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Associations between maternal characteristics and pregnancy-related stress among low-risk mothers: An observational cross-sectional study

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ABSTRACT

Background: Pregnancy is viewed as a major life event and, while the majority of healthy, low-risk women adapt well to pregnancy, there are those whose levels of stress are heightened by the experience.
Objectives: To determine the level of pregnancy-related stress experienced by a group of healthy, low-risk pregnant women and to relate the level of stress with a number of maternal characteristics.
Design: An observational cross-sectional study.
Setting: A large, urban maternity centre in Northern Ireland.
Participants: Of the 306 pregnant women who were invited to participate, 278 provided informed consent and were administered one self-complete questionnaire. Due to the withdrawal criteria, 15 questionnaires were removed from the analysis, resulting in a final sample of 263 healthy, low-risk pregnant women.
Methods: Levels of stress were measured using a self-report measure designed to assess specific worries and concerns relating to pregnancy. Maternal characteristics collected included age, marital status, social status, parity, obstetric history, perceived health status and 'wantedness' for the pregnancy. Regression analysis was undertaken using an ordinary linear regression model.
Results: The mean prenatal distress score in the sample was 15.1 (SD = 7.4; range 0–46). The regression model showed that women who had had previous pregnancies, with or without complications, had significantly lower mean prenatal distress scores than primiparous women ($p < 0.01$). Women reporting poorer physical health had higher mean prenatal distress scores than those who reported at least average health, while women aged 16–20 experienced a mean increase in the reported prenatal distress score ($p < 0.05$) in comparison to the reference group of 36 years and over.
Conclusions: This study brings to light the prevalence of pregnancy-related stress within a sample representative of healthy, low-risk women. Current antenatal care is ill-equipped to identify women suffering from high levels of stress; yet a growing body of research evidence links stress with adverse pregnancy outcomes. This study emphasises that healthy, low-risk women experience a range of pregnancy-related stress and identification of stress levels, either through the use of a simple stress measurement tool or through the associated factors identified within this research study, provides valuable data on maternal well-being.

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What is already known about the topic?

- Research suggests that approximately 25% of women report emotional distress during the antenatal period.
- There is a consistent association between stress and adverse pregnancy outcome.
- Maternal stress levels are not measured under the current system of routine antenatal care in most countries.

What this paper adds

- This study demonstrates relationships between pregnancy-related stress and maternal age, parity, obstetric history and self-reported health status in a group of healthy, low-risk pregnant women.
- This study suggests that, in the absence of stress measurement in routine antenatal care, these factors could help identify subgroups of women who would benefit from additional support and reassurance from health professionals.

1. Introduction

Pregnancy is viewed as a major life event and, while the majority of women adapt well to the physiological changes associated with pregnancy and report no psychological complications (Lobel, 1998), there are those individuals whose levels of stress are heightened by the experience regardless of their clinical risk status. Yali and Lobel (1999) suggested that approximately 25% of women report emotional distress during the antenatal period. Pregnancy-related stress differs from general stress in that it is related specifically to events or occurrences experienced by women during pregnancy (Mulder et al., 2002). These include physical/physiological changes, changes in interpersonal relationships, concerns about labour and delivery, concerns about the health of the unborn baby and parenting concerns (Stanton et al., 2002). Lobel et al. (2008) provided evidence to demonstrate that pregnancy-related stress was a better predictor of adverse birth outcomes, including preterm delivery, than a number of other measures, including anxiety state, perceived stress and life event stress. This supported previous findings by Dole et al. (2003), Huizink et al. (2004) and O'Connor et al. (2002) and recommendations by Da Costa et al. (1999), Gennaro and Hennessy (2003) and Yali and Lobel (2002).

A number of studies have provided consistent evidence that increased pregnancy-related stress is associated with adverse birth outcomes (Alderdice and Lynn, 2009; Latendresse, 2009). Glynn et al. (2008), Copper et al. (1996) and Sandman et al. (1994) reported a direct link between stress specific to pregnancy and spontaneous preterm birth. In addition, pregnancy-related stress has been associated with intrauterine growth restriction (Cliver et al., 1992), low birth weight (Rice et al., 2010; Copper et al., 1996), abnormal fetal heart rate patterns (Monk et al., 2000) and increased fetal morbidity (Rossi et al., 1989; Groome et al., 1995; Zuckerman et al., 1990). Even with the finite timeline of pregnancy, prenatal maternal stress has been shown to have lasting adverse effects for both the mother and child, including postnatal depression (Da Costa et al., 2000), adverse infant temperament (Austin, 2004; Van den Bergh, 1990) and lower mental development of the infant (Brouwers et al., 2001). These findings have been confirmed irrespective of the risk status of the mother.

In the UK, approximately 80% of pregnancies are considered to be 'low-risk' by clinicians during the antenatal period (McKenna et al., 2003). Low-risk pregnancies are classified by The National Institute of Health and Clinical Excellence (NICE), through the absence of a number of risk factors relating to obstetric history, maternal health issues and issues that may arise during the course of pregnancy (National Collaborating Centre for Women's and Children's Health, 2008). This guidance, which provides recommendations for the provision of routine antenatal services for health authorities within the UK and beyond, recommends that women considered to be at low-risk receive routine antenatal care. Routine care does not include any form of assessment of maternal stress levels during the antenatal period. It is therefore unlikely that women, who are experiencing higher than average levels of stress, and subsequently at risk of developing complications, will be identified under the system of routine antenatal care currently in place. This was a concern recently highlighted by Furber et al. (2009), who reported on the debilitating effect that even mild to moderate levels of stress can have on women during the pregnancy period.

In the absence of an accepted tool to assess maternal mental health and well-being, the identification of maternal factors associated with higher levels of stress might be used as a proxy to recognize subgroups of women who would benefit from additional care and reassurances from health professionals. A number of maternal characteristics have previously been assessed for associations with pregnancy-related stress, including age (Da Costa et al., 1999; Gupton et al., 2001; Yali and Lobel, 1999), previous obstetric complications (Armstrong and Hutti, 1998; Fertl et al., 2009; Franche and Mikail, 1999), parity (Da Costa et al., 1999; Gupton et al., 2001; Yali and Lobel, 2002), socio-economic status (Da Costa et al., 1999; Lobel et al., 2000; Yali and Lobel, 1999, 2002), and marital status (Levin, 1991; Lobel et al., 2000; Gupton et al., 2001). However, the evidence for potential associations has been contradictory and differences in reported findings might be attributed to small sample sizes, lack of clear definitions of maternal characteristics being studied, the type of stress measured, the timing of assessment, the measurement tools employed, or the lack of adjustment for confounding factors.

The aims of the present study were to examine the levels of pregnancy-related stress reported by a group of healthy, low-risk pregnant women and to identify whether there were any associations with maternal characteristics. In achieving these aims, particular attention was given to the methodology in order to ensure the provision of reliable results. This included an appropriate sample size, the use of standardised and validated measures, a review of the type of stress measured, an assessment of suitable tools to assess pregnancy-related stress with consideration of the timing of assessment, and the employment of appropriate statistical methods to address the issue of confounders.