



Original Research – Quantitative

A prospective examination of depression, anxiety and stress throughout pregnancy

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ABSTRACT

Background: Perinatal distress has largely been conceptualised as the experience of depression and/or anxiety. Recent research has shown that the affective state of stress is also present during the perinatal period and thus may add to a broader understanding of perinatal distress.

Aim: The aims of the present study were to investigate the changes in depression, anxiety and stress symptoms across pregnancy, and to explore the prospective relationships between these symptoms.

Methods: Two-hundred and fourteen pregnant women were recruited when they were less than 16 weeks gestation. Women completed depression, anxiety and stress measures on a monthly basis, from 16 weeks gestation through to 36 weeks gestation. The covariate measures of sleep quality and social support were assessed bi-monthly at 16, 24 and 32 weeks gestation.

Findings: Levels of depression, anxiety and stress symptoms were all shown to change over time, with women experiencing fewer symptoms during the middle of their pregnancy. Higher symptoms early in pregnancy predicted higher symptom levels throughout the rest of pregnancy. Higher depression scores early in pregnancy were also shown to predict higher anxiety and higher stress scores in late pregnancy. Increased stress scores during mid pregnancy also predicted higher anxiety scores in late pregnancy.

Conclusion: Current findings indicate that symptom levels of depression, anxiety and stress vary over the course of pregnancy. Increased depression in early pregnancy seemed to be particularly pertinent as it not only predicted later depression symptoms, but also increased anxiety and stress in late pregnancy. Collectively, these results further highlight the importance of emotional health screening early in pregnancy.

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1. Introduction

The perinatal period is recognised as a time of major transition that can be extremely emotional,¹ and associated with significant distress.^{2,3} Symptoms of emotional distress are experienced by a substantial number of women, with international research indicating that depression affects approximately 10–25% of women, while anxiety affects approximately 25–45% of perinatal women.^{4,5} The negative consequences of perinatal distress have been well documented and extend not only to the new mother, but also her foetus, child, partner and family (e.g., 6–11). In turn, there

is a clear need to continuously advance our understanding of perinatal distress in an effort to better inform screening, prevention and early detection practices, as well as treatment strategies.

Research to date has primarily defined perinatal distress as the psychological disorders of depression and anxiety,¹ which in turn are the two affective states that have received the most research attention. Interestingly, despite this attention and the increased contact that women generally have with health professionals during pregnancy and post birth (in comparison to other time points in their lives), depression and anxiety can often be overlooked and thus left untreated, with approximately half of all cases going unrecognised.¹² Perhaps even more neglected, are the early signs of elevated distress levels as well as subclinical symptom levels. In addition, relatively little attention has focused on exploring whether these experiences represent a continuum of symptoms that women may experience prior to the

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onset of clinical depression. This is especially surprising given that depressive symptoms and anxious features are often identified as risk factors and pre-cursors to postpartum depression.¹³

Furthermore, when reviewing the literature on the prevalence of perinatal distress, a notable deficit is highlighted in that most prospective studies to date have assessed distress symptoms at only two to three time-points (e.g., 14–17) with only a few assessing symptoms across four (e.g., 7,18) or five time-points (e.g., 19,20). The majority of these studies have also been focused on the postpartum period, rather than pregnancy. Clearly, such research designs do not allow one to assess which distress symptoms demonstrate the earliest onset; what the specific time points are in which the symptoms are escalating; and ultimately at what time-points health professionals may consider intervening in an effort to deliver the most effective treatment plan.

Research has also shown that anxiety symptoms may be more common in perinatal depression in comparison to non-perinatal depression.^{15,21} In light of these findings, it has been argued that there is a need to abandon dichotomous classification systems and to discriminate other affective states in the perinatal period, such as perinatal stress^{22,23}; which has been shown to be present during the first postpartum year and thus may add to the broader and better understanding of perinatal distress.³

Lovibond and Lovibond²⁴ assessed and defined the construct of stress as a measure of persistent, non-specific arousal and tension, with a low threshold for becoming frustrated or upset.^{24,25} It is argued that while some symptoms of stress are associated closely with those of anxiety, the experience of stress as a whole entails a coherent set of symptoms that can be differentiated from depression and anxiety. Thus, the existence of such symptoms as a collective may have important implications for any effort to provide a comprehensive understanding of negative affective states,^{24,25} and may also be a term that is more readily accepted and associated with less stigma by the wider community. To our knowledge, the point prevalence of stress, with a validated measure that differentiates stress from anxiety and depression during pregnancy, has not been investigated. Past research has indicated that multi-dimensional screening tools such as the Depression Anxiety and Stress Scales (DASS) may be particularly useful, as they allow clinicians to screen for not only depression, as is the case with commonly used instruments such as the Edinburgh Postnatal Depression Scale,²⁶ but also anxiety and stress symptoms within the one brief measure.³

The findings of recent studies also indicate that a cycle of co-morbidity exists between depression and anxiety, whereby initial levels of depressive symptoms in pregnancy lead to higher levels of anxiety in late pregnancy, which in turn predict higher depressive symptoms in the postnatal period.^{27,28} A better understanding of these relationships may elucidate the mechanisms that underpin depression and anxiety in the perinatal period. In turn, this understanding may assist in designing interventions to reduce their incidence, subsequent effects and treatment costs. Whether a similar cycle of co-morbidity exists between stress and depression, and stress and anxiety has not been explored to date.

The overall aim of this study was twofold: (1) to examine the trajectory of depression, anxiety and stress symptoms throughout pregnancy on a monthly basis; and (2) to investigate the prospective relationships between depression, anxiety and stress through pregnancy. The impact of social support and sleep quality during early, mid and late pregnancy, were co-varied in the latter analyses, given that they have been shown to be associated with depressive symptoms during the antenatal period.^{29–31}

2. Methods

2.1. Participants

Two hundred and fourteen women were recruited as part of a prospective study. The women were recruited at 10–16 weeks gestation via pregnancy and birth magazines, online forums for expectant and new parents, as well as via word of mouth and community advertising, from various states of Australia. Characteristics of the participant sample are shown in Table 1.

2.2. Measures

Demographics Questionnaire. The Demographics Questionnaire obtained information regarding age, weight, annual household income, parity status, employment and marital status, as well as information regarding current health and exercise behaviours.

Perinatal anxiety and stress. Perinatal anxiety and stress were assessed using the Anxiety and Stress subscales from the Depression, Anxiety and Stress Scales–short form.²⁴ The DASS-21 is a self-report scale with 7 items in each category of Depression, Anxiety and Stress symptoms, thus the 7 anxiety and 7 stress items were used in the present study. Responses are scored on a 4-point Likert scale ranging from 0 to 3, with elevated scores indicating higher levels of anxiety and stress.

The DASS-21 is a widely used, standardised instrument found to reliably distinguish between the symptoms of depression, anxiety and stress in clinical as well as non-clinical samples,^{32,33} and has demonstrated strong reliability and validity with Cronbach's alpha .87 and .91 for anxiety and stress respectively.³⁴ In the current study alpha coefficients ranged from: .64 to .74 for the Anxiety subscale, and .75 to .83 for the Stress subscale.

Perinatal depression. The Edinburgh Postnatal Depression Scale was used to assess the levels of depressive symptomatology.²⁶ The EPDS is a 10-item self report scale which assesses depressive symptoms experienced within the previous week. Responses to statements are scored on a 4-point Likert scale ranging from 0 to 3, with higher scores indicative of greater intensity of depressive

Table 1

Participant characteristics at initial study time-point (16 weeks gestation); $n = 214$.

Age, $M (SD)$	30.67 (4.29)
Range	19–44 years
Relationship status, $n (%)$	
Married	161 (75.2%)
De Facto	49 (23.0%)
Single	3 (1.4%)
Did not respond	1 (0.4%)
Parity status, $n (%)$	
Primiparous	122 (57%)
Multiparous	92 (43%)
Born in Australia, $n (%)$	180 (84.1%)
Education, $n (%)$	
Did not complete high school	6 (2.8%)
Completed high school	19 (8.9%)
Diploma/certificate level	60 (28%)
Bachelor degree	93 (43.5%)
Postgraduate degree	36 (16.8%)
Engaged in paid employment, $n (%)$	170 (79.4%)
Working full-time	105 (49%)
Annual family income bracket (\$AUD) $n (%)$	
\$105,001 or more	136 (63.9%)
\$65,001–105,000	51 (23.9%)
\$65,000 or less	26 (11.8%)
Did not respond	1 (0.4%)

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