Marital Status, Duration of Cohabitation, and Psychosocial Well-Being Among Childbearing Women: A Canadian Nationwide Survey

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Objectives. We examined the joint associations of marital status and duration of cohabitation on self-reported intimate partner violence, substance use, and postpartum depression among childbearing women.

Methods. We analyzed data from the 2006–2007 Canadian Maternity Experiences Survey, a cross-sectional nationwide sample of 6421 childbearing women. Cohabiting women were married or nonmarried women living with a partner; noncohabiters were single, divorced, or separated women. We further categorized cohabiters by their duration of cohabitation (≤ 2, 3–5, or > 5 years). We used logistic regression to generate adjusted odds ratios and 95% confidence intervals.

Results. About 92% of women were cohabiters. Compared with married women living with a husband more than 5 years, unmarried women cohabiting for 2 years or less were at higher odds of intimate partner violence (adjusted odds ratio [AOR] = 4.64; 95% confidence interval [CI] = 2.85, 7.56), substance use (AOR = 5.36; 95% CI = 3.06, 9.39), and postpartum depression (AOR = 1.87; 95% CI = 1.25, 2.80); these risk estimates declined with duration of cohabitation.

Conclusions. Research on maternal and child health would benefit from distinguishing between married and unmarried cohabiting women, and their duration of cohabitation. (*Am J Public Health.* 2013;103:e8–e15. doi:10.2105/AJPH.2012.301116)

Since the mid-20th century, births to unmarried women have been steadily increasing. In recent years, in several European countries, births out of wedlock outnumbered those of married couples.[1] The prevalence of such births in Canada increased from 9% in 1971 to 30% in 2006[2,3]; in the United States, it reached 40% by 2007.[4] These trends reflect a decline in the rate of marriage and the emergence of nonmarital cohabitation as a popular living arrangement.[5]

As marital status has evolved, its categorization for the purposes of administration data collection or health research has not kept pace, so that it is still unclear about how marital status relates to maternal well-being and reproductive outcomes. It is known that infants of unmarried women fare worse than those of married women in terms of low birth weight, preterm birth, and infant mortality.[6–8] When unmarried women are distinguished by whether or not they have a regular partner, a gradient of increased risk of adverse outcomes has been observed for married mothers, unmarried mothers with a partner, and unmarried mothers without a partner.[7–11] Further distinctions have been hampered by the lack of fine categorizations of these relationships. For example, it is unclear whether indicators of health and well-being among women without partners differ between never-married single mothers and those who experience divorce or separation. Among childbearing women with partners, it is not known whether indicators of health and well-being are affected by duration of cohabitation, which is deemed to reflect the commitment to, and stability of, a couple's relationship,[12] and whether the association of duration of cohabitation and maternal well-being, if any, is different between married and cohabiting women.

To advance knowledge on these issues, we used a rich data set from a national survey of Canadian childbearing women and evaluated marital status, cohabitation status, and duration of cohabitation and their interplay with selected psychosocial problems around the time of pregnancy (i.e., right before pregnancy, during pregnancy, and shortly after delivery) known to be associated with marital status, such as intimate partner violence, substance use, and postpartum depression.[13–16] On the basis of previous reports suggesting potential heterogeneity of risk of adverse outcomes within marital status groups,[7,11,12] we hypothesized that a finer categorization of childbearing women's relationship with their partners, one that distinguished marital and cohabitation status and its duration, would reveal differences in indicators of maternal psychosocial well-being beyond those observed according to marital status alone.

Violence against women is a worldwide problem,[16,17] and intimate partner violence around the time of pregnancy may hinder health care utilization and have negative physical and mental health consequences for both the mother and the infant.[16–18] Substance use (street drugs, tobacco, and alcohol) during pregnancy is associated with maternal complications, impaired fetal growth, and behavioral and cognitive problems in childhood.[19,20] Postpartum depression may impair the ability of women to take care of themselves and affect attachment and communication with their children, resulting in negative effects on infant social, emotional, and cognitive development.[21–23]

As these 3 psychosocial outcomes have important interpersonal components, they are intimately connected with marital status and marital transitions.[24–26] In some cases, marital status may influence the likelihood of these outcomes via unintended pregnancy and partner support.[24,27] In many cases, a woman's childbearing desires may differ from those of her partner,[27] and a partner's disagreement with the current pregnancy may be an

indicator of poor relationship quality and a predictor of poor maternal well-being.[24,27,28] However, it is also true that psychosocial problems may trigger changes in marital status, as in the case of separation or divorce following partner abuse,[29] or when a woman's poor health causes her to be rejected by her partner.[25] Pregnancy is a critical period for maternal well-being, and couples' arrangements and the assessment of associations of psychosocial problems around the time of pregnancy with more detailed categorizations of unions is likely to improve our ability to discriminate who is at risk and who is not.

METHODS

The Maternity Experiences Survey (MES) was a population-based cross-sectional survey completed by the Public Health Agency of Canada to fill specific knowledge gaps about reproductive health in women. The MES target population comprised biological mothers aged 15 years and older who gave birth to a singleton live-born infant between February 2006 and May 2006. Mothers living in institutions or on First Nations reserves were excluded.[30,31] The survey involved an age- and region-stratified simple random sample, without replacement, using recent births drawn from the 2006 Canadian Census sampling frame to ensure that the sample was representative of the Canadian population. We estimated that 8244 of the 8542 women selected from the frame were eligible on the basis of the target criteria. A total of 6421 women successfully completed the survey questionnaire, for a 78% response rate. Compared with respondents, nonrespondents were more likely to be teenagers or older mothers (≥ 40 years), to speak languages other than English or French, and to live in households with fewer than 2 adults. After we applied the survey weights, which were adjusted for nonresponse, the respondents' maternal characteristics were similar to those in the 2006 census sampling frame. The weighted sample size was representative of 76 500 Canadian women.[31]

About 97% of respondents were interviewed 5 to 9 months postpartum. To include most ethnic groups, the 45-minute computer-assisted telephone interview was conducted by trained female interviewers in English, French, and 13 nonofficial languages. For 30 respondents for whom telephone interviews were not feasible, interviewers administered paper questionnaires in person.[31] Further details of the survey design and methods have been reported elsewhere.[30–33]

We excluded 46 women whose marital status and duration of cohabitation were not known, or who were widowed. Thus, our final sample comprised 6375 women (99.3% of the original sample), representative of 75 960 new mothers in Canada.

Measures

We divided survey respondents into 4 groups: (1) cohabiting and married, (2) cohabiting and unmarried, (3) noncohabiting and single or never married, and (4) noncohabiting and either separated or divorced. The last group was further subdivided into those who became separated or divorced in the year prior to the index delivery and those who became separated or divorced at an earlier date. Further subdivisions were not possible because of small sample sizes. The referent was women who were both married and cohabiting. We further categorized cohabiting women by their duration of cohabitation (short, ≤ 2 years; medium, 3–5 years; long, > 5 years).

We evaluated 3 psychosocial outcomes assessed in the MES. We defined "intimate partner violence" as an episode in which the partner threatened to, or carried out, an act of harm—physical or sexual—right before, during, or after pregnancy, that is, within a 2-year period preceding the postpartum interview. The MES contained 10 questions to capture abuse and violence; these questions were adapted from the Violence Against Women Survey[34] and are similar in content to those in the Abuse Assessment Screen.[35] The MES assessed "postpartum depression" using the Edinburgh Post-Natal Depression Scale, a 10-item screening tool.[36] A score of 13 or more out of 30 indicates a high probability of postpartum depression at the time of the interview, with a sensitivity of 86% and a specificity of 78%.[37,38] We defined "substance use" as smoking 10 or more cigarettes per day in the last 3 months of pregnancy, consuming 2 or more alcoholic drinks on at least 1 occasion during pregnancy, or using street drugs during pregnancy. Finally, "any psychosocial problem" was a composite outcome defined by the presence of any of the 3 outcomes (intimate partner violence, substance use, or postpartum depression) to broadly reflect maternal psychosocial vulnerability.

Analytic Methods

We used survey weights to account for the unequal probabilities of selection of respondents and to obtain unbiased point estimates representative of most of Canada's childbearing women. We used procedures for the analysis of survey data (SAS version 9.2; SAS Institute Inc, Cary, NC) to obtain weighted means, percentiles, proportions, and odds ratios with 95% confidence intervals, using the Taylor series method of variance estimation.[39]

We used logistic regression analysis to compare the reported study outcomes among the following groups: (1) cohabiting and married (the reference group), (2) cohabiting and unmarried, (3) noncohabiting and single or never married, and (4) noncohabiting and either divorced or separated. In the logistic regression models restricted to cohabiting women, we further subdivided married and unmarried women by duration of cohabitation with their current partner (≤ 2 years, 3–5 years, or > 5 years, with > 5 years serving as the referent). We conducted a test for trend by duration of cohabitation by entering the duration of cohabitation groups as a linear term within each stratum of marital status.

Potential confounders in the logistic regression models included maternal age (quadratic term, in years), parity (primiparous or multiparous), education (less than high school, high school diploma, or a postsecondary or university diploma), household income (below, at, or above the Statistics Canada low-income after-tax cutoff,[40] or unknown), foreign-born status (yes or no), and ethnic or cultural identity (North American, European, non-Western, other). As they may confound or mediate the association between marital status and the study outcomes, we added to the multivariable models 2 survey indicators of the desirability of the current pregnancy: wantedness of the pregnancy (sooner or when it occurred, later or not at all) and partner disagreeing with the pregnancy (yes or no). Since postpartum depression may be preceded by prepregnancy depression, which in turn may affect marital status or living arrangements, we performed a sensitivity analysis wherein we reran the

TABLE 1—Characteristics of a Representative Population of Recent Mothers in Canada, by Cohabitation and Marital Status: The Maternity Experiences Survey, 2006–2007

Characteristic	Cohabiting With Partner (n = 69 610; 96.1%)		Not Cohabiting With Partner (n = 6350; 8.4%)	
	Married (n = 51 220), % or Mean (SD)	Not Married (n = 18 390), % or Mean (SD)	Single, Never Married (n = 4940), % or Mean (SD)	Divorced or Separated (n = 1410), % or Mean (SD)
Women in total sample	67.4	24.2	6.5	1.9
Women within cohabitation group	73.6	26.4	77.8	22.2
Duration of cohabitation with current partner				
Mean, y	6.4 (3.7)	4.3 (3.3)	. . .	. . .
≤ 2 y	13.3	34.6	. . .	. . .
3–5 y	32.1	34.8	. . .	. . .
> 5 y	54.6	30.6	. . .	. . .
Became separated or divorced in the year before baby's birth	. . .	. . .	. . .	43.5
Maternal age at delivery, y	30.7 (4.6)	28.1 (5.3)	24.7 (6.0)	29.6 (6.1)
Primiparous,	42.1	49.5	60.7	29.3
Foreign-born	31.5	6.9	12.3	21.1
Ethnic/cultural identity				
North American	27.3	58.5	25.4	28.6
European	39.2	24.7	36.3	33.1
Non-Western	24.2	8.0	23.3	22.7
Other	9.3	8.8	15.0	15.6
Maternal education				
< high school	4.4	10.8	27.6	14.0
High school diploma	15.7	24.6	34.8	31.9
Postsecondary diploma	37.0	40.0	30.6	42.8
University diploma	42.9	24.6	7.0	11.3
Household income, Can $				
< 20 000	4.6	8.3	44.6	42.1
20 000–49 999	23.6	34.2	23.7	35.1
50 000–79 999	29.3	29.2	9.3	10.3
≥ 80 000	37.6	24.7	3.0	4.2
Unknown	4.9	3.6	19.4	8.3
LICO status				
Below LICO	13.5	19.3	55.1	58.7
At or above LICO	78.8	73.5	22.2	26.6
Unknown	7.7	7.2	22.7	14.7
Prepregnancy depression	13.6	18.0	24.7	19.7
Wantedness of recent pregnancy				
Sooner or when it occurred	79.2	67.3	35.8	47.9
Later	15.3	26.2	43.8	27.8
Not at all	5.5	6.5	20.4	24.3
Partner disagreed with the recent pregnancy	1.7	4.1	22.9	22.8

Note. LICO = low-income after-tax cutoff. All data are presented as a weighted percentage unless otherwise specified.

models for postpartum depression and the composite outcome after excluding women with a history of a diagnosed or treated prepregnancy depression.[33]

RESULTS

Most mothers (91.6%) lived with their partners (Table 1). Three out of 4 noncohabiting women were single and never married. Among women who experienced dissolution of a relationship, 81% were separated and the remainder divorced. About 43% of separated or

TABLE 2—Psychosocial Problems Around the Time of Pregnancy, by Cohabitation and Marital Status: The Maternity Experiences Survey, 2006–2007

Status	Intimate Partner Violence				Substance Use				Postpartum Depression			
	%	OR (95% CI)	AOR (95% CI)[a]	AOR (95% CI)[b]	%	OR (95% CI)	AOR (95% CI)[a]	AOR (95% CI)[b]	%	OR (95% CI)	AOR (95% CI)[a]	AOR (95% CI)[b]	AOR (95% CI)[c]
Cohabiting with partner													
Married (Ref)	2.9	1.0	1.0	1.0	1.7	1.0	1.0	1.0	7.0	1.0	1.0	1.0	1.0
Not married	7.4	2.68 (2.02, 3.55)	2.37 (1.73, 3.24)	2.19 (1.60, 3.01)	8.2	5.26 (3.85, 7.20)	3.26 (2.27, 4.69)	3.22 (2.24, 4.63)	7.2	1.04 (0.81, 1.33)	1.27 (0.97, 1.68)	1.19 (0.90, 1.57)	1.37 (0.97, 1.93)
Not cohabiting with partner													
Single, never married	22.8	9.95 (7.33, 13.50)	5.33 (3.61, 7.85)	3.95 (2.62, 5.95)	11.0	7.27 (4.87, 10.86)	3.13 (1.83, 5.35)	2.64 (1.53, 4.55)	10.9	1.63 (1.17, 2.28)	1.15 (0.76, 1.72)	0.88 (0.57, 1.35)	0.79 (0.45, 1.39)
Divorced or separated	25.9	11.77 (7.27, 19.05)	8.82 (5.10, 15.24)	6.74 (3.77, 12.03)	10.1	6.56 (3.31, 13.00)	3.10 (1.48, 6.49)	2.58 (1.22, 5.45)	17.5	2.83 (1.59, 5.05)	2.01 (1.10, 3.66)	1.54 (0.85, 2.79)	1.67 (0.85, 3.28)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio.
[a]Adjusted for maternal age (years), maternal age (quadratic), parity (primiparous, multiparous), education (< high school, high school diploma, postsecondary diploma, university diploma), household income (below, at, or above Statistics Canada low-income after-tax cutoff, or unknown), foreign-born status (yes, no), and ethnic or cultural identity (North American, European, non-Western, other).
[b]Adjusted for factors enumerated in footnote a, as well as for wantedness of the recent pregnancy (sooner or when it occurred, later, not at all) and partner disagreement with the recent pregnancy (yes, no).
[c]Adjusted for factors enumerated in footnotes a and b, after excluding women with prepregnancy depression.

divorced women became so within the year previous to the index delivery. Among cohabiters, married women had lived with their partner a mean of 2.1 years longer than nonmarried women. Married women were more likely to be foreign-born and to have higher levels of education and income (Table 1). Single women were younger and had lower levels of education and household income. Women not living with a partner exhibited the highest proportion of having an unwanted pregnancy and of the partner disagreeing with the current pregnancy.

The prevalence of adverse outcomes varied according to marital status, with the lowest being among married women (Table 2). In general, adverse outcomes were more frequent among divorced and separated women, followed by single never-married women and then by cohabiting unmarried women. After we took into account potential confounders, these associations remained statistically significant for intimate partner violence and substance abuse but not for postpartum depression, even after we excluded women with a history of depression (Table 2). The prevalence of postpartum depression was virtually the same among cohabiting mothers, but higher among noncohabiting mothers, particularly divorced and separated women, although this excess risk was accounted for by maternal characteristics and mother's wanting the pregnancy and partner's disagreement.

The composite outcome "any psychosocial problem"—defined as any intimate partner violence, substance use, or postpartum depression around the time of pregnancy—also varied considerably by marital status (Table 3). Whereas 1 in 10 married women were affected by at least 1 of the 3 components, women in the other categories of marital status were considerably more likely to be affected. About 2 in 3 new mothers who divorced or separated in the year previous to the baby's birth experienced at least 1 of the outcomes, compared with fewer than a third of those who did not separate or divorce during that period (Table 3). Associations were attenuated by the inclusion of other predictors in the models, and did not substantially change after we excluded women with a history of prepregnancy depression.

Disparities between unmarried and married women became more apparent after they were distinguished according to their duration of cohabitation (Table 4). Among unmarried women, there was a dose–response association between duration of cohabitation and intimate partner violence, substance use, and the composite outcome, even after adjustment for potential confounders. Among married women, postpartum depression and the composite outcome were associated with duration of cohabitation, but these associations did not remain significant after we excluded women with a history of prepregnancy depression. There was little variation in postpartum depression between married and unmarried cohabiting women overall (Table 2) or according to duration of cohabitation (Table 4). Interestingly, women who had cohabited for 2 years or less were significantly more likely to report depression regardless of marital status, although this association remained statistically significant only among unmarried women after we excluded those who had prepregnancy depression (Table 4).

DISCUSSION

Divorced and separated women were more likely to report intimate partner violence, substance use, and postpartum depression, either alone or in combination; single, never-married women were also at higher risk. Shorter duration of cohabitation was also found to be associated with psychosocial problems around the time of pregnancy among unmarried women. These trends were not observed among married women, for whom the protective effect of marriage seemed to operate regardless of the length of cohabitation.

Our findings suggest that classifying women by marital status alone falls short of identifying those at risk for psychosocial problems around the time of pregnancy. First, compared with married women, childbearing women who underwent separation or divorce fared worse than single women who had not formed a union. Childbearing is a time when women may be more likely to make life changes, particularly those who were victims of partner violence.[29] Although the reasons for exiting a union may be reflected in psychosocial stressors such as intimate partner violence or substance use, dissolution of a relationship may precipitate a temporary crisis with

TABLE 3—Occurrence of at Least 1 Psychosocial Problem Around the Time of Pregnancy, by Cohabitation and Marital Status: The Maternity Experiences Survey, 2006–2007

Status	At Least 1 Psychological Problem				
	%	OR (95% CI)	AOR (95% CI)[a]	AOR (95% CI)[b]	AOR (95% CI)[c]
Cohabiting with partner					
Married (Ref)	10.6	1.0	1.0	1.0	1.0
Not married	20.0	2.11 (1.77, 2.50)	2.04 (1.68, 2.48)	1.93 (1.59, 2.35)	2.07 (1.65, 2.60)
Not cohabiting with partner					
Single, never married	35.0	4.55 (3.61, 5.73)	2.57 (1.93, 3.43)	1.94 (1.43, 2.62)	1.89 (1.32, 2.70)
Separated or divorced > 12 mo before the index delivery	29.2	3.47 (1.96, 6.15)	2.29 (1.25, 4.19)	1.92 (1.02, 3.60)	1.87 (0.91, 3.83)
Separated or divorced in the 12 mo before the index delivery	67.1	17.12 (8.97, 32.67)	11.76 (5.90, 23.44)	8.35 (4.38, 15.95)	8.38 (4.09, 17.19)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio. "At least 1 psychological problem" is a composite outcome of intimate partner violence, substance use, or postpartum depression.

[a]Adjusted for maternal age (years), maternal age (quadratic), parity (primiparous, multiparous), education (< high school, high school diploma, postsecondary diploma, university diploma), household income (below, at, or above Statistics Canada low-income after-tax cutoff, or unknown), foreign-born status (yes, no), and ethnic or cultural identity (North American, European, non-Western, other).

[b]Adjusted for factors enumerated in footnote a, as well as for wantedness of the recent pregnancy (sooner or when it occurred, later, not at all) and partner disagreement with the recent pregnancy (yes, no).

[c]Adjusted for factors enumerated in footnotes a and b, after excluding women with prepregnancy depression.

negative health consequences.[25] In particular, the process of becoming divorced or separated may deprive a partner of the benefits of marriage or cohabitation, such as enhanced well-being, reciprocal caretaking, monitoring of health behaviors, and emotional and financial support.[25] Consistent with this explanation is our finding that women who separated or divorced in the year before they gave birth had more psychosocial problems around the time of pregnancy than those who became separated more than a year before the baby's birth. This group of women may be in particular need of additional attention and services to help them successfully navigate this transitional period. Our findings are in line with the literature linking divorce and separation to partner violence, poor health behaviors, and mental health.[41–43] In a study assessing changes in marital status between 2 consecutive pregnancies, women who were married at the time of the first, but not second, birth were at higher risk of adverse pregnancy outcomes than those who remained married.[44]

Our findings do not support the practice of including cohabiting and married women within the same group, as recommended by the Centers for Disease Control and Prevention for surveillance of intimate partner violence.[45] Labeling women in common-law unions as married may hinder the implementation of targeted interventions to reduce violence against unmarried cohabiting women.

Nonetheless, cohabiting and married women had a similar prevalence of postpartum depression, which is consistent with previous reports.[46,47] Also, the higher risk of postpartum depression among unpartnered women, and the elimination of this association after control for maternal characteristics, wantedness of pregnancy, and partner's agreement with the pregnancy, suggest that the role of a partner may be a key factor in the occurrence of postpartum depression. Although marriage appears to confer a protective effect on health,[8,41,44,48] the mechanisms for why this is so are less clear. For example, there is discordant evidence about the protective role of positive sociodemographics among those who are married.[7,10–12,14] Our adjustment for sociodemographic characteristics attenuated, but did not eliminate, the association between marital status and maternal psychosocial problems. An intended pregnancy, especially one wanted by the partner, has been reported to partially explain disparities by marital status.[28,49] Consistent with this literature, we observed that further adjustment for wantedness of the pregnancy and partner's approval attenuated the associations beyond that conferred by sociodemographics alone. Other factors deemed to explain the relative advantage of marriage include the existence of common values and beliefs (e.g., religiosity) between partners and a stronger commitment to a lifelong relationship and family formation,[24,50,51] neither of which was measured in the MES. The existence of health disparities between unmarried cohabiting women and married women is of concern, since nonmarital cohabitation is common, as is the rate of separation after short-term cohabitation.[52]

The excess risk of adverse outcomes among unmarried short-term cohabiters may reflect a weaker relationship and stem from the fact that some see nonmarital cohabitation as a "trial run" and thus are more likely to both perceive and report conflicts in their relationship. Unmarried cohabiters are more likely to experience negative marital outcomes resulting in separation than married cohabiters,[51–53] particularly if they began cohabitation before engagement.[53] This may partly explain why short-term cohabitation is more common among unmarried women, and why they are at higher risk of adverse outcomes.

Limitations

Our findings are representative of Canadian women and may be generalizable elsewhere. However, the prevalence of psychosocial problems and their determinants may differ substantially in places where the meaning of

TABLE 4—Psychosocial Problems Around the Time of Pregnancy Among Nonmarried and Married Women, by Duration of Cohabitation: The Maternity Experiences Survey, 2006–2007

	Not Married				Married			
Psychosocial Outcome	Cohabiting 0–2 Years	Cohabiting 3–5 Years	Cohabiting > 5 Years	P^a	Cohabiting 0–2 Years	Cohabiting 3–5 Years	Cohabiting > 5 Years	P^a
Among all women								
Intimate partner violence								
%	11.5	6.9	3.2		3.2	3.4	2.5	
OR (95% CI)	5.06 (3.41, 7.50)	2.88 (1.83, 4.53)	1.27 (0.68, 2.40)	< .001	1.27 (0.71, 2.27)	1.37 (0.89, 2.11)	1.00 (Ref)	.21
AOR[b] (95% CI)	4.64 (2.85, 7.56)	3.03 (1.82, 5.04)	1.50 (0.78, 2.90)	< .001	1.26 (0.66, 2.40)	1.37 (0.86, 2.18)	1.00 (Ref)	.19
AOR[c] (95% CI)	3.66 (2.21, 6.08)	2.73 (1.64, 4.53)	1.28 (0.65, 2.50)	.002	1.30 (0.68, 2.46)	1.36 (0.86, 2.17)	1.00 (Ref)	.21
Substance use								
%	11.6	8.2	4.4		1.4	1.8	1.7	
OR (95% CI)	7.71 (4.97, 11.98)	5.23 (3.26, 8.38)	2.68 (1.49, 4.83)	< .001	0.86 (0.38, 1.92)	1.05 (0.62, 1.79)	1.00 (Ref)	.82
AOR[b] (95% CI)	5.36 (3.06, 9.39)	3.85 (2.22, 6.65)	1.96 (1.04, 3.67)	< .001	1.26 (0.52, 3.01)	1.32 (0.75, 2.32)	1.00 (Ref)	.97
AOR[c] (95% CI)	5.03 (2.83, 8.94)	3.70 (2.09, 6.55)	1.85 (0.96, 3.56)	< .001	1.33 (0.56, 3.21)	1.39 (0.78, 2.48)	1.00 (Ref)	.84
Postpartum depression								
%	9.4	5.3	6.9		10.2	7.0	6.1	
OR (95% CI)	1.59 (1.11, 2.26)	0.85 (0.54, 1.34)	1.14 (0.74, 1.77)	.17	1.75 (1.21, 2.53)	1.15 (0.85, 1.57)	1.00 (Ref)	.006
AOR[b] (95% CI)	1.87 (1.25, 2.80)	1.05 (0.65, 1.69)	1.39 (0.88, 2.20)	.35	1.85 (1.20, 2.85)	1.33 (0.95, 1.85)	1.00 (Ref)	.004
AOR[c] (95% CI)	1.84 (1.21, 2.80)	1.09 (0.67, 1.77)	1.50 (0.94, 2.39)	.64	1.81 (1.16, 2.81)	1.34 (0.95, 1.87)	1.00 (Ref)	.005
Any psychosocial problem								
%	28.1	18.1	12.9		13.6	11.0	9.7	
OR (95% CI)	3.66 (2.85, 4.70)	2.06 (1.56, 2.73)	1.39 (1.00, 1.93)	< .001	1.48 (1.08, 2.02)	1.15 (0.90, 1.47)	1.00 (Ref)	.02
AOR[b] (95% CI)	3.74 (2.76, 5.07)	2.25 (1.65, 3.08)	1.52 (1.07, 2.16)	< .001	1.69 (1.18, 2.41)	1.31 (1.01, 1.71)	1.00 (Ref)	.004
AOR[c] (95% CI)	3.45 (2.53, 4.72)	2.23 (1.63, 3.05)	1.50 (1.05, 2.15)	< .001	1.70 (1.19, 2.45)	1.34 (1.02, 1.75)	1.00 (Ref)	.005
Among women without prepregnancy depression								
Postpartum depression								
%	7.2	4.6	6.1		8.5	5.7	5.4	
OR (95% CI)	1.37 (0.88, 2.12)	0.80 (0.46, 138)	1.15 (0.70, 1.90)	.55	1.61 (1.03, 2.52)	1.04 (0.73, 1.50)	1.00 (Ref)	.08
AOR[b] (95% CI)	2.12 (1.26, 3.56)	1.33 (0.75, 2.38)	1.83 (1.07, 3.13)	.71	1.49 (0.88, 2.53)	1.20 (0.81, 1.78)	1.00 (Ref)	.17
AOR[c] (95% CI)	1.84 (1.08, 3.14)	1.28 (0.71, 2.31)	1.76 (1.02, 3.05)	.82	1.45 (0.84, 2.50)	1.21 (0.81, 1.80)	1.00 (Ref)	.26
Any psychosocial problem								
%	24.0	17.3	10.3		10.9	9.1	8.8	
OR (95% CI)	3.27 (2.44, 4.37)	2.17 (1.58, 2.98)	1.18 (0.80, 1.74)	< .001	1.27 (0.87, 1.84)	1.04 (0.78, 1.37)	1.00 (Ref)	.28
AOR[b] (95% CI)	3.39 (2.35, 4.89)	2.56 (1.79, 3.64)	1.39 (0.92, 2.10)	< .001	1.29 (0.84, 1.99)	1.14 (0.84, 1.56)	1.00 (Ref)	.4
AOR[c] (95% CI)	3.94 (2.35, 6.61)	3.17 (2.17, 3.64)	1.36 (0.90, 2.07)	< .001	1.29 (0.83, 2.00)	1.17 (0.85, 1.60)	1.00 (Ref)	.49

Note. OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.

[a]*P* value for linear trend across duration of cohabitation groups using duration of cohabitation groups as a continuous variable in the models, by marital status.

[b]Adjusted for maternal age (years), maternal age (quadratic), parity (primiparous, multiparous), education (< high school, high school diploma, postsecondary diploma, university diploma), household income (below, at, or above Statistics Canada low-income after-tax cutoff, or unknown), foreign-born status (yes, no), and ethnic or cultural identity (North American, European, non-Western, other).

[c]Adjusted for factors enumerated in footnote b, as well as for wantedness of the recent pregnancy (sooner or when it occurred, later, not at all) and partner disagreement with the recent pregnancy (yes, no).

marriage and cohabitation is rooted on contrasting gender roles and cultural practices and beliefs. For instance, marriage may not be protective in countries like India, where more than half of married women in some regions report different types of violence and abuse perpetrated almost exclusively by their husbands.[54]

Because of sample size limitations, we could not further subdivide marital status groups. Duration of cohabitation may differ from the duration of a given relationship.[12] We did not possess information about the latter, or about the number or quality of previous relationships, so some women classified here as having lived with a partner for a short time period may have previously cohabited with another partner in a stable or unstable relationship. The MES also lacks information about the characteristics of each woman's current partner[55] or the religious affiliation of the couple, which may predict their likelihood of engagement,

marital commitment, premarital cohabitation, or receipt of premarital education.[51,53] Finally, the MES was a cross-sectional survey that did not allow one to establish clear temporal direction and relied on retrospective, self-reported responses that might be affected by maternal recall. Despite these limitations, we were able to identify sizable disparities by marital status and cohabitation, using a nationally representative, high-quality, population-based survey. Although the MES did not exhaustively cover mothers' relationships, its data collection represents a step forward to a sounder typology of unions. To our knowledge, this is the first study to assess the association between duration of cohabitation, by marital status, and multiple pregnancy-related outcomes.

Conclusions

Our study supports the claim that a finer typology of unions allows better identification of women at risk for psychosocial problems. First, it shows that noncohabiting, divorced, and separated women, particularly those who became so around the time of pregnancy, have the highest burden of psychosocial problems. Second, it shows that psychosocial problems associated with nonmarital cohabitation are concentrated among those with the shortest duration of cohabitation. Our findings suggest that newly formed couples may benefit from appropriate interventions to lessen their vulnerability to adverse outcomes. Various experimental studies have consistently shown that premarital education, relationship education, and couple therapy improve marital outcomes and long-term satisfaction with relationships.[51,56–59] However, innovative strategies may be needed to induce those couples at highest risk of dissolution to participate.[60] Such timely interventions may improve psychosocial well-being during and after pregnancy by minimizing marital conflict and enhancing relationships at the start of a union. This, in turn, may reduce the rates of separation and divorce, which appear to have a negative impact on the well-being of the mother, father, and newborn. On the other hand, there may be circumstances where union dissolution is best for long-term outcomes (e.g., severe partner abuse). Psychosocial screening during pregnancy may help identify those mothers in high-risk relationships and provide opportunities for intervention.[61] To advance our understanding of the impact of union dynamics on family health, future data collection should go beyond the childbearing mother to cover prior relationships and the characteristics of both partners. Future studies would be strengthened by employing longitudinal designs to better assess how trajectories in relationship status affect family health. ■

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This article was accepted October 9, 2012.

Contributors

M. L. Urquia conceptualized the study and analyzed the data. All authors contributed to the study design, interpretation of results, and writing of the article, and approved the final version of the article.

Acknowledgments

We thank the Maternity Experiences Study Group of the Public Health Agency of Canada's Canadian Perinatal Surveillance System, who developed and implemented the Maternity Experiences Study.

Human Participant Protection

This project was approved by the St. Michael's Hospital Research Ethics Board and by the Research Data Centre Access Granting Committee of Statistics Canada.

References

1. Organisation for Economic Co-Operation and Development. Share of births out of wedlock and teenage births. 2011. Available at: http://www.oecd.org/els/familiesandchildren/40278615.pdf. Accessed January 26, 2012.

2. Kerr D, Moyser M, Beaujot R. Marriage and cohabitation: demographic and socioeconomic differences in Quebec and Canada. *Can Stud Popul.* 2006;33:83–117.

3. *Births 2006. Catalogue no. 84F0210-XIE.* Ottawa, Ontario: Statistics Canada; 2008.

4. Ventura SJ. Changing patterns of nonmarital childbearing in the United States. NCHS Data Brief no. 18, May 2009. Available at: http://www.cdc.gov/nchs/data/databriefs/db18.htm. Accessed January 26, 2012.

5. Solomon-Fears C. Nonmarital childbearing: trends, reasons, and public policy interventions. 2008. Congressional Research Service Report for Congress, order code RL34756. Available at: http://www.fas.org/sgp/crs/misc/RL34756.pdf. Accessed January 26, 2012.

6. Bennett T, Braveman P, Egerter S, Kiely JL. Maternal marital status as a risk factor for infant mortality. *Fam Plann Perspect.* 1994;26(6):252–256, 271.

7. Luo ZC, Wilkins R, Kramer MS. Disparities in pregnancy outcomes according to marital and cohabitation status. *Obstet Gynecol.* 2004;103(6):1300–1307.

8. Raatikainen K, Heiskanen N, Heinonen S. Marriage still protects pregnancy. *BJOG.* 2005;112(10):1411–1416.

9. Gaudino JA Jr, Jenkins B, Rochat RW. No fathers' names: a risk factor for infant mortality in the State of Georgia, USA. *Soc Sci Med.* 1999;48(2):253–265.

10. MacDonald LD, Peacock JL, Anderson HR. Marital status: association with social and economic circumstances, psychological state and outcomes of pregnancy. *J Public Health Med.* 1992;14(1):26–34.

11. Young RL, Declercq E. Implications of subdividing marital status: are unmarried mothers with partners different from unmarried mothers without partners? An exploratory analysis. *Matern Child Health J.* 2010;14(2):209–214.

12. Bird ST, Chandra A, Bennett T, Harvey SM. Beyond marital status: relationship type and duration and the risk of low birth weight. *Fam Plann Perspect.* 2000;32(6):281–287.

13. Bilszta JL, Tang M, Meyer D, Milgrom J, Ericksen J, Buist AE. Single motherhood versus poor partner relationship: outcomes for antenatal mental health. *Aust N Z J Psychiatry.* 2008;42(1):56–65.

14. Kiernan K, Pickett KE. Marital status disparities in maternal smoking during pregnancy, breastfeeding and maternal depression. *Soc Sci Med.* 2006;63(2):335–346.

15. Lipsky S, Holt VL, Easterling TR, Critchlow CW. Impact of police-reported intimate partner violence during pregnancy on birth outcomes. *Obstet Gynecol.* 2003;102(3):557–564.

16. Taillieu T, Brownridge D. Violence against pregnant women: prevalence, patterns, risk factors, theories, and directions for future research. *Aggress Violent Behav.* 2010;15(1):14–35.

17. Campbell JC. Health consequences of intimate partner violence. *Lancet.* 2002;359(9314):1331–1336.

18. Jasinski JL. Pregnancy and domestic violence: a review of the literature. *Trauma Violence Abuse.* 2004;5(1):47–64.

19. Kuczkowski KM. The effects of drug abuse on pregnancy. *Curr Opin Obstet Gynecol.* 2007;19(6):578–585.

20. Shankaran S, Lester BM, Das A, et al. Impact of maternal substance use during pregnancy on childhood outcome. *Semin Fetal Neonatal Med.* 2007;12(2):143–150.

21. Murray L, Cooper P, Hipwell A. Mental health of parents caring for infants. *Arch Womens Ment Health.* 2003;6(suppl 2):S71–S77.

22. Murray L. The impact of postnatal depression on infant development. *J Child Psychol Psychiatry.* 1992;33(3):543–561.

23. Murray L, Sinclair D, Cooper P, Ducournau P, Turner P, Stein A. The socioemotional development of 5-year-old children of postnatally depressed mothers. *J Child Psychol Psychiatry.* 1999;40(8):1259–1271.

24. Akincigil A, Munch S, Niemczyk KC. Predictors of maternal depression in the first year postpartum: marital status and mediating role of relationship quality. *Soc Work Health Care.* 2010;49(3):227–244.

25. Meadows SO, McLanahan SS, Brooks-Gunn J. Stability and change in family structure and maternal health trajectories. *Am Sociol Rev.* 2008;73(2):314–334.

26. Muhajarine N, D'Arcy C. Physical abuse during pregnancy: prevalence and risk factors. *CMAJ.* 1999;160 (7):1007–1011.

27. Waller MR, Bitler MP. The link between couples' pregnancy intentions and behavior: does it matter who is asked? *Perspect Sex Reprod Health*. 2008;40(4):194–201.

28. Kroelinger CD, Oths KS. Partner support and pregnancy wantedness. *Birth.* 2000;27(2):112–119.

29. Engnes K, Liden E, Lundgren I. Experiences of being exposed to intimate partner violence during pregnancy. *Int J Qual Stud Health Well-Being.* 2012;7:1–11.

30. Public Health Agency of Canada. *What Mothers Say: The Canadian Maternity Experiences Survey.* Ottawa, Ontario: Public Health Agency of Canada; 2009.

31. *Microdata User Guide. Maternity Experiences Survey 2006.* Ottawa, Ontario: Statistics Canada, Public Health Agency of Canada; 2007.

32. Dzakpasu S, Kaczorowski J, Chalmers B, Heaman M, Duggan J, Neusy E. The Canadian maternity experiences survey: design and methods. *J Obstet Gynaecol Can.* 2008;30(3):207–216.

33. Public Health Agency of Canada. *Maternity Experiences Survey, 2006 Questionnaire.* Ottawa, Ontario: Public Health Agency of Canada; 2009.

34. *Violence Against Women Survey.* Ottawa: Statistics Canada; 1993.

35. Parker B, McFarlane J. Identifying and helping battered pregnant women. *MCN Am J Matern Child Nurs.* 1991;16(3):161–164.

36. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry.* 1987;150:782–786.

37. Beck CT, Gable RK. Comparative analysis of the performance of the Postpartum Depression Screening Scale with two other depression instruments. *Nurs Res.* 2001;50(4):242–250.

38. Murray L, Carothers AD. The validation of the Edinburgh Post-Natal Depression Scale on a community sample. *Br J Psychiatry.* 1990;157:288–290.

39. *SAS/STAT 9.2 User's Guide.* Cary, NC: SAS Institute Inc; 2008.

40. Statistics Canada. *2006 Census Dictionary. Catalogue no.92-566-X.* Ottawa, Ontario: Minister of Industry; 2010.

41. Brown SL. The effect of union type on psychological well-being: depression among cohabitors versus marrieds. *J Health Soc Behav.* 2000;41(3):241–255.

42. Lee S, Cho E, Grodstein F, Kawachi I, Hu FB, Colditz GA. Effects of marital transitions on changes in dietary and other health behaviours in US women. *Int J Epidemiol.* 2005;34(1):69–78.

43. Saltzman LE, Johnson CH, Gilbert BC, Goodwin MM. Physical abuse around the time of pregnancy: an examination of prevalence and risk factors in 16 states. *Matern Child Health J.* 2003;7(1):31–43.

44. Holt VL, Danoff NL, Mueller BA, Swanson MW. The association of change in maternal marital status between births and adverse pregnancy outcomes in the second birth. *Paediatr Perinat Epidemiol.* 1997;11(suppl 1): 31–40.

45. Saltzman LE, Fanslow JL, McMahon PM, Shelley GA. *Intimate Partner Violence Surveillance: Uniform Definitions and Recommended Data Elements, Version 1.0.* Atlanta, GA: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2002.

46. Eastwood JG, Phung H, Barnett B. Postnatal depression and socio-demographic risk: factors associated with Edinburgh Depression Scale scores in a metropolitan area of New South Wales, Australia. *Aust N Z J Psychiatry.* 2011;45(12):1040–1046.

47. Rich-Edwards JW, Kleinman K, Abrams A, et al. Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in a medical group practice. *J Epidemiol Community Health.* 2006;60 (3):221–227.

48. DeKlyen M, Brooks-Gunn J, McLanahan S, Knab J. The mental health of married, cohabiting, and noncoresident parents with infants. *Am J Public Health.* 2006;96(10):1836–1841.

49. Maxson P, Miranda ML. Pregnancy intention, demographic differences, and psychosocial health. *J Womens Health (Larchmt).* 2011;20(8):1215–1223.

50. Brown SL, Booth A. Cohabitation versus marriage: a comparison of relationship quality. *J Marriage Fam.* 2012;58(3):668–678.

51. Halford WK, Markman HJ, Kline GH, Stanley SM. Best practice in couple relationship education. *J Marital Fam Ther.* 2003;29(3):385–406.

52. Kennedy S, Bumpass L. Cohabitation and children's living arrangements: new estimates from the United States. *Demogr Res.* 2008;19:1663–1692.

53. Kline GH, Stanley SM, Markman HJ, et al. Timing is everything: pre-engagement cohabitation and increased risk for poor marital outcomes. *J Fam Psychol.* 2004;18 (2):311–318.

54. Babu BV, Kar SK. Domestic violence against women in eastern India: a population-based study on prevalence and related issues. *BMC Public Health.* 2009;9:129.

55. Misra DP, Caldwell C, Young AA Jr, Abelson S. Do fathers matter? Paternal contributions to birth outcomes and racial disparities. *Am J Obstet Gynecol.* 2010;202 (2):99–100.

56. Cummings EM, Faircloth WB, Mitchell PM, Cummings JS, Schermerhorn AC. Evaluating a brief prevention program for improving marital conflict in community families. *J Fam Psychol.* 2008;22(2):193–202.

57. Hahlweg K, Richter D. Prevention of marital instability and distress. Results of an 11-year longitudinal follow-up study. *Behav Res Ther.* 2010;48(5):377–383.

58. Halford WK, Lizzio A, Wilson KL, Occhipinti S. Does working at your marriage help? Couple relationship self-regulation and satisfaction in the first 4 years of marriage. *J Fam Psychol.* 2007;21(2):185–194.

59. Stanley SM, Amato PR, Johnson CA, Markman HJ. Premarital education, marital quality, and marital stability: findings from a large, random household survey. *J Fam Psychol.* 2006;20(1):117–126.

60. Halford WK, O'Donnell C, Lizzio A, Wilson KL. Do couples at high risk of relationship problems attend premarriage education? *J Fam Psychol.* 2006;20(1):160–163.

61. Nelson HD, Bougatsos C, Blazina I. Screening women for intimate partner violence: a systematic review to update the US Preventive Services Task Force recommendation. *Ann Intern Med.* 2012;156(11):796–808.