# The Association Between Maternal Age and Depression

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#### **Abstract**

**Objective:** Postpartum depression is a relatively common and potentially debilitating condition but its relationship with advanced maternal age has not been adequately studied. We evaluated the relationship between age and depression in a population-based sample of Canadian women.

Methods: Data on women aged 20 to 44 years were obtained from the Canadian Community Health Survey, 2007 to 2008. Depression was defined using the Short-Form score from the Composite International Diagnostic Interview (depression defined as a score of ≥ 5). Women were stratified according to whether they had a live birth within five years preceding the interview. Logistic regression was used to compare the prevalence of depression among women of advanced maternal age versus younger women after adjusting for education, marital status, and chronic disease.

Results: Among women who had delivered recently, 8.0% (207 of 2326) were depressed compared with 10% (597 of 5610) of women who had not recently delivered. The prevalence of depression in women who had recently delivered was significantly higher in women aged 40 to 44 years than in women aged 30 to 35 years (adjusted OR 3.72; 95% CI 2.15 to 6.41). Depression rates were not higher among older women who had not had a recent delivery (adjusted OR among women 40 to 44 years 0.75; 95% CI 0.56 to 1.01).

**Conclusion:** Women of advanced maternal age have significantly higher rates of depression than younger women. Research is required to determine if a program of targeted depression screening and prevention will help reduce the burden of illness among older mothers.

**Key Words:** Advanced maternal age, depression, maternal depression, postpartum depression, reproductive mental health, psychological effects of childbirth

Competing Interests: None declared. Received on February 5, 2014 Accepted on April 17, 2014

## Résumé

Objectif: La dépression postpartum est un trouble relativement courant et potentiellement débilitant. Toutefois, son lien avec l'âge maternel avancé n'a pas été examiné de manière adéquate. Nous avons évalué le lien qui existe entre l'âge et la dépression au sein d'un échantillon fondé sur une population de Canadiennes.

Méthodes: Nous avons obtenu des données portant sur des femmes âgées de 20 à 44 ans à partir de l'Enquête sur la santé dans les collectivités canadiennes (2007 à 2008). La définition de la dépression a été établie à l'aide de la cote du *Short-Form Health Survey* de la *Composite International Diagnostic Interview* (une cote ≥ 5 indique qu'il y a présence de dépression). Les femmes ont été réparties en fonction de la présence ou de l'absence d'une naissance vivante au cours des cinq années ayant précédé l'entrevue. Une régression logistique a été utilisée pour comparer la prévalence de la dépression chez les femmes d'âge maternel avancé et chez les femmes plus jeunes, à la suite de la neutralisation de l'effet du niveau de scolarité, de l'état civil et de la présence d'une maladie chronique.

Résultats: Huit pour cent des femmes qui avaient accouché récemment (207 participantes sur 2 326) étaient déprimées, par comparaison avec 10 % (597 participantes sur 5 610) des femmes qui n'avaient pas accouché récemment. La prévalence de la dépression chez les femmes qui avaient récemment accouché était nettement plus élevée chez les femmes âgées de 40 à 44 ans que chez les femmes âgées de 30 à 35 ans (RC corrigé, 3,72; IC à 95 %, 2,15 - 6,41). Chez les femmes d'âge plus avancé qui n'avaient pas accouché récemment, les taux de dépression n'étaient pas plus élevés (RC corrigé chez les femmes âgées de 40 à 44 ans, 0,75; IC à 95 %, 0,56 - 1,01).

Conclusion: Les femmes d'âge maternel avancé présentent des taux considérablement plus élevés de dépression que les femmes moins âgées. Des recherches plus poussées sont nécessaires en vue de déterminer si un programme ciblé de dépistage et de prévention de la dépression peut permettre de réduire le fardeau de la maladie chez les mères d'âge plus avancé.

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#### INTRODUCTION

The frequency of women giving birth at advanced  $\bot$  maternal age ( $\ge 35$  years) has been on the rise in most high-income countries over the last 30 years. 1-3 In Canada. between 1995 and 2009, the number of live births per 1000 women aged 35 to 39 years increased by 81% (from 28.0 to 50.6 per 1000 females). Increasing maternal age has become an issue of public health concern because women of advanced maternal age experience higher rates of pregnancy complications, obstetrical intervention, and severe maternal morbidity than younger mothers.<sup>2,5–7</sup> Numerous studies have demonstrated associations between AMA and chromosomal abnormalities, gestational diabetes, multiple births, Caesarean section, preterm birth, low birth weight, and perinatal death.<sup>5,7–11</sup> However, despite the abundance of research aimed at understanding the physiological effects of AMA, few studies have comprehensively examined postnatal depression and the psychological experiences of older mothers. The importance of postpartum depression is underscored by its frequency (10% to 15% of women experience depression after childbirth) and its debilitating effects on the mother and the infant.12

The anxiety-provoking "high risk" context of pregnancy in women of AMA and the frequency of medical complications have been suggested as reasons to expect higher rates of depression among older mothers.<sup>13</sup> On the other hand, the higher and more stable socioeconomic status that often characterizes women of AMA<sup>6,14</sup> could confer psychological benefits.<sup>14</sup> Previous studies on depression in older mothers have yielded mixed results, with some finding negative associations between maternal age and depression, 15-18 others observing no differences between age groups,19 and yet others showing higher rates of depression in women of AMA.<sup>20–22</sup> In addition, a few studies have examined the effects of childbearing on depression by contrasting postpartum women with those who had not recently delivered. <sup>23–26</sup> However, none of these studies have simultaneously compared the effect of age on depression in women who had recently delivered and in women who had not recently experienced childbirth.

We carried out a population-based study on the effect of age on depression with the objective of comparing the prevalence of depression among younger and older women who either had or had not recently given birth.

#### **ABBREVIATIONS**

AMA advanced maternal age aOR adjusted odds ratio

CIDI-SF Composite International Diagnostic Interview—Short Form

#### **METHODS**

Data for this study were obtained from the Canadian Community Health Survey, 2007 to 2008. This is a nationally representative cross-sectional study that collects data on health status, health care use, and determinants of health on an ongoing basis. The target population included individuals aged 12 years and older living in private dwellings in Canada's 10 provinces and three territories. Individuals were excluded if they lived in institutions, on First Nations reserves, on government-owned land, or in very remote regions. The survey represented approximately 98% of the Canadian population aged 12 and over.<sup>20</sup> It employed a multistage sampling strategy to select households randomly. Approximately one half of the interviews were conducted in person using computer-assisted personal interviews, while the other half were conducted by telephone using computer-assisted telephone interviews. Further details on the methodology of the Canadian Community Health Survey are reported elsewhere.<sup>27</sup>

Our study was restricted to women aged 20 to 44 years and was stratified by the experience of recent childbirth based on the response to the question "Have you given birth in the past five years (not including stillbirths)?" The study population was further restricted to women from the six provinces that included the optional depression module in the 2007 to 2008 Canadian Community Health Survey (Nova Scotia, New Brunswick, Quebec, Alberta, Yukon, and Nunavut). Respondents with incomplete information were excluded (n = 42). Our final study population included 7936 women; of these, 2326 had given birth in the last five years, and 5610 had not (subsequently referred to as the "recent birth group" and the "no recent birth group," respectively).

Age was classified into five-year categories (20 to 24, 25 to 29, 30 to 34, 35 to 39, and 40 to 44 years). The age category 30 to 34 years was used as the reference group since previous research has suggested that rates of depression are lowest at approximately age 30.20 Because the survey question asked women if they had given birth in the last five years, women in the 30 to 34 years of age category in the recent birth group could have delivered a live baby at any time between the ages of 25 and 34. Similarly, women in the 40 to 44 years of age group could have had a live birth at any time between the ages of 35 and 44. Thus, the age group that corresponded to women of AMA was the group aged 40 to 44 in the "recent birth group." The 35 to 39 years of age group contained some women aged ≥ 35 at delivery, but also included women aged 30 to 34.

Data on the prevalence of depression were collected using a short-form scale of items from the Composite

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