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## Original Research

## Maternal depression is not just a problem early on

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## ABSTRACT

**Introduction:** Little is known about the onset of depression beyond the first postpartum year. This study examines the onset and course of depression over an 18 month period among a socio-economically diverse, community-wide sample of women.

**Materials & methods:** A prospective longitudinal telephone survey of 249 women was conducted at two weeks, two months, six months and 18 months after delivery. Depression was measured using the Edinburgh Postnatal Depression Scale (EPDS), and onset was defined as the first EPDS score of 12+ on the 30-point scale. Temporal trends were assessed using generalized estimating equation (GEE) regression.

**Results:** There was a significant temporal trend for EPDS scores decreasing until six months and then rebounding at 18 months; mean EPDS 5.5, 4.3, 4.2, and 4.9 at two weeks, two months, six months and 18 months respectively, GEE,  $P < .001$ . Depression onset followed a similar trend and was found to be 6.8%, 2.6%, 2.7% and 6.0% at two weeks, two months, six months and 18 months respectively, GEE,  $P = .068$ . The high scores of the early-onset group (mean 14.4 at two weeks) contributed to the early depression spike, while the high scores of the late-onset group (mean 13.9 at 18 months) contributed to the late spike.

**Conclusions:** Two peaks of depression were identified, one early and one late. They appear to be the result of two processes: (1) elevated depression symptoms at two-weeks and again at 18 months postpartum experienced by the full sample and, thus, they may be a normal trend, and (2) onset of major depression by two sub-groups of women, one at each time period. Therefore, continued screening after one-year post delivery is indicated.

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## Introduction

Maternal depression during the first months and years of a child's life can pose significant risk by interrupting: maternal self-care, maternal-infant bonding, and infant development.<sup>1–4</sup> These consequences may reach far into the future, with adverse effects upon both mother and infant—for mother, depression may develop into a chronic condition and; for infant, the detrimental cognitive and behavioral impacts of interrupted maternal-infant bonding that can accompany maternal depression.<sup>5–8</sup> Depression screening within health care settings, coupled with treatment (psychotropic medication, counselling or social support) have shown to be effective in reducing maternal depression.<sup>9–12</sup>

To identify maternal depression as early as possible, focus has been directed at the prenatal and early postpartum periods.<sup>13–15</sup> Epidemiologic documentation of increased depression onset during the first postpartum months has further focused these efforts: as many as 7.1% of women experience depression during the first two to three months after delivery, a rate of onset three times higher than at any other time during a woman's life.<sup>10,16,17</sup> Together, these factors have served to concentrate depression screening in the first postpartum months and, within the US, to locate health care interventions for maternal depression within obstetric practices, despite a growing body of evidence that depression also develops throughout the first year (often referred to as 'perinatal depression') and into the toddler years (termed 'maternal depression').<sup>18–20</sup>

While depression has been documented in women beyond the early postpartum period and well into early childhood, many of the earlier studies were limited by a narrow focus upon a specific sub-population (adolescents, poor urban women) and a failure to differentiate new incidents from ongoing depression.<sup>21–24</sup> More recent studies have explicitly addressed these issues, examining new onset maternal depression among diverse populations drawn from pediatric and family practice settings.<sup>25,26</sup> Gjerding et al. (2011) and Yawn et al. (2015) both reported early postpartum peaks in depression, but found different longitudinal trends. Results from Gjerding et al. (2011)'s study suggested a U-shaped trend, with a high of 12.5% point prevalence at zero to one month, lowering to 7.1% at two months, 7.0% at four months, and 5.0% at six months, before rising again to 10.2% at nine months. New onset cases, women who were not depressed at zero to one month, but screened depressed at one or more of the subsequent surveys, was 5.7% over the full follow-up period. In contrast, Yawn et al. (2015), with a later postpartum baseline (one to three months postpartum) and higher initial prevalence (20.5%), reported a downward trend, with 10.9% new onset cases at six months postpartum, and only 2.6% new onset screenings at twelve months postpartum.

The question of when, over the first months and years after delivery, women first experience depression has important implications for the locus of screening and treatment, especially given the heightened vulnerability of both mother and infant to the consequences of untreated depression during this time. Studies of screening within pediatric clinics, while promising, have not been widely adopted due to limited

resources, lack of training, and an assumption that maternal depression is being captured early, within the postpartum visit.<sup>18–20</sup> The current study adds to this literature by tracking depression symptoms among a community-wide sample of women over an 18 month period to identify patterns of maternal depression prevalence, incidence, and onset, with a specific focus on comparing the characteristics of early (within the first two months) and late (six to 18 months) onset.

## Material and methods

### Design

This was a prospective longitudinal telephone survey study of depression in women associated with childbearing and mothering. Prior studies have variously examined this by prenatal period (trimester of pregnancy), postpartum/postnatal period (two to twelve months after delivery), perinatal period (pregnancy through twelve months after delivery) or early childhood (from one to four years after delivery).<sup>10,27–29</sup>

The current study focused on depression experienced by women across the postpartum period and into early childhood, using the broader term 'maternal depression,' and surveying participants at the following four points in time after delivery: two weeks, two months, six months, and 18 months. Survey timing corresponded with the following clinical and epidemiological parameters of maternal depression. The two week and two month surveys lined up with medical diagnostic criteria of postpartum depression, defined by DSM IV-V/ICD 9-10 as onset within the first four weeks after delivery, and duration of two or more weeks, with clinical recommendations for screening and identification at the six-to-eight week postpartum visit.<sup>30–33</sup> The six month survey aligned with the six-month recommended well-child pediatric visit, and is the period recommended by advocates be adopted for DSM (Diagnostic and Statistical Manual of Mental Disorders) criterion.<sup>27,33</sup> Likewise the 18 month survey coincided with a recommended well-child visit, and was intended to capture depression that was emerging with toddlerhood but was beyond the traditional twelve-month postpartum-depression timeframe.<sup>16,25–29</sup>

### Study setting

The study was conducted in Kalamazoo County in Southwest Michigan, containing two urban areas and many surrounding rural communities, and whose maternal-infant birth characteristics reflect the national profile on maternal race (76.3% births to white women [county] compared to 76.8% [national]), adolescence (9.6% births to adolescent women [county] compared to 10.0% [national]), and marital status (41.5% births to unmarried women [county] compared to 41.0% [national]).<sup>34</sup> As across the US, maternal depression screening occurs primarily within perinatal practices, is completed using a validated screener (such as the Edinburgh Postnatal Depression Scale), typically at the first prenatal visit and at the six-to-eight week postpartum visit.<sup>35</sup> Thereafter, annual well-women preventive care visits are recommended, can be performed by

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