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A pilot randomized controlled trial comparing prenatal yoga to perinatal health education for antenatal depression

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Summary

We conducted a pilot randomized controlled trial (RCT) comparing a prenatal yoga intervention to perinatal-focused health education in pregnant women with depression. Findings document acceptability and feasibility of the yoga intervention: no yoga-related injuries were observed; instructors showed fidelity to the yoga manual; and women rated interventions as acceptable. Although improvements in depression were not statistically different between groups, they favored yoga. This study provides support for a larger scale RCT examining prenatal yoga to improve mood during pregnancy.

Keywords

depression; pregnancy; yoga; treatment; clinical trial

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Introduction

Antenatal depression can lead to adverse outcomes for mothers and infants. Despite risks, the majority of depressed pregnant women do not pursue any form of mental health care (Byatt, 2012). Many women have concerns about prenatal use of antidepressants or difficulty accessing standard mental health treatments. In order to broaden the range of effective treatment options, there is an urgent need for trials of novel, non-pharmacologic interventions for antenatal depression that are acceptable to pregnant women.

Prenatal yoga has been proposed as an acceptable and safe intervention that may reduce depression symptoms among depressed pregnant women (Battle, Uebelacker, Howard, & Castaneda, 2010). Like other forms of hatha yoga, prenatal yoga involves breathing practices, physical postures, and meditation. Prenatal yoga differs in pace, choice of postures, use of modifications, and emphasis on the physical changes of pregnancy. Initial studies have documented that prenatal yoga appears safe, and that women may experience benefits including better birth outcomes (Rakhshani et al., 2012). There is increasing evidence for the efficacy of yoga for depression in the general population, and plausible mechanisms by which yoga might influence depression, such as decreasing inflammation or increasing mindfulness (Uebelacker et al., 2010). To date, little research has rigorously examined yoga for antenatal depression; published studies have been promising but have had methodologic limitations such as lack of control conditions, reliance upon self-report scales, or use of yoga interventions that are inconsistent with typical community classes (Battle et al., 2015).

Prior to embarking upon a larger RCT, we conducted a pilot randomized trial evaluating a nine-week prenatal yoga intervention versus a health education control condition among depressed pregnant women. Consistent with recommendations for aims of pilot studies (Leon, Davis, & Kraemer, 2011), we examined intervention feasibility, safety, and adherence, and change in depression severity.

Methods

Participants

Inclusion criteria: 12–26 weeks pregnant; major or minor depression during the current pregnancy; moderate depressive symptoms defined by a Quick Inventory of Depressive Symptomatology (QIDS; (Rush et al., 2003) score > 7 and < 20 ; medically cleared for moderate exercise; not currently practicing yoga; 18 or older; English speaking; able to attend one of two class times. Exclusion criteria: bipolar disorder, schizophrenia, current or chronic psychotic symptoms; severe PTSD, OCD, or panic disorder; hazardous drug or alcohol use; acute suicidality.

Procedures

The study was IRB-approved. We recruited women by advertising at OB/GYN practices and other community locations. If women met basic eligibility criteria, we invited them to a baseline interview. At that time, research assistants conducted informed consent and verified eligibility. Women signed a release form allowing us to contact their prenatal care clinician

to request medical clearance for participation. Once we received clearance, we re-contacted the participant and randomized her to the prenatal yoga program (PYP) or a perinatal health education control condition, the Mom-Baby Wellness Workshop (MBWW). Subsequently, women were invited to attend classes weekly in their assigned arm for 9 weeks. Assessments occurred at baseline, 3 weeks, 6 weeks, and 9 weeks (endpoint).

Participants were compensated \$10–20 for each assessment. We also provided incentives for participating regularly in the form of a \$10 gift card for attending two consecutive classes. Completers were invited to “cross over” to the other intervention postpartum: women initially assigned to PYP could attend MBWW classes; MBWW participants received a gift certificate for mom-baby yoga classes at a local studio.

Measures

Treatment expectations and satisfaction—We measured treatment credibility and expectations for treatment success with the Credibility Expectancy Questionnaire (Dewilly & Borkovec, 2000) after the first class. At endpoint, we administered the Client Satisfaction Questionnaire-8 (CSQ-8) (Larsen, Attkisson, Hargreaves, & al., 1979), an 8-item scale yielding a total score ranging from 8–32 that reflects satisfaction with services.

Amount of yoga—We assessed amount of home yoga practice every 3 weeks.

Injuries—At each assessment, we asked yoga arm participants whether they had experienced any injuries or medical problems due to yoga.

Psychiatric diagnoses—We used the Structured Clinical Interview for DSM-IV Axis I Disorders- Patient Version (SCID) to diagnose depression and other mental health conditions. We assessed depression severity using the interviewer-administered Quick Inventory of Depression Symptoms – Clinician Rating (QIDS) and the self-report Edinburgh Postnatal Depression Scale (EPDS; (Cox, 1987)

Interventions

Prenatal yoga program (PYP)—Instructors were registered yoga instructors with previous experience teaching prenatal yoga and extensive study training. Instructors followed a detailed manual that included chapters on antenatal depression, physiology of pregnancy and implications for yoga, class sequencing, breath awareness, and benefits, modifications, and contraindications of specific asanas (postures). Classes were 75 minutes long and gentle in nature. Each class included breathwork or meditation, gentle warm-up, standing poses, floor poses, final resting pose, and class closing and homework discussion. Instructors chose specific practices within the general prescribed sequence. Instructors were encouraged to teach mindfulness, emphasize breath awareness, and encourage home practice. Instructors used props and adapted asanas as needed.

Mom-Baby Wellness Workshop (MBWW)—The control condition, MBWW, was a series of 75-minute workshops focused on mother’s and baby’s health during the first postpartum year as well as general wellness. Classes were taught by masters-level

instructors with prior training in psychology and study-specific training in perinatal health. Topics included self-care during the early postpartum period, nutrition for mom and baby, infant safety, infant and maternal sleep, and long-term health promotion. Each class included handouts and participants were encouraged to engage in class discussion.

Results

Fifty-nine women expressed interest in the study. After hearing a description, 23 either chose not to participate ($n = 14$) or could not be re-contacted ($n = 9$). Seventeen women were not eligible due to a variety of reasons. One third ($n = 20$) were randomized. Table 1 displays participant characteristics at baseline. Study groups did not differ on any variables. We collected some follow-up data on 19 participants, and endpoint data on 90% ($n = 18$).

Feasibility and acceptability

There were significant differences favoring PYP on the CEQ and CSQ-8, although average scores were acceptable in both arms. Women in each group attended approximately the same number of classes. Women in MBWW did not report going to yoga classes or doing yoga at home. Women in PYP practiced yoga at home in addition to attending study classes.

Manual fidelity

An expert prenatal yoga instructor who helped develop the manual rated $> 20\%$ of PYP classes on manual fidelity using an 18-item checklist. Fidelity was over 80% for all classes, with average = 92%.

Safety

We systematically asked participants if they experienced injuries due to yoga practice. No yoga-related injuries were reported, and no serious adverse events observed.

Depression

We present means and standard deviations of QIDS and EPDS scores by group in Table 2. There was improvement over time in both arms. Although changes were not statistically different between PYP and MBWW, they favored PYP, with a difference between groups of 0.48 standard deviation units for the QIDS and 0.4 standard deviation units for the EPDS. These represent medium effect sizes (Cohen, 1988) but should be interpreted with caution given the small sample size.

Discussion

Building upon promising results from other studies, these findings indicate that further investigation is warranted to evaluate whether prenatal yoga could represent an effective intervention for mild-moderate antenatal depression. Although not powered for the detection of an effect, this preliminary trial was designed with careful methodology and detailed intervention procedures in an effort to evaluate the feasibility of conducting a more definitive large-scale trial. Results were encouraging in terms of the feasibility and acceptability of study interventions and other procedures (including randomization).

Specifically, women attended classes consistently in both arms; as expected, women in PYP practiced yoga at home and women in the MBWW did not; yoga instructors demonstrated fidelity to the manual; and there were no injuries due to yoga. Further, changes in depression severity were in the expected direction, suggesting that prenatal yoga could be helpful for women with mild to moderate levels of depression.

Because this is a study of behavioral interventions, participants could not be blind to which intervention they received. However, when advertising the study and describing it to women, we took care to present the study arms with equipoise. We designed the MBWW to be engaging and participatory. Even so, we found that the MBWW participants reported somewhat lower credibility and expectancy that the intervention would target their depression, as well as somewhat lower satisfaction with their assigned intervention. Importantly, however, we note that levels of these three indices of acceptability were still satisfactory, and we believe that this control group is stronger than a minimal-treatment or treatment-as-usual control condition. It is a challenge to design a control group that is equally satisfactory and credible as PYP, yet contains no “active” ingredients of PYP or of other established depression interventions, such as psychotherapy.

In sum, pregnant women need more treatment options beyond traditional forms of depression treatment. Prenatal yoga is an exciting alternative because it is widely accessible, seems acceptable, and holds promise for having a positive impact on both physical and mental health.

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Table 1

Demographic, clinical, and pregnancy characteristics at baseline

	Whole sample (n =20)		Yoga group (n = 12)		MBWW (n = 8)		Chi square (df) or t (df)
	n or mean	% or SD	n or mean	% or SD	n or mean	% or SD	
Age	28.4	5.8	28.0	5.9	28.9	6.0	0.32(18)
Marital status							0.14(1)
Single or Divorced	11	55%	7	58%	4	50%	
Married or Cohabiting	9	45%	5	42%	4	50%	
Ethnicity							1.58(1)
Latina	1	5%	0	0%	1	13%	
Not Latina	19	95%	12	100%	7	88%	
Race							4.44(3)
Asian	1	5%	1	8%	0	0%	
Black/African Amer.	3	15%	3	25%	0	0%	
White	15	75%	8	67%	7	88%	
Other	1	5%	0	0%	1	13%	
Education							0.82(3)
8 th grade	1	5%	1	8%	0	0%	
Some college	7	35%	4	33%	3	38%	
4 years college	9	45%	5	42%	4	50%	
Masters degree +	3	15%	2	17%	1	13%	
Annual Family income							6.05(3)
0– \$24,999	6	35%	5	42%	1	13%	
\$25,000 – \$49,999	2	10%	0	0%	2	25%	
\$50,000 – \$74,999	7	35%	3	25%	4	50%	
\$75,000 and above	5	25%	4	33%	1	13%	
Employment status							3.47(4)
Employed full time or part time	10	50%	5	42%	5	63%	
Student	3	15%	2	17%	1	13%	
Unemployed	5	25%	4	33%	1	13%	
On disability	1	5%	0	0%	1	13%	

	Whole sample (n = 20)		Yoga group (n = 12)		MBWW (n = 8)		Chi square (df) or t (df)
	n or mean	% or SD	n or mean	% or SD	n or mean	% or SD	
Homemaker	1	5%	1	8%	0	0%	
Weeks gestation	18.4	4.0	18.4	4.7	18.3	3.0	0.09(18)
Pregnancy intention							0.30(1)
Pregnancy planned	9	45%	6	50%	3	38%	
Pregnancy unplanned	11	55%	6	50%	5	63%	
# of pregnancies incl. current							2.16(1)
One	11	55%	5	42%	6	75%	
More than one	9	45%	7	58%	2	25%	
Prior live births							1.48(1)
None	18	90%	10	83%	8	100%	
One or more	2	10%	2	17%	0	0%	
Diagnosis at baseline							3.33(2)
Current major depression	15	75%	10	83%	5	63%	
Current minor depression	2	10%	0	0%	2	25%	
Past major depression in preg.	3	15%	2	17%	1	13%	
Antidepressant use at baseline							1.58(1)
Taking an antidepressant	1	5%	0	0%	1	13%	
Not taking an antidepressant	19	95%	12	100%	7	88%	
Seen a health professional for mental health problems in 2 months prior to baseline							1.11(1)
No	15	75%	10	83%	5	63%	
Yes	5	25%	2	17%	3	28%	
Ever seen a health professional for mental health problems?							2.35(1)
No	3	15%	3	25%	0	0%	
Yes	17	85%	9	75%	8	100%	

Note. None of the comparisons between the two study groups reached statistical significance.

Table 2

Outcomes: Acceptability, Feasibility, and Depression

	PWP group			MBWW group			t (df)
	n	mean	SD	n	mean	SD	
Acceptability and Feasibility							
Credibility (after first group attended)	12	7.78	1.01	8	6.71	0.81	−2.51(18)*
Expectancy (after first group attended)	12	7.09	0.93	8	5.76	1.53	−2.43(18)*
Participant satisfaction (endpoint)	12	29.36	3.04	8	22.13	8.46	−2.64(17)*
Number of classes attended	12	5.67	2.84	8	6.00	2.98	0.25(18)
Average minutes per week of yoga at home	12	45.60	51.95	8	0	0	−2.35(16)*
Average total minutes per week of yoga (class + home)	12	87.58	64.86	8	0	0	−3.53(16)*
Depression – QIDS scores ^a							
Baseline	12	11.17	2.52	8	11.50	2.56	
Randomization	12	9.50	2.88	8	11.75	2.12	
Week 3	11	6.64	2.29	7	9.57	4.93	
Week 6	9	5.56	2.92	5	9.40	5.98	
Week 9 (Endpoint)	11	6.82	3.25	6	8.00	3.63	
Depression – EPDS scores ^a							
Baseline	12	12.16	4.76	8	12.88	7.36	
Week 3	11	7.55	4.50	7	10.32	6.25	
Week 6	9	3.89	2.32	5	10.20	6.14	
Week 9 (Endpoint)	11	5.27	4.47	7	7.43	4.72	

^aWe calculated multilevel models with group, time, and group X time as the independent variables and depression score as the dependent variable. The group X time parameter was not statistically significantly different from 0 for either the QIDS (parameter estimate = -0.86, standard error = 1.41, $t(73.37) = -0.61$, *ns*) or the EPDS (parameter estimate = -2.50, standard error = 1.97, $t(52.66) = -1.27$, *ns*).