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Longitudinal study of perinatal maternal stress, depressive symptoms and anxiety

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ABSTRACT

Objectives: to understand the trends in, and relationships between, maternal stress, depressive symptoms and anxiety in pregnancy and post partum.

Design: a prospective longitudinal survey study was undertaken to explore maternal psychological distress throughout the perinatal period. The participants were recruited after 24 completed weeks of gestation, and were followed-up monthly until one month post partum (four surveys in total).

Setting: participants were recruited from a single hospital in southern Taiwan, and asked to complete questionnaires in the hospital waiting area.

Participants: inclusion criteria were: age ≥ 18 years, able to read and write Chinese, ≥ 24 weeks of gestation, singleton pregnancy and no pregnancy complications (including a diagnosis of antenatal depression or anxiety disorder). In total, 197 women completed all four surveys (response rate 74.62%).

Measurements and findings: stress was measured with the 10-item Perceived Stress Scale, depressive symptoms were measured with the Center for Epidemiologic Studies' Depression scale, and anxiety was measured with the Zung Self-reported Anxiety Scale. Participants were followed-up at four time points: T1 (25–29 gestational weeks), T2 (30–34 gestational weeks), T3 (> 34 gestational weeks) and T4 (4–6 weeks post partum). Appointments for data collection were made in accordance with the participants' antenatal and postnatal check-ups. The three types of maternal distress had different courses of change throughout the perinatal period, as levels of depressive symptoms remained unchanged, anxiety levels increased as gestation advanced but declined after birth, and stress decreased gradually during pregnancy but returned to the T1 level after birth. There was a low to high degree of correlation in maternal stress, depressive symptoms and anxiety in pregnancy and post partum.

Key conclusions: around one-quarter of the study participants had depressive symptoms during pregnancy and post partum. Stress and anxiety showed opposing courses during the perinatal period. Regardless of the trend, maternal mental distress returned to the T1 level after birth.

Implications for practice: effective survey questionnaires are suggested for use as primary screening for possible psychological distress among pregnant and post partum women. It is suggested that health care professionals involved in obstetrics and midwifery should pay attention to the psychological needs of pre- and postnatal women, provide women with sufficient information about their mental well-being, and make appropriate and timely referrals to psychiatric or psychological care.

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Introduction

Perinatal maternal mental health has gained increasing attention because certain forms of psychological distress experienced by pregnant or post partum women not only have an immediate impact on birth outcomes, but also have long-term effects on the

health of mothers, infants/children and the whole family (Dunkel Schetter and Tanner, 2012). The most common types of perinatal maternal mental distress investigated and discussed in the published literature are depression/anxiety and stress in daily life (Dipietro et al., 2008; Dunkel Schetter and Tanner, 2012).

Maternal depression or anxiety alone during the perinatal period has been found to be related to adverse outcomes, such as excessive activity or growth delay (fetuses); preterm childbirth; low birth weight, disorganised sleep or less responsive to stimuli (newborns); underweight, growth delay, negative affection or poor mother–infant relationship (infants); attention deficiency,

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emotional instability or behavioural problems (children/adolescents); decreased likelihood for new mothers to breast feed; and parental stress after childbirth (Britton, 2007; Marina et al., 2008; Van den Bergh et al., 2008; Tronick and Reck, 2009; Field, 2010; Grote et al., 2010; Misri et al., 2010; Thompson and Fox, 2010; Insaf et al., 2011). Previous research has suggested that the incidence of prematurity is higher in the offspring of women with comorbid depression and anxiety compared with the offspring of women with depression or anxiety alone (Field et al., 2010). In addition, the maternal perception of stress has been found to be related to pregnancy complications and paediatric health, such as decreased likelihood of breast feeding, post partum depression, preterm childbirth, caesarean section, separation anxiety disorder, attention deficit-hyperactivity disorder and conduct disorders in children (Abeyseena et al., 2010; Martini et al., 2010; Chuang et al., 2011; Insaf et al., 2011; Roy-Matton et al., 2011; Tegethoff et al., 2011).

The adverse effects of psychological distress during pregnancy and post partum have been validated, but the changing courses and relationships of perinatal maternal mental distress are rarely discussed. By depicting the trends in, and relationships between, types of maternal mental distress throughout the perinatal period, suitable preventive or treatment interventions can be adopted at the right time to ameliorate or alleviate the seriousness of distress for women during pregnancy and post partum. Longitudinal studies have been conducted to understand the changing courses of perceived stress, depression and anxiety from pregnancy to post partum, but they have either focused on depression alone (Evans et al., 2007; Lee et al., 2007; Mora et al., 2008; Lau et al., 2010; Bowen et al., 2012; Melo et al., 2012) or solely on the period of pregnancy (Parcells, 2010). Very few studies have explored the trends in, and relationships between, stress, depressive symptoms and anxiety throughout the perinatal period (Dipietro et al., 2008). The present study was undertaken to investigate maternal stress, depression and anxiety from pregnancy to post partum, guided by the following research questions: (1) What are the trends in maternal perceived stress, depressive symptoms and anxiety from pregnancy to post partum? (2) What are the relationships between maternal perceived stress, depressive symptoms and anxiety from pregnancy to post partum?

Methods

Design

This prospective, longitudinal study explored maternal psychological distress from pregnancy to post partum. The participants were recruited after they reached 24 completed weeks of gestation, and were followed-up monthly until one month post partum (four surveys in total).

Setting

Participants were recruited from a single hospital in southern Taiwan. Participants were asked to complete the questionnaires in the hospital waiting area.

Sampling

The inclusion criteria were: age ≥ 18 years, able to read and write Chinese, ≥ 24 weeks of gestation, singleton pregnancy and no pregnancy complications (including a diagnosis of antenatal depression or anxiety disorder). Initially, a pilot study with a sample size of 130 was conducted. The pilot study found correlation coefficients between stress, depressive symptoms and anxiety

of $r = -0.45$ to 0.66 ; as such, the G*Power statistical power analysis program indicated that 44 participants were needed for power of 90%. It was anticipated that this study might have a high attrition rate due to its longitudinal design (Gustavson et al., 2012); therefore, as many pregnant women as possible were recruited between February 2010 and October 2011.

Initially, 264 pregnant women were approached, and 56 declined to participate in the study. As such, 208 participants completed the first survey (T1: 25–29 gestational weeks). Eleven pregnant women dropped out after completing the second survey (T2: 30–34 gestational weeks), but 197 women completed the study, reflecting a response rate of 74.62%. One pregnant woman did not complete the T2 survey and three did not complete the T3 survey (> 34 gestational weeks) due to preterm birth; therefore, 196 and 194 questionnaires were analysed for T2 and T3, respectively. There were no differences in demographic variables, including age, marital status, parity, educational level, employment and planned pregnancy, between women who dropped out and women who remained in the study. A trained research assistant approached potential participants awaiting antenatal check-ups in the waiting area. Women decided if they wished to participate following an explanation of the purpose of the study and their rights. The participants were encouraged but not obligated to complete the study.

As shown in Table 1, the mean age of the participants was 29.71 years, and the mean gestational age at T1 was 27.34 weeks. The majority of the participants were primiparas. Almost all of the participants were married or cohabiting, and most of them had planned their pregnancy. Approximately two-thirds of the

Table 1
Demographic profile of the study participants.

	Mean	SD	Range
Age (years)	29.71	4.42	19–42
Gestational age at T1 (weeks)	27.34	1.08	25–29
Gestational age at T2 (weeks)	31.83	0.80	30–34
Gestational age at T3 (weeks)	35.64	0.73	34–38
Gestational age at birth (weeks)	38.20	1.37	32–41
Infant birth weight	3028.12	341.43	1820–3940
	n	%	
Parity			
Primipara	111	56.3	
Multipara	86	43.7	
Marriage			
Married/cohabiting	195	99.0	
Not married	2	1.0	
Planned pregnancy			
Yes	101	51.3	
No	96	48.7	
Education			
Less than college	63	32.0	
College or higher	134	68.0	
Employment			
Employed	118	59.9	
Unemployed	79	40.1	
Maternal leave			
Paid leave	159	80.5	
Non-paid leave	35	17.8	
No leave	3	1.7	
Birth method			
Vaginal childbirth	143	72.6	
Caesarean section	54	27.4	
Low-birthweight infant (< 2500 g)	11	5.6	

T1, 25–29 gestational weeks; T2, 30–34 gestational weeks; T3, > 34 gestational weeks; T4, 4–6 weeks post partum; SD, standard deviation.

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