Socioeconomic and Psychosocial Adversity in Inuit Mothers from Nunavik during the First Postpartum Year

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ABSTRACT

The postpartum year is a crucial period for child development and mother-child attachment. In a young and prolific population such as the Inuit from Nunavik (northern Quebec, Canada), postpartum maternal well-being is even more concerning. This study aims to document the prevalence and co-occurrence of socioeconomic and psychosocial risk factors in this population, and to use these factors to identify specific profiles of women. Data collection involved 176 mothers recruited during pregnancy and interviewed 12 months after delivery. Socioeconomic (age, education, single parenting, unemployment, welfare) and psychosocial (psychological distress, suicidal thoughts and attempts, spousal abuse, drug and alcohol use) risk factors were documented. Four high-risk conditions (socioeconomic precariousness, distress, domestic abuse, and substance use) were computed and considered in the analysis. Adversity was salient because most of the women (58%) simultaneously experience many high-risk conditions, with socioeconomic difficulties, distress, and spousal abuse being the most prevalent. Distinct profiles were identified: those without...
INTRODUCTION

The postpartum year, starting after childbirth, is a critical period for early child development and for the establishment of a mother-child relationship (Stein et al., 2010). Mothers—the principal caregivers for most children during the first year of life—play a decisive role in the optimal development of their children. Difficulties that interfere with mothers' parenting ability are therefore of public health concern (Logsdon, Wisner, & Pinto-Foltz, 2006). Normative population studies show that many mothers experience personal and marital distress during this transitional period (Elec, Brage Hudson, & Boufard, 2003; McConachie et al., 2008; Sakala, Declercq, & Corry, 2002). Among Canadian Aboriginal Peoples, where 50% of the population is under 24-years of age (Statistics Canada, 2008), adverse socioeconomic conditions and a high rate of psychosocial problems further add concern about optimal parenting among mothers (Commission des droits de la personne et des droits de la jeunesse, 2007).

Socioeconomic and psychosocial stressors—such as poverty, psychological distress, substance use, and domestic abuse—can significantly impair maternal functioning and therefore parenting. From the latter category, two specific profiles of distressed mothers emerged: single women coping with socioeconomic stressors (40.1%), and women with fewer financial difficulties but in an abusive relationship and more likely to use drugs or binge drink (29.1%). Our results support the need for preventive and public health programs in this population to improve maternal as well as infant well-being.

KEYWORDS

Adversity, poverty, distress, domestic violence, substance use, postpartum year, Inuit, Aboriginal peoples

Socioeconomic and psychosocial adversity in Inuit mothers
practices (MacKenzie, Kotch, & Lee, 2011; Whitaker, Orzol, & Kahn, 2006). Family stress theory proposes that socioeconomic stressors indirectly affect the development of young children through the stress and distress experienced by their mother (Ewart & Suchday, 2002; Kotchick, Dorsey, & Heller, 2005; Westbrook & Jones Harden, 2010). Stress and depressive symptoms in mothers are linked to parenting that is less warm, supportive, and involved (Jackson, Brooks-Gunn, Huang, & Glassman, 2000; Jackson & Schenier, 2005), is more restrictive (Gutman, Friedek, & Hitt, 2003), and shows fewer child-centred behaviours (Blustone & Tamis-LeMonda, 1999). Similarly, reflective functioning theory suggests that psychosocial difficulties—such as depression, domestic abuse, and substance use—impact mothers’ understanding of their child’s needs, emotions, and intents (Schecter et al., 2008; Sharp & Fonagy, 2008; Wohlgemuth Levy, 2003). These difficulties are also significantly related to negative maternal behaviours, such as intrusiveness, anxiety, and rejection/hostility (Grienberger, Kelly, & Slade, 2005; Rosenblum, McDonough, Smeroff, & Muzik, 2008).

The study of individual risk factors, i.e., any situation or environmental characteristic that raises the likelihood of developing adverse outcomes, does not well represent personal experience because people tend to experience multiple risk factors at the same time (Chmura Kraemer, Stice, Kazdin, Offord, & Kuper, 2001; Kelley et al., 2010; MacKenzie et al., 2011). A cumulative approach to the study of risks assumes that child outcomes are affected by the increased stress caused by additional risk factors, regardless of the specific nature of these risks (Deater-Deckard, Dodge, Bates, & Petit, 1998). Studies supporting this approach have generally concluded that developmental difficulties tend to increase with the number of risk factors (Hooper, Burchinal, Roberts, Zeisel, & Neebe, 1998; Jaffe, Cipsi, Moffitt, Polo-Tomàs, & Taylor, 2007; MacKenzie et al., 2011). Pioneers in this approach, Smeroff et al. (1987) found that each additional risk factor resulted in an average decrease of four IQ points in the Rochester Longitudinal Study, which evaluated 215 four-year-old children from socially heterogeneous environments. This result has been replicated in three independent studies examining different child outcomes (Atzaba-Poria, Pike, & Deater-Deckard, 2004; Biederman, Faraone, & Monuteaux, 2002; Raviv, Taussig, Culhane, & Garrido, 2010; Yumoto, Jacobson, & Jacobson, 2008). To our knowledge, only one epidemiological study (Whitaker et al., 2006) has focused on cumulative psychosocial risk factors in the postpartum year. This study found that behavioural problems at three years of age went up significantly as the number of postpartum risk factors (i.e., mental health problems, domestic violence, and substance use) increased.

Throughout the last two decades, health surveys conducted by governmental agencies (Jetté, 1992; Pageau, Perland, & Déry, 2003; Santé Canada, 1998) have highlighted the persistence of socioeconomic and psychosocial disparities between Aboriginal Peoples and the general Canadian population. However, Aboriginal Peoples were considered as a homogenous group, even though Inuit, Métis, and First Nations groups have each their own historical, cultural, and social characteristics. Of all the health concerns among the Inuit, the so-called social pathologies—such as suicide, violence, and substance abuse—are the most prevalent and destructive. Although there have been improvements in the last decades, socioeconomic issues such as unemployment, low income, poor education, and decreased housing quality remain major problems for the Inuit (Bjerregaard, Young, Dewailly, & Ebesson, 2004).

In 2004, one major health survey (the Nunavik Inuit Health Survey, also known as Qanuittaa) was conducted in the 14 Nunavik (northern Quebec) communities. Qanuittaa surveyed Inuit men and women from 521 households, which was about 27% of the population. This representative sample of the Nunavik adult population provided prevalence rates of demographic, socioeconomic, and psychosocial risk factors (Rochette, St-Laurent, & Plaziac, 2007). The survey highlighted that a large portion of the population experienced socioeconomic stressors: 78% of respondents did not graduate from high school, and 58% had an income of less than $20,000 and a precarious employment status (Anctil, 2007), compared to 34% and 11%, respectively, in the general population of Canada (Statistics Canada, 2009; Statistics Canada, 2011). Rates of psychological distress, a broad state of emotional suffering, were 15.1% and 13.9% in the groups of Inuit women aged 15–29 and 30–49 years old, respectively (Kirmayer & Kenneth, 2007). In contrast, the Canadian Community Health Survey (CCHS) reported distress rates from 6.8% to 8.3% in women of similar ages (Gravel & Bélair, 2005). A history of suicidal thoughts was reported by 18.4% of Inuit women for the 12 months preceding the survey, while 25.7% reported at least one lifetime suicide attempt (Kirmayer & Kenneth, 2007). Women in the CCHS reported a similar proportion of suicidal thoughts (16%), but the rate of lifetime attempts was 6 times lower (4.2%) (Government of Canada, 2006). About six in 10 Inuit women experienced at least one incident of physical abuse during adulthood, with 70% of these abuses from a spouse or partner (Lavoie, Muckle, Fraser, & Boucher, 2007). In the 1999 General Social Survey, the rate of physical and sexual spousal violence against Canadian women overall was 8% (Canadian Centre for Justice Statistics (CCJS), 2006). Marijuana and abusive alcohol use were also more prevalent among Inuit women than in the general Canadian population. Half of the Inuit surveyed used marijuana in the year preceding Qanuittaa, and 47.1% were at risk of alcohol-related problems (Muckle, Boucher, Laflamme, & Chevalier, 2007), compared with 7.8% and less than 5%, respectively, in women in the general Canadian population (Government of Canada, 2006). Our team (Muckle et al., 2011) recently reported a high prevalence of alcohol use, smoking, and drug use during pregnancy in a sample of 248 Nunavik women from the Hudson Bay region who participated in the Environmental Contaminants and Child Development (ECCD) study. Rates of smoking, alcohol use, binge drinking, and marijuana use were 92%, 60%, 38%, and 36%, respectively.

This study, part of the ECCD study, aims to describe the adversity faced by Inuit mothers from Nunavik during the first postpartum year, a positive but stressful period of transition...
that is important for early child development and mother-child bonding. Here, adversity is defined as a condition in which the mother faces multiple risk factors or negative events that were likely to jeopardize the development of their child during the year following childbirth. First, we document the prevalence, i.e., number of cases for a given time period (postpartum year), and the co-occurrence of socioeconomic and psychosocial risk factors. Second, we identify association patterns among the factors. We computed binary (i.e., yes/no) high-risk conditions and used an innovative analysis to identify specific profiles of women.

Outcomes of this study are significant to the Inuit population of Nunavik, where fertility rates are higher than the rest of Quebec (Rochette et al., 2007). Our findings may lead to specific prevention and public health programs for Inuit mothers in the prenatal and postpartum periods.

METHODS

Participants

The sample consisted of 176 women who participated in the ECCD study (Jacobson et al., 2008; Muckle, Ayotte, Dewailly, Jacobson, & Jacobson, 2011), which was conducted in the three largest communities (Puvirnituq, Inukjuak, and Kuujjuaq) of Nunavik between November 1995 and March 2002. The Nunavik region is located north of the 55th parallel in the province of Quebec. About 11,300 Inuit live in 14 villages scattered along a 2000-km shoreline of the Hudson Bay, Hudson Strait, and Ungava Bay. Midwives and nurses provided us with the names of pregnant women shortly after their first prenatal visit. A research assistant contacted each potential participant by telephone and invited her to meet at the village nursing station to learn about the objectives and procedures of the study, which focused on infant health and development. Women without telephones were notified through the radio station. The study received approval from ethical review boards at Laval University and Wayne State University. It received the support of the Nunavik Nutrition and Health Committee, the relevant municipal councils, the Pauktuutit Inuit Women’s Association, and the Nunalituqait Ikaluqatigiitut Association. The main reasons for the loss of participants after enrolment were: infant adopted by a family living outside of the three communities participating in the study (28%), mother moving to a community not participating in the study (22%), miscarriage or infant mortality (22%), and inability to contact (18%). Refusal rates after enrolment were 3.6% and 6.7% at the 1- and 12-month follow-up visits, respectively.

Instruments and variables

We assessed the following demographic and socioeconomic characteristics through the interviews: mother’s age at delivery, years of education, welfare status, employment status, single parent status, village of residency, language used in interviews (Inuktitut vs. French or English), and the adoption status of the child.

We measured psychological distress using a short version of the Indice de détresse psychologique de Santé Québec (14 items), also known as the IDPESQ-14 (Préville, Boyer, Potvin, Perrault, & Légaré, 1992). This instrument, developed from the Psychiatric Symptoms Index (Ilfeld, 1976), assesses the frequency (never, once in a while, or often) of symptoms of depression (e.g., sadness, lost interest in activities), anxiety (e.g., feeling tense, restlessness), irritability and cognitive problems (e.g., attention difficulties) experienced during the previous week. The weighted sum of all items, which ranges from 14 to 42, provides a summary score for psychological distress. A clinical cut-off score ≥ 26 is used to identify possible cases of depression (Audet, Lemieux, & Cardin, 2001). The IDPESQ-14 has good internal consistency and reliability among the Inuit (Cronbach’s alpha = .88) and a stable factorial structure (Jetté, 1992). We used two specific yes/no questions (Tousignant, Hanigan, & Bergeron, 1984) previously used in Inuit health surveys in Nunavik to document the prevalence of postpartum and lifetime suicidal thoughts and attempts.

We assessed domestic abuse with the Conflict Tactics Scales (CTS) (Strauss, 1984). This instrument examines the frequency of abusive responses (i.e., verbal and physical) that each partner has reportedly used during spousal disagreements over the previous 12 months. In this study, the women were asked about their own behaviours and those of their spouse or partner. In the original instrument, three standardized scores were calculated: reasoning, verbal abuse, and physical abuse. In this study, we omitted the reasoning subscale because women found it difficult to understand during a pilot phase. We selected specific items to come up with scores for verbal abuse (items 2, 6, 7; e.g., to shout or yell at my partner) and physical abuse (items 11 to 16; e.g., to slap my partner, to punch or hit my partner with something that could hurt) that better reflect the items generally used in epidemiological studies of domestic violence (Chang, Theodore, Martin, & Runyan, 2008; Connelly, Newton, Landsverk, & Aarons, 2000; Taylor, Lee, Guterman, & Rice, 2010).

We used the following indicators of alcohol consumption during the postpartum year: alcohol use, binge drinking (at least
five standard drinks in one session), number of binge drinking episodes, and average number of standard drinks per binge episode. Two trained research assistants independently coded the reports of alcohol use. Disagreements were discussed until a consensus was reached. We also recorded illicit drug use during the postpartum year for marijuana, cocaine (including crack cocaine), solvent sniffing, heroin, psilocybin mushrooms, phencyclidine (PCP), sedatives, and amphetamines (see Muckle et al., 2011, for detailed descriptions of the interviews about alcohol and drug use). Smoking during the postpartum year (including number of cigarettes per day) was documented with questions from the Santé-Québec Health Survey Among the Inuit of Nunavik (Jetté, 1992).

Statistical analysis

Descriptive statistics were obtained for the risk factors. We used Spearman correlations and Cramer's Phi to examine the associations among continuous and binary (yes/no) risk factors. Four binary (yes/no) high-risk conditions were constructed (Table 1). Exploratory latent class analysis models were tested statistically to identify the different participant profiles (latent classes) in regard to socioeconomic and psychosocial high-risk conditions. Latent class analysis is a statistical method based on the assumption that distinct subgroups sharing common characteristics exist within the sample. The best-fitting model is the most parsimonious, i.e., the one that explains the observed data with the smallest number of classes. Class membership is estimated for each participant. Finally, we used independent samples t-tests and chi-square tests to compare the risk profiles on high-risk conditions, demographic factors (village of residency, language used at the interview, adoption status of the child, mother's age), and socioeconomic variables (education, welfare status, employment status).

A relatively large portion of the data (31.7%) was missing for the CTS variables. Reasons for the missing data were: failure to administer the CTS to two participants (1.1%), loss of two questionnaires (1.1%), participant not in a relationship for at least 6 months or not living with her spouse during the postpartum year (26.1%), and partial or complete refusal to complete the CTS (4.5%). Due to the sensitive nature of this measure, it is possible that the women who refused to complete the CTS were more likely to be those who were in an abusive relationship, suggesting a pattern of data not missing at random (MNAR). We used pattern mixture models followed by sensitivity tests to look at the influence of the possible MNAR pattern on parameter estimations in preliminary regression models testing the association between the CTS and the main outcomes of the study (Allison, 2001). The results showed that the missing data did not significantly affect parameter estimates. Consequently, we performed further statistical analyses—including CTS variables—with all available data from mothers living in a couple (married or not) or who had a boyfriend during the 6-month period preceding the interview (69% of the sample) without the concern for an eventual MNAR bias. Data were analyzed using SPSS 12 (SPSS Inc., Chicago, IL) and Mplus 5.21 software (Muthén & Muthén, 2009).

RESULTS

Participant characteristics and the prevalence of risk factors are shown in Table 2. About 10% of mothers were less than 18 years of age and one-third were unmarried at the time of delivery. Only 21% had graduated from high school. One year after delivery, six out of 10 women were unemployed, and almost four out of 10 received welfare. Inuktitut is the first language among Nunavik Inuit, but since most participants were fluent in French or English, interviews were mainly conducted in one of these two languages. When the child was adopted, the 12-month postpartum interview was conducted with the adoptive mother (13%).

During the postpartum year, one out of four women experienced psychological distress above the clinical cut-off, i.e., the
Table 2. Demographic and psychosocial characteristics of the Inuit mothers in the postpartum year.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>n(%)</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Range</th>
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<tbody>
<tr>
<td>Marital status (% single)</td>
<td>176</td>
<td>53 (29.0)</td>
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<tr>
<td>Age</td>
<td>176</td>
<td>27.0</td>
<td>26.1</td>
<td>7.5</td>
<td></td>
<td>14.6–55.1</td>
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<td>Education (years)</td>
<td>176</td>
<td>8.7</td>
<td>9.0</td>
<td>2.0</td>
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<td>0–14.3</td>
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<tr>
<td>Employed</td>
<td>175</td>
<td>68 (38.9)</td>
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<tr>
<td>Receiving welfare</td>
<td>176</td>
<td>66 (37.5)</td>
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<tr>
<td>Interviewed in Inuktitut</td>
<td>176</td>
<td>26 (14.8)</td>
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<tr>
<td>Adoptive mothers</td>
<td>176</td>
<td>23 (13.1)</td>
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<tr>
<td>Psychological distressa</td>
<td>172</td>
<td></td>
<td>22.2</td>
<td>20.0</td>
<td>6.3</td>
<td>14.0–41.0</td>
</tr>
<tr>
<td>Suicidal thoughts ever</td>
<td>176</td>
<td>113 (64.2)</td>
<td></td>
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<tr>
<td>Suicidal thoughts postpartum</td>
<td>168</td>
<td>34 (19.3)</td>
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<tr>
<td>Suicidal attempts ever</td>
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<td>69 (39.2)</td>
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<tr>
<td>Suicidal attempts postpartum</td>
<td>170</td>
<td>12 (6.8)</td>
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<tr>
<td>Domestic abuseb</td>
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<tr>
<td>Verbal</td>
<td>122</td>
<td></td>
<td>(86.1)</td>
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<tr>
<td>Physical</td>
<td>120</td>
<td></td>
<td>(48.3)</td>
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<tr>
<td>Substance Use</td>
<td>122</td>
<td></td>
<td>(86.1)</td>
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<tr>
<td>Alcohol use</td>
<td>173</td>
<td>105 (60.7)</td>
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<tr>
<td>Binge drinking (% yes)c</td>
<td>105</td>
<td>67 (63.8)</td>
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<tr>
<td>No. of episodesd</td>
<td>67</td>
<td></td>
<td>22.8</td>
<td>8.0</td>
<td>32.2</td>
<td>0.8–193.0</td>
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<tr>
<td>No. of standard drinks/bingeid</td>
<td>67</td>
<td></td>
<td>8.6</td>
<td>8.0</td>
<td>3.4</td>
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<td>Illicit drug use</td>
<td>176</td>
<td>53 (30.1)</td>
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<tr>
<td>Marijuana usee</td>
<td>53</td>
<td>50 (94.3)</td>
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<tr>
<td>Others drug usee</td>
<td>53</td>
<td>9 (17.0)</td>
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<tr>
<td>Tobacco use</td>
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<td>157 (89.2)</td>
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<tr>
<td>No. of cigarettes/dayf</td>
<td>157</td>
<td></td>
<td>10.2</td>
<td>10.0</td>
<td>5.3</td>
<td>1.0–35.0</td>
</tr>
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</table>

aIDPESQ-14
bBy partner and mother only for women in a relationship
cAbstainers excluded
dOnly for binge drinkers
eOnly for drug users
fNon-smokers excluded
level likely to require professional help. A large majority of women reported at least one episode of verbal domestic abuse during the postpartum year. About half of the women reported physical abuse during the same time period. Women in the study committed spousal abuse as frequently as their partner. We observed moderate Spearman correlations between the frequency of being the victim and the perpetrator of violence in the couple for both verbal ($r_s = .62, p < .001$) and physical abuse ($r_s = .55, p < .001$). During the postpartum period, 6 women out of 10 consumed alcohol, with a majority binge drinking ($n = 67/105$ alcohol consumers). About one-third of the participants reported using illicit drugs. Most of the drug users consumed only marijuana ($n = 44/53$). Cocaine, solvent snifiting, psilocybin mushroom, and sedative use were rarely reported. Almost all participants smoked cigarettes, with 50% of the smokers smoking more than half of a pack daily. The prevalence of composite high-risk conditions was 51.1% for socioeconomic precariousness, 37.5% for distress, 35.8% for domestic violence, and 46.3% for substance use.

With regard to the relationship between demographic and socioeconomic variables: welfare was related to unemployment ($\Phi = .57, p < .01$), number of years of education ($r_s = -.29, p < .01$), and single parenting ($\Phi = .23, p < .01$); unemployment was related to number of years of education ($r_s = -.25, p < .01$) and age ($r_s = -.17, p < .05$). As shown in Table 3, among the psychosocial risk variables, we observed the strongest associations between distress and domestic abuse variables. Psychological distress was as strongly associated with violence from the participant’s partner as from the participant (data not shown: partner $r_s = .44, p < .01$; mother $r_s = .45, p < .01$). Verbal and physical abuse were associated for both partner ($r_s = .41, p < .01$) and participant ($r_s = .39, p < .01$). Illicit drug use was related to all suicide variables and both types of domestic abuse. Additionally, weak to moderate relationships were seen between socioeconomic and psychosocial risk factors: single parenting was associated with greater psychological distress ($r_s = .16, p < .05$), postpartum suicidal thoughts ($\Phi = .17, p < .01$), and physical abuse ($r_s = .29, p < .01$); unemployment was associated with verbal abuse ($r_s = .25, p < .01$); welfare status was associated with postpartum suicidal thoughts ($\Phi = .21, p < .01$), and drug use ($\Phi = .18, p < .05$); and poorer education was associated with postpartum suicidal thoughts ($r_s = .17, p < .05$) and binge drinking ($r_s = .22, p < .01$). The age of the mother was unrelated to distress, substance use, or domestic abuse variables. Examination of the coexistence of high-risk conditions revealed that 80.1% of women met criteria for at least one of these risks, 57.9% for at least two, 24.9% for at least three, and 5.7% for all high-risk conditions.

Exploratory latent class analyses of the computed high-risk conditions revealed that a three-class solution (Figure 1) provides the best fit for the data set, which showed three subgroups of mothers with distinct profiles in our sample (lowest AIC = 927.19). First, 30.8% of the mothers were at low risk, since they did not

<table>
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<td>Suicidal thoughts ever$^a$</td>
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<td>Suicidal thoughts$^a$</td>
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<td>.38**</td>
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<tr>
<td>Suicidal attempts ever$^a$</td>
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<td>.60**</td>
<td>.18*</td>
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<td>Binge drinking$^a$</td>
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<td>Drug use$^a$</td>
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<td>.18*</td>
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<td>No. cigarettes/day</td>
<td>.05</td>
<td>.25**</td>
<td>.15*</td>
<td>.15</td>
<td>.08</td>
<td>.08</td>
<td>-.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic abuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal abuse$^b$</td>
<td>.44**</td>
<td>.19*</td>
<td>.21*</td>
<td>.13</td>
<td>.11</td>
<td>.20*</td>
<td>.24**</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>Physical abuse$^b$</td>
<td>.24**</td>
<td>.20*</td>
<td>.45*</td>
<td>.16</td>
<td>.24**</td>
<td>.22**</td>
<td>.19*</td>
<td>.09</td>
<td>.53**</td>
</tr>
</tbody>
</table>

Note. $N$ ranges from 166 to 176. Phi coefficients are presented when two binary risk factors were simultaneously analyzed; Spearman's rho values are presented for the remaining analyses. $^a$Binary variables: 0 = no and 1 = yes.

$^b$Only for women in a relationship ($N$ ranges from 120 to 122).

*p < .05  **p < .01
encounter socioeconomic precariousness, distress, or domestic violence, and most of them did not report substance use (77.3%).

Second, 69.2% of mothers were experiencing higher levels of distress ($\chi^2[1, n=176] = 34.68, p=.001$). Third, there were two subgroups or profiles within the group of distressed mothers: 1) mostly single mothers characterized by their higher likelihood of having socioeconomic issues, and 2) women with fewer financial difficulties, but all experiencing domestic abuse. Mothers from those two profiles did not significantly differ on distress ($\chi^2[1, n=125] = 0.72, p=.79$), but those experiencing domestic violence were more likely to report substance use than women with an economically at-risk profile ($\chi^2[1, n=131] = 4.22, p=.04$). Therefore, women in the domestic violence group ($M = 2.59$, $SD = 0.84$) faced significantly more high-risk conditions than those in the economically at-risk group: ($M = 1.82$, $SD = 0.73$); $t(129) = 5.58$, $p = .00$.

Mean comparisons analysis between the low- and the two high-risk groups combined did not show significant differences on most demographic (language of the interview, adoption status of the child) and socioeconomic variables (age, education, employment). This is in spite of none of the mothers of the low-risk group receiving welfare compared to half of those in the high-risk groups ($\chi^2[1, n=176] = 36.27, p=.00$).

**DISCUSSION**

The primary aim of this study was to examine the prevalence and the coexistence of socioeconomic and psychosocial risk factors among Inuit mothers in the postpartum year, a critical period for child development. Our results show many mothers struggled with socioeconomic and psychosocial difficulties during this period. We found the prevalence rates of these difficulties in our study to be similar to those reported by women of childbearing age in the 2004 Nunavik Inuit Health Survey (Qanuippitaa). Rates of psychological distress, lifetime history of suicide attempts, and substance use, however, were higher in our study. The higher rate of distress might be due to being interviewed during the postpartum months, a period well-recognized to be high-risk for maternal depression. Differences in prevalence rates between Qanuippitaa and our study may also be due to sample differences between studies: the Qanuippitaa sample included 27% of the entire adult population of the region, with households selected to be representative of the population. We conducted our study in the three largest communities of the Hudson Bay region. As a consequence, it is possible that outcomes in this study may not be relevant to the entire Inuit population.
In addition, prevalence rates reported in this study corroborate the established disparities between Aboriginal Peoples and the general Canadian population (Pageau et al., 2003; Santé Canada, 1998). One year after delivery, 38.9% of Inuit women are employed compared to 64.3% of Canadian women with a child younger than three years old (Statistics Canada, 2007); the high school graduation rate is 4 times lower in Inuit women compared to Canadian women overall (Statistics Canada, 2009); the proportions of binge drinkers and marijuana users in the last 12 months are 2 and 4 times higher, respectively; the rate of suicide attempts in the postpartum year exceeds the rate of lifetime attempts among Canadian women of childbearing age (Government of Canada, 2006); and 7 times as many women in this study reported physical abuse than in the 1999 General Social Survey of Canada (CCJS, 2006).

In our study, the adversity during the postpartum year is obvious, since 6 women out of 10 simultaneously encounter at least two high-risk conditions. In addition to the personal and marital adjustment related to the birth of a child, many Inuit mothers have to deal with stressful psychosocial and socioeconomic difficulties likely to challenge their adaptation and well-being. Furthermore, this adversity may jeopardize optimal parental abilities in this fast growing population during a critical period of child and attachment development. Additional studies following infants through childhood are needed to examine the effect of socioeconomic and psychosocial adversity during the postpartum year, not only on child development but also on mother-child bonding.

The cross-cultural nature of this study raises issues about the validity of some psychosocial measures. From our experience with interviewing Inuit women, it appears that social desirability does not influence responses as much as in Caucasian populations. It is possible that studies in Caucasian populations underestimate the rates of social pathologies compared to those reported in this study. Furthermore, the fact that our participants had been interviewed several times before the postpartum interviews may have led to a more complete disclosure of sensitive personal information. Assessing constructs with a psychosocial meaning—especially violence and distress—across cultures poses methodological challenges (Kirmayer & Jarvis, 2005). For example, yelling at one’s spouse may be considered psychological abuse in some populations, but this behaviour may be socially acceptable in others (Levodonsky, Bogart, & von Eye, 2007), and likely easier to disclose. A questionnaire developed for a specific population therefore may not be reliable for another cultural group, because cultural groups define experience and express the underlying constructs in different ways (Kirmayer & Kenneth, 2007). It is possible that our measures over- and under-identified specific forms of distress and violence, while others may not be prevalent among the Inuit.

A second aim of the study was the identification of patterns and specific profiles of women based on risk factors. We did this to better understand postpartum adversity in Inuit mothers from Nunavik, and consequently to suggest an appropriate target of intervention. Our results showed moderate relationships among psychosocial risk factors, especially between domestic abuse and distress indicators. Due to the research design, it is not possible to determine the causal relationship between these variables: experiencing domestic abuse may create or exacerbate distress, but distress may also trigger domestic violence. Nevertheless, our results emphasize the importance of supporting women in an abusive relationship, since the frequency of verbal and physical abuse is the risk factor most associated with maternal distress.

We also found consistent associations between drug use and suicide and domestic abuse, which corroborate findings from previous studies in female Inuit youth (Kirmayer, Boothroyd, & Hodgins, 1998; Tester & McNicoll, 2004) and data from mental health services in Nunavik (Lessard, Bergeron, Fournier, & Bruneau, 2008). These studies have identified recent alcohol abuse and drug use as risk factors and triggers of suicide attempts among the Inuit. In this study, alcohol abuse or binge drinking was not related to suicide variables, but was related to both types of violence and associated with higher education level. These outcomes linking substance use with some desperate, impulsive, and aggressive behaviors against self and others have clinical implications. For example, substance use intervention programs should have a wider focus to encompass affect and impulse management with culturally respectful strategies. The surprising association between alcohol abuse and higher education was also found in the Qanuippitaa survey (Muckle et al., 2007) and in the present cohort during the pregnancy period (Muckle et al., 2011). It may be explained by the fact that the more educated women have larger incomes, providing them easier access to alcoholic beverages that are very expensive in the North.

Our results suggest that socioeconomic difficulties are likely to jeopardize maternal well-being during the postpartum period. According to the Maslow’s Universal Hierarchy of Needs theory, it is very difficult to reach a sense of well-being when the most fundamental human needs are not fulfilled (Harsenne, 2003). This finding shows the need for more effective governmental programs to improve employment opportunities and make food more affordable.

Using the data on high-risk conditions, we identified three distinct profiles of Inuit mothers. The first profile was a low-risk one, representing the third of our sample in which most of the women do not encounter any of the defined risk conditions. The second and third profiles referred to two subgroups of mothers susceptible to postpartum distress, but who have distinct experiences: domestic violence or socioeconomic precariousness. We failed to depict the resilient profile of mothers because our study did not include protective factors. The only variable that could be conceptualized in this way was education level and it did not significantly differ among the resilient and the risk groups. Moreover, the low-risk profile does not have any specific demographic characteristics when compared to others except welfare status, which was absent in this group. Welfare is the most severe socioeconomic risk factor included in this study, likely to reflect longer periods of unemployment and greater difficulties meeting family financial needs.
CONCLUSIONS

The results of this study support that Inuit mothers are at greater risk of distress in the postpartum period. In addition to adapting to the birth of a child, most of them have to deal with multiple psychosocial and socioeconomic adverse events. This study identified three risk profiles of Inuit mothers: one low-risk group, and two high-risk groups with different patterns of distress. This information has implications for prevention and public health programs to improve well-being in this population. To be most effective, programs should target both distinct subgroups: mothers experiencing financial difficulties and women in an abusive relationship, who are more likely to use substances. The fact that the economically precarious profile is the most prevalent reinforces the need to prioritize public programs addressing economic conditions in Nunavik. Further qualitative studies on the resilient low-risk group would also be beneficial to better understand the key factors of a positive postpartum transition among Inuit women.

ACKNOWLEDGEMENTS

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REFERENCES


**ENDNOTES**

i Since no specific statement by gender was made, we reported the results regardless of the gender.

ii In the MNAR pattern, missing data relate to the variable itself and cannot be ignored regardless of their proportion (Graham, 2009; Roth, 1994).

iii The governmental maternity leave program at time of the study allowed up to six months of leave after delivery.

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