



## Use of complementary approaches in pregnant women with a history of miscarriage



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### ABSTRACT

**Objectives:** To describe the use of complementary approaches in pregnant women with a history of miscarriage and to investigate whether a miscarriage is associated with the use of complementary approaches during their pregnancy.

**Design:** A cross-sectional survey was distributed to pregnant women residing in the United States (N = 890).

**Results:** Women who had a history of miscarriage, were Caucasian, were college educated, reported a high income, had low depression scores, and had low anxiety scores (all  $P < 0.001$ ) were more likely to use complementary approaches. In pregnant women with a history of miscarriage (N = 193), the most frequently reported complementary approaches used were prayer (22.3%), yoga (15%), massage (14.5%), chiropractic (13%), and meditation (11.4%). Finally, after adjustment for age, race, education, and income, the odds of using a complementary approach in women with a history of miscarriage was 1.8 (95% CI: 1.3, 2.5,  $P < 0.001$ ) as compared with women without a history of miscarriage (model 1). Associations persisted after additional adjustment for depression, anxiety, and stress; the odds of using a complementary approach in women with a history of miscarriage was 1.7 (95% CI: 1.2, 2.4,  $P < 0.001$ ) (model 2), compared with women without a history of miscarriage.

**Conclusions:** Findings from this study may help inform future studies for pregnant women with a history of miscarriage and may also provide information about appropriate strategies in which health care providers can refer their patients.

### 1. Introduction

Miscarriage, the spontaneous loss of a pregnancy before completion of 20 weeks gestation, is the most common pregnancy complication in the United States.<sup>1</sup> Miscarriage occurs in 12–20% of clinically recognized pregnancies.<sup>1</sup> Approximately one in four women will experience a miscarriage during their lifetime.<sup>1</sup> Miscarriage can be a physically and psychologically traumatic event. Women who have experienced miscarriage compared to women who have not experienced miscarriage are more likely to suffer psychological distress such as high levels of stress, anxiety, depressive symptoms, and grief.<sup>2</sup> This psychological distress is likely to be carried into the subsequent pregnancy following a miscarriage.<sup>2</sup> As many as 50–85% of women who miscarry become pregnant within 12–18 months.<sup>3</sup> In one study, women who had experienced a miscarriage were more likely to experience sadness or low mood and excessive worry during a subsequent pregnancy as compared to women with no history of pregnancy loss, after controlling for mental health and demographics.<sup>4</sup> In other studies

women have reported their stress is increased<sup>5</sup> and the concept of self is altered (e.g., lack of trust in the body, concerns with emotional stability) in the subsequent pregnancy to a miscarriage.<sup>5</sup> This psychological distress (i.e., high levels of stress, anxiety, depressive symptoms, and grief) can impact the health of the fetus or newborns such as preterm birth, low birth weight or small for gestational age babies.<sup>6</sup> Additionally, women who report psychological distress are more likely to be fearful and/or overly protective of their infants, and this may result in long term consequences for the child such as deficits in cognitive functioning and an increase in negative behavior.<sup>7,8</sup> There is a need to determine ways to mitigate psychological distress (i.e., high levels of stress, anxiety, depressive symptoms, and grief) during the subsequent pregnancy after a miscarriage to promote optimal fetal/infant health outcomes.

It has been suggested that the general practitioner openly discuss previous miscarriage so women experiencing psychological distress can receive intervention if needed during the subsequent pregnancy.<sup>1</sup> Kinsey et al. (2015) suggests interventions should include mental health

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consultation for depressive symptoms and/or bereavement support through support groups.<sup>9</sup> Others have suggested women receive emotional support in the form of counseling, practical advice concerning lifestyle (e.g., diet, exercise) and/or medication in the subsequent pregnancy.<sup>10</sup> However, there are a number of barriers that keep women from receiving resources to mitigate psychological distress in the subsequent pregnancy.<sup>1</sup> First, doctors have limited time to spend with their patients to counsel them and provide emotional support.<sup>11</sup> Second, resources are limited, and providers are often unaware of existing community resources precluding them from referring.<sup>11</sup> Third, women are reticent to take medication as they are concerned it may “harm” the baby.<sup>12,13</sup>

Complementary health care approaches to alleviate psychological distress among women in reproductive health care settings have become increasingly popular. A complementary health care approach can be defined as a natural product (e.g., herbs) or mind-body practice (e.g., yoga, meditation), developed outside of mainstream Western (i.e., conventional) medicine to improve health and wellness.<sup>14</sup> Women, in particular, are known to use more complementary therapies as compared to men. Midwives and nurses are also interested in complementary approaches and have sought special training for the clinical application of these approaches.<sup>15</sup> Complementary health care approaches may reduce stress signaling hormones and increase dopamine levels which in turn play a role in controlling emotions, mood, and anxiety.<sup>16,17</sup> More specifically, mind-body approaches cultivate mindfulness, a practice that helps an individual become aware of their thoughts, feelings, and sensations without judgment. This awareness and acceptance of emotions may improve affect tolerance and help women manage their psychological distress. Mindfulness may also contribute to improvements in self-compassion and as such, a concept of self. This is important as women who have had a miscarriage are likely to report reductions in perceived self-worth.<sup>18</sup> Evidence suggests complementary approaches such as yoga and meditation are desirable amongst pregnant women and may decrease depressive symptoms during pregnancy and post-partum.<sup>19</sup> To our knowledge, there has been little research about the use of complementary approaches in pregnant women with a history of miscarriage. The purpose of this paper is to describe the use of complementary approaches in pregnant women with a history of miscarriage and to investigate whether a miscarriage is associated with the use of complementary approaches during their pregnancy. Findings from this study may help inform future studies for pregnant women with a history of miscarriage and may also provide information about appropriate strategies in which health care providers can refer their patients.

## 2. Methods

The Institutional Review Board of a large university in the southwestern United States approved this study, and all participants consented to the study.

### 2.1. Participant selection

Women were included in the study if they were: 1) currently pregnant ( $\geq 8$  weeks gestation), 2) 18 years and older, 3) a US resident, and 4) able to read and write in English.

### 2.2. Recruitment

This was a national cross-sectional study using a purposive non-probabilistic sample. Research staff contacted organizations (e.g., mother and baby retail stores, hospitals, pregnancy web sites) and asked them to advertise the study by posting provided recruitment information (e.g., flyers, blurbs) to their social media sites and/or websites, emailing listservs, or by displaying flyers at their location. Recruitment for the study occurred between April and June of 2015.

### 2.3. Procedures

Interested participants completed a web-based survey via Qualtrics (Provo, Utah) that assessed their general physical and psychosocial health during pregnancy. The online survey was labeled the Pregnancy and Wellness Survey (PAWS) and took women approximately 30 min to complete. Eligible participants were informed of how the data would be used, confidentiality of their responses, and that completion of the survey indicated their consent to be in the study. Participants who completed the PAWS were offered a \$10 Target gift card (limited to the first 350 due to funding). The remaining participants were entered into a drawing to win one Jawbone UP Band or Fitbit Flex (winner's choice).

### 2.4. Survey

The PAWS is reported elsewhere<sup>19</sup> but briefly, the PAWS consisted of two parts: 1) multiple reliable and valid scales to describe pregnancy history (e.g., miscarriage), psychosocial factors (i.e., stress, anxiety, depression) and mindfulness and 2) investigator-developed questions to identify the wellness practices (e.g., uses of complementary health approaches) of pregnant women. Demographics were collected at the end of the survey.

### 2.5. Wellness practices

A 19-item survey was developed to assess participants' perceptions, uses of, and interests in complementary health approaches (e.g., yoga, meditation, mindfulness). Specifically, participants were asked about their current or past use of complementary health approaches during pregnancy with a yes/no response. More information and data collected from the PAWS Part Two is reported elsewhere.<sup>19</sup>

### 2.6. Statistical analysis

General linear models were used to test mean differences for baseline anthropometric measures by the use of complementary approach after adjustment for age and race. Chi-square tests were used to compare frequency differences for complementary use across miscarriage status and demographic variables (e.g., race, education, income). Multiple logistic regression models were used to investigate the association between a history of miscarriage and the use of complementary approach after adjustment for age, race, education, and income (model 1); after additional adjustment for depression, anxiety, and stress from model 1 (model 2). The women with complementary use without a history of miscarriage were the reference category. All statistical procedures were performed by using SAS software (version 9.4; SAS Institute, Cary, NC).

## 3. Results

### 3.1. Demographics in those currently using/not using a complementary approach

As shown in [Table 1](#), the use of a complementary approach was more frequent in women who had a history of miscarriage (38.9%), were Caucasian (32.0%), college educated (30.6%), reported a high income (32.5%), had low depression scores (30.3%), and low anxiety scores (32.1) (all  $P < 0.001$ ). There were no frequency differences of using a complementary approach across perceived stress levels ( $P = 0.5$ ).

The demographics and characteristics of the women with a history of miscarriage across the current use of complementary approaches are shown in [Table 2](#). About 40% of women with a history of miscarriage reported using a complementary approach. The use of a complementary approach was more frequent in women who had a college or above education as compared with high school or less than high school

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