



Association between postpartum physical symptoms and mood

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ABSTRACT

Objective: Postpartum depression may be associated with higher levels of postpartum pain, but the association with discomfort in general is unclear. We sought to describe an association between postpartum mood disturbances and quantitatively measured physical symptoms at the time of the routine postpartum encounter.

Methods: We designed a novel quantitative measurement of postpartum symptoms, the Postpartum Symptom Inventory (PSI), to allow comparison to scores of postpartum mood. Women presenting for a routine postpartum visit were asked to complete a brief questionnaire about their delivery, the 20-item PSI, and an Edinburgh Postnatal Depression Scale (EPDS). Depression scores were compared with symptom inventory scores and demographic data.

Results: Two hundred six women responded, of whom 77% had a vaginal delivery. The most common physical symptoms experienced to a bothersome degree were fatigue (35.3%), back/hip pain (22.4%), and headache (13.2%). Twenty-nine women (14.3%) had an EPDS score of 10 or more, thereby screening positive for possible depression. Women screening positive had significantly greater total PSI scores than women who did not screen positive (20.2 vs 12.2, $p < 0.001$). After adjustment for history of depression and age, the odds of screening positive for depression were 3.6 times higher in women with PSI scores over 10 compared to women with lower scores [95% CI: (1.1, 11.4); $p = 0.03$].

Conclusion: Data suggest that a high level of physical symptomatology as measured by a PSI score > 10 at six weeks post-delivery is associated with increased odds of screening positive for postpartum depression.

1. Introduction

Postpartum depression is the most common major complication of pregnancy, with approximately 1 in 7 women experiencing a new episode of depression after giving birth [1]. Several risk factors have been identified, including a history of prior depression, poor social support, stressful life events, traumatic birth experience, and neonatal complications [2]. In addition to these extrinsic issues, one might expect postpartum depression to be triggered or worsened by physical pain or discomfort, since there appears to be frequent association between depression and pain complaints in women outside of pregnancy [3].

The possible association between postpartum depression and postpartum physical symptoms remains unclear. Some of the literature that explores the question looks strictly at measures of pain, as this may be quantified with visual or numerical pain scales. A study that compared acute pain scores at 8 weeks postpartum with measurements of depressive symptoms found an increased risk of depression both in those

women who had high levels of immediate (within 36 h postpartum) pain as well as those with residual pain at 8 weeks [4]. Another study that specifically examined perineal pain at 4–6 weeks also demonstrated an association [5]. These studies, however, did not account for other factors that may have influenced the experience of pain. In a study that employed a multivariate risk analysis to eliminate potential confounders, no statistically significant link was demonstrated between pain shortly after childbirth and the development of postpartum depression [6], suggesting that women with worse pain at this time are not at increased risk.

The degree of postpartum physical discomfort that may be anticipated goes beyond pain alone. Pain scales may not capture the full range of discomfort that women typically experience as they recover from childbirth. Prior studies have demonstrated a wide range of physical symptoms that may impact postpartum women's health status and quality of life, including fatigue, sleep-related problems, sexual concerns and breast problems [7]. Other surveys have been more specific in distinguishing the different types of pain that may be experienced,

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citing backache, headache and pelvic pain [8]. These surveys, however, tend to quantify the results in terms of the general prevalence, without mention of the degree of discomfort experienced. For example, a survey of women at 5 weeks postpartum showed that women reported an average of 6.2 physical symptoms at that point in time [9]. Another large survey queried U.S. women at 24 months postpartum and found that one in three of these women still experienced physical conditions such as perineal pain, backache, painful nipples, painful intercourse, loss of libido or tiredness [10]. Such experiences may be equally important in affecting mental health, but have not been well quantified in terms of how much they are bothersome.

Knowing the degree to which such symptoms interfere with daily activity would be useful in determining a measurable association with mood symptoms. Studies have sought to establish such a relation, but these are often conducted at a point in time that is too late to be clinically meaningful in providing postpartum care. For example, Woolhouse et al. inquired about physical symptoms in the year following childbirth, with the first inquiry at 3 months after delivery [11]. They found that women who reported five or more physical problems had a six-fold increase in the likelihood of reporting concurrent or subsequent depression in the year following birth. Similar studies also noted a correlation between physical symptoms and emotional well-being at 6 to 7 months postpartum [12], and at 9 and 12 months postpartum [13]. These studies were done remote from delivery, after the point when most women are screened for depression and later than most cases of postpartum depression are recognized. Because features of postpartum depression often develop in the six weeks immediately following birth, it would be useful to determine if a correlation exists during this timeframe, and, further, to see if the degree of physical symptoms may be predictive of mental health issues.

Knowing what is normal at six weeks postpartum is important, because this is the time at which most women are scheduled for a follow-up postpartum visit with their providers. It is at this point that women are expected to be physically recovered from delivery (whether vaginal or abdominal) and able to return to a full level of activity. At this six-week visit, screening for postpartum depression is also typically conducted. There is no standardized screen for assessing normal physical symptoms, as they are difficult to quantify numerically. If there is an association between physical discomfort and adverse mood changes, a quantitative scale could be helpful at this time point to recognize when such complaints exceed the expected norm.

The aim of the current study was to pilot a postpartum symptom inventory that would quantify the degree to which bothersome symptoms persist at six weeks following delivery. By providing a numerical score representing the amount of physical discomfort at this point in time, the inventory could be used to examine the correlation between physical discomfort and depression symptoms as measured by a standardized scale. If the inventory is proven useful in this regard, it may be used in future for studies in which a quantitative measurement of postpartum physical symptoms is needed.

2. Methods

A Postpartum Symptom Inventory (PSI) was developed to permit quantitative assessment of postpartum somatic symptoms. Items included in the inventory were culled from surveys of postpartum symptoms in the literature [7–10], as well as authors' clinical experience. In particular, the lead author has practiced obstetrics for 25 years, and this expertise was used to group similar complaints or add additional complaints unique to the postpartum experience to establish the PSI. Mood and anxiety symptoms were not included, as those are routinely assessed separately as part of depression screening. For each of 20 symptoms, women were asked to rate the degree to which an individual symptom was bothersome. Ratings were recorded on a scale of 0 (never bothersome) to 4 (always bothersome) for each symptom. The total of the responses therefore generated a score between 0 and 80.

The survey was piloted to five women, whose responses were not included in the current report, to ensure that the language was understandable and that questions were worded appropriately.

Postpartum women were recruited over the course of nine months (July 2015 to April 2016) from one of two sites: a resident clinic and a faculty practice office. Women who arrived for a scheduled postpartum visit were asked to participate while they awaited the clinician. Although these scheduled visits were targeted to occur at the six-week mark, the timing of the visits ranged from 5 to 8 weeks postpartum. Per convention, follow-up appointments were scheduled in this timeframe as postpartum women are expected to have fully recovered from childbirth and be able to discontinue physical restrictions related to their recovery at this time. Women presenting for follow-up beyond this time were excluded. Women who had experienced a fetal or neonatal demise, non-English speakers, and girls under the age of 18 were also excluded.

On consenting to participate, the women were asked to complete a series of demographic questions along with the PSI. The study questionnaire also inquired about details of the recent delivery (e.g., mode of delivery, need for perineal repair, use of pain medication), any history of depression or use of antidepressant medication, and a self-rating of general health. As part of routine postpartum care, women were also administered the 10-item Edinburgh Postpartum Depression Scale (EPDS). The EPDS is a validated scale with proven success in screening for postpartum depression [14]. Scores of 10 or greater were considered screen positive for possible depression. The study was approved by the biomedical Institutional Review Board of the Ohio State University.

Data were examined for missing or extreme values. Summary statistics were performed for each of the physical symptoms. Multivariable logistic regression was used to examine the association between PSI score and depression screening status. Covariates were selected based on a review of the literature coupled with examination of whether they met the definition of a confounder (i.e., related to disease and exposure but not in the causal pathway). With PSI scores as a continuous variable, linearity in the logit was also assessed with a lowess smoothed logit curve. With PSI score as a binary variable, the median score was used as the cut-off. Due to the performance of an interim analysis after 100 patients had been recruited, p-values were adjusted to 0.047, as determined by a one-interim analysis O'Brien-Fleming-Lan DeMets adjustment. All analyses were conducted in STATA, version 14.0. All p-values and confidence intervals are two-sided and are unadjusted for multiple comparisons.

3. Results

A total of 207 women completed the questionnaire. One woman was removed from the study for being under the age of 18, leaving 206 respondents. Respondents had a mean age of 29 (S.D. = 5.2; median = 29; range = 18–45). Although the rate of return for women scheduled for a postpartum appointment was only 50–60%, the response rate for those who attended and were eligible to participate was 80% (258 postpartum appointments). Demographics of the group are shown in Table 1. As noted, the cesarean delivery rate was 22.8%. Fifty-five women (27.2%) reported a prior history of depression. On the self-rating of general health, 41.6% of women reported excellent health, and 48.5% reported good health.

The distribution of responses on the PSI are shown in Table 2. The most common symptoms noted were fatigue (which was reported as often or always bothersome by 35.3% of respondents), back/hip pain (22.4%), and headache (13.2%). Total PSI scores ranged from 0 to 38, with an average score of 13.3 (SD = 8.3).

Women who reported a prior history of depression had higher PSI scores on average than women who did not (17.6 vs 11.5, $p < 0.001$). Women who reported general health as good or excellent had an average PSI score of 12.9, compared with 16.8 for those whose health was poor or fair ($p = 0.046$). There were no significant differences in

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