ghasemi M. (2009) Effects of yoga on depression and anxiety of women. Complementary Therapies in Clinical Practice 15, pp102-104
35. Timlin D.and Simpson E.E.A (2016) A preliminary randomised control trial of the effects of Dru yoga on psychological well-being in the Northern Irish first time mothers, Midwifery Journal, vol 46 ,pp 29-36
36. Uebelacker L.A., Epstein-Lubow G., Gaudiano B.A, Tremont G., Battle C.L, Miller I.W. (2010) Hatha yoga for depression: critical review of the evidence for efficacy, plausible mechanisms of action, and directions for future research. J Psychiatr Pract, 16 (1) pp 22–33
37. World Health Organization (2013) Maternal Mental Health and Child Health and Development. Improving Maternal Mental Health Millennium Development Goal 5 – Improving Maternal Health. Geneva
38. World Health Organization (2008) International Statistical Classification of Diseases and Related Health Problems. 10th revision. Geneva: WHO; 2008. URL: ww.who.int/classifications/icd/en/ (accessed 4 March 2016).