Factors Associated with Depression in Pregnant Immigrant Women

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Abstract This study examined psychosocial risk factors for depressive symptomatology in a community sample of pregnant immigrant women in Montreal, Canada. One hundred and nineteen participants were recruited through hospitals and responded to questionnaires assessing depression, somatic symptoms, functional status, social support, stressful life events and marital adjustment. Forty-two percent of participants scored above the cut-off for depression. Depressive symptoms were associated with poorer functional status and more somatic symptoms. Depressed women reported a lack of social support, more stressful life events and poorer marital adjustment. Transitions associated with migration may place pregnant immigrant women at high risk for depression.

Key words depression • immigration • marital adjustment • pregnancy • social support • stress


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Despite societal expectations that pregnancy should be a time of emotional well-being for the mother, changes in social roles and in self-definition, coupled with other risk factors, might make pregnant women vulnerable to mental health problems. In fact, pregnant women appear to exhibit a higher rate of depressive symptomatology than non-childbearing women (O’Hara, 1995). Studies of depression during pregnancy have reported prevalence rates of approximately 12% (Kitamura, Sugawara, Sugawara, Toda, & Shima, 1996; Matthey, Barnett, Ungerer, & Waters, 2000). Rates may be considerably higher, ranging from 38 to 50%, among high-risk groups such as low income and/or minority women (Kelly, Zatzick, & Anders, 2001; Zayas, Cunningham, McKee, & Jankowski, 2002).

Prenatal depression poses risks for both the mother and the fetus. Smoking, drinking and illicit drug use are more common in depressed pregnant women, who may also be less likely to obtain adequate prenatal care (Pajulo, Savonlahti, Souraner, Helenius, & Piha, 2001; Zuckerman, Amaro, Bauchner, & Cabral, 1989). Orr and Miller (1995) found that prenatal depressive symptoms were associated with poor pregnancy outcomes such as premature delivery. Prenatal depression places women at greater risk for postpartum depression (Beck, 1996; O’Hara, 1995).

Research has indicated that a lack of social support and life stress are risk factors for depression during pregnancy. Social support is associated with lower levels of depressive symptomatology in pregnancy (Pajulo et al., 2001; Seguin, Potvin, St. Denis, & Loiselle, 1995, 1999). In particular, support from the baby’s father has been found to be associated with less depression in the prenatal period (Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Kitamura, Toda, Shima, Sugawara, & Sugawara, 1998). Stressful life events, particularly chronic stressors associated with low socio-economic status, are also associated with depression during pregnancy (Bolton, Hughes, Turton, & Sedgwick, 1998; Da Costa, Laruche, Drista, & Brender, 2000; Pajulo et al., 2001; Seguin et al., 1995; Zayas et al., 2002).

Immigrant women are at risk for depression (Franks & Faux, 1990), and pregnant immigrant women may be at particularly high risk. Stresses connected with the immigration process may affect physical and emotional well-being: financial worries, social isolation and separation from the extended family, discrimination and unfamiliarity with medical practices. An inability to communicate in the language of the new country may impede access to social and health services (Hyman & Dussault, 1991; Minister of Supply and Services Canada, 1988). Immigrant women have lower levels of social support, and it is this lack of support, rather than immigrant status per se, that is related to higher levels of reported stress (Landale & Oropesha, 2001). Glasser et al. (1998) found that 34% of their sample of pregnant Israeli women were depressed, with higher rates among Russian immigrants than among native-born Israeli women. Similarly,
30% of the pregnant immigrant women interviewed in a Montreal community survey reported significant emotional distress on the General Health Questionnaire (GHQ; Kirmayer, Galbaud du Fort, Young, Weinfeld, & Lasry, 1997). A lack of social support can place immigrant women at risk for emotional distress and psychiatric disturbance during pregnancy and the postpartum period (Brugha et al., 1998; Engle, Scrimshaw, Zambrana, & Dunkel-Schetter, 1990; Zelkowitz, 1996).

It appears then, that immigrant women may constitute a high-risk group for depressive disorders in pregnancy and the postpartum period. However, there is a lack of empirical research on the risk factors for depression in this group. The risk may be related to personal disruptions associated with immigrant status. Rogler (1994) has suggested that migration involves three major transitions: changes in personal ties and the reconstruction of social networks, the move from one socio-economic system to another, and the shift from one cultural system to another. This model may help to inform research on risk factors for depression among pregnant immigrant women.

Research on depression in pregnancy is also hampered by the lack of appropriate measurement instruments (Hendrick, Altshuler, Cohen, & Stowe, 1998). Because pregnancy is a time of major physical changes, the use of instruments such as the Beck Depression Inventory (BDI), which includes numerous somatic symptoms, may yield many false positives. The Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987), which includes only cognitive and affective symptoms, may yield a more accurate assessment of depression during pregnancy (Murray & Cox, 1990). Furthermore, the EPDS has been used extensively in transcultural research on depression in childbearing women, making it suitable for research with immigrant populations (Cox & Holden, 1994). Nonetheless, when assessing pregnant immigrant women, measurement of somatic symptoms may also be of value because of the common finding that in non-western cultures, somatization is an important feature of depression (Jacobsson, 1988). Indeed, the presence of numerous somatic complaints may in fact be a marker for mental health problems during pregnancy (Kelly, Russo, & Katon, 2001).

This article describes a study designed to assess risk factors for depressive symptomatology, somatic symptoms and functional status in a community sample of pregnant immigrant women. In keeping with Rogler’s model, it was hypothesized that depressed women would experience more strain associated with changes in social relationships (including social networks and the marital relationship) and in socio-economic status (reflected in stress associated with work and financial concerns).
METHODS

SAMPLE

With the cooperation of attending obstetricians and nurses, a community sample of participants was recruited from two Montreal hospitals that serve a significant immigrant population. Prospective participants were given a brief screening questionnaire to determine if they met the inclusion criteria: (i) born outside Canada or the US; (ii) age 18 years or older; (iii) immigrated to Canada as an adult, or with a conjugal partner; and (iv) able to respond to questions in English, French or Spanish. Of the 162 immigrant women who were screened, 19 were no longer interested in participating or could not be scheduled for an interview and 20 did not meet the inclusion criteria. As a result, 121 women participated in the study. The data from two women were deemed unreliable due to a language barrier. The final sample consisted of 119 women.

The mean age of the participants was 30.6 years (SD = 4.9), and the average age at arrival in Canada was 26.1 years (SD = 5.4). The mean length of residence in Canada was 4.5 years (SD = 3.4); 63% of the women had been in Canada for less than 5 years. The majority of the participants had completed high school (92%), and the average number of years of schooling was 13.2 (SD = 2.1). Only 38% of the participants were currently employed, whereas 66% had worked prior to their arrival in Canada. Participants spoke 29 languages and came from 44 countries, though 87% of the women spoke some English and/or French prior to their arrival in Canada. The largest group came from Middle Eastern/North African countries (33%); others came from Europe (17%), Asia (15%), Latin America (14%), Africa (13%) and Caribbean Islands (8%). The majority of participants were married or cohabiting (94%), and the average number of children living at home was 1.0 (SD = 0.9). Most participants were Canadian citizens or landed immigrants (92%). Their average gestation at the time of the interview was 28.7 weeks (SD = 5.1).

Measures

A screening questionnaire was used to obtain information on the woman’s place of birth, year of arrival in Canada, age at arrival in Canada and number of family members accompanying her to Canada. A demographics questionnaire yielded data on age, parity, marital status, education, work status, citizenship status in Canada, and fluency in English and French. Occupational status was rated with a modified version of the Blishen scale (Blishen, Carroll, & Moore, 1987). Measures of education and occupational status were used as indicators of socio-economic status (Bradley & Corwyn, 2002).
Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)
The EPDS was used to measure depressive symptomatology. The 10 items on the EPDS take about 5 minutes to complete and inquire about the mother's feelings during the past 7 days; she rates each item on a 4-point scale, from 0 to 3. The items refer to depressed mood, anhedonia, guilt, anxiety and thoughts of hurting oneself. The EPDS has been widely used to assess depressive symptoms in the postpartum period, in both western and non-western cultures (Cox & Holden, 1994). Using a cut-off point of 12/13, the measure exhibited 64–95% sensitivity and 78–96% specificity in relationship to diagnosis via clinical interview (Cox et al., 1987; Harris, Huckle, Thomas, Johns, & Fung; 1989; Murray & Cox, 1990; Zelkowitz & Milet, 1995). The EPDS has been found to have a moderate correlation ($r = .59$) with the structured clinical interview for DSM-IV mood disorder diagnosis (Beck & Gable, 2001). This instrument has been validated for use during pregnancy (Murray & Cox, 1990). There is some debate as to the appropriate cut-off point to use in research with pregnant women. Although Murray and Cox (1990) reported the best trade-off between sensitivity and specificity at a cut-off point of 14, they advocated the use of the 12/13 cut-off point to screen for both major and minor depression. Several large-scale studies of pregnant women in different countries have used cut-off points of 10 (Josefsson, Berg, Nordin, & Sydsjo, 2001) and 12 (Evans, Heron, Francomb, Oke, & Golding, 2001; Pajulo et al., 2001). It should also be noted that the validation sample in Murray and Cox's study was relatively small (100 participants), and the prevalence rate of depression quite low. These factors will certainly affect calculations of sensitivity and specificity. Large population-based studies using culturally appropriate diagnostic tools, with which EPDS scores can be compared, are needed to inform the debate regarding the most appropriate cut-off point for the EPDS (Austin & Lumley, 2003).

For the purposes of this study, a cut-off point of 12 was chosen to identify women at risk for depression, to maintain consistency with the cut-off point used to evaluate risk for postpartum depression. The data were also analyzed using a cut-off point of 14; apart from the fact that fewer women scored above the higher cut-off point (31% compared with 42% at the cut-off point of 12), the findings with regard to associations with somatic symptoms and functional status, as well as those with the risk factors of social support, life events and marital quality, were virtually identical.

It should be noted that although the EPDS is a valid screening tool for identifying women who are at risk for depression, a score above the cut-off point does not constitute a psychiatric diagnosis of depression. In this study, women scoring at or above the cut-off score of 12 were considered at high risk for depression.
Somatic Symptoms
A 12-item scale utilized by Kirmayer et al. (1997) in a community survey of immigrants was used to assess somatic symptoms in the sample. Respondents were asked to indicate whether they had been troubled by any of the 12 symptoms in the previous year. This measure demonstrated good internal consistency, with Cronbach’s alpha for this measure ranging from .72 to .76.

Functional Status
Functional status was assessed with the Medical Outcomes Study Short-Form General Health Survey (SF-20; Ware, Sherbourne, & Davies, 1992). It is comprised of 20 items that form six subscales: physical functioning, role functioning, social functioning, mental health, bodily pain and general health perceptions. This measure takes only 5–10 minutes to complete, and its reliability and validity have been demonstrated across cultures and populations.

Stressful Life Events
A list of 14 stressful life events (Kirmayer et al., 1997) found to be related to illness and depression (Paykel et al., 1969) was used. The list also includes questions concerning events that are specifically relevant to ethnic minorities, such as problems with language or discrimination. This instrument has demonstrated acceptability in its use with several immigrant groups. Internal consistency of this measure is moderate (Cronbach’s alpha = .55), which is to be expected when measuring a very diverse set of life events. Respondents were asked to indicate whether they had experienced any of these events in the previous year.

Social Support
The Arizona Social Support Interview Schedule (ASSIS; Barrera, 1981) was used to derive information on perceived and enacted support in six domains: intimate interactions, material assistance, advice, positive feedback, practical assistance, and social participation. Perceived support was measured by the mean number of network members listed for each domain. Enacted support refers to the mean number of network members from whom the participant received assistance in the previous month on each domain. Participants rated their need for and satisfaction with support on Likert scales. The interviewer also obtained information on certain characteristics of network members, including ethnic background, gender and the nature of the relationship to the respondent. The measure shows good test–retest reliability.
Relationship with the Partner

Relationship with the partner was assessed with the Dyadic Adjustment Scale (DAS; Spanier, 1976). This 32-item scale has been widely used in studies of marital quality. The scale yields a total score as well as four subscale scores: consensus, satisfaction, cohesion and affectional expression. Internal consistency for the scale as a whole is .96, with subscale reliabilities ranging from .73 to .94.

Procedures

Research assistants approached potential participants who were waiting for their obstetrics appointments or participating in prenatal information sessions. Upon agreement of the participant, the research assistant administered the screening questionnaire. Participants who met the inclusion criteria were later contacted to schedule a home visit where the assessment took place. Interviews were conducted in French (60%), English (29%) and Spanish (10%), and lasted approximately 1–2 hours, depending on the participants’ language fluency.

Results

Analysis of variance was used to examine differences among women from different geographic areas in somatic symptoms, functional status and psychosocial risk factors; chi square analysis was used to determine whether there was a difference in the rate of women scoring above the EPDS cut-off point by geographic area. There were no significant between-group differences in these variables, or in the risk factors, including social support, life stress and marital adjustment. For the purposes of all subsequent analyses, women from all geographic groups were combined. Independent samples t-tests showed that women scoring > 12 on the EPDS did not differ from those scoring < 12 in any of the following demographic variables: age, parity, years of education, employment status and occupational status (see Table 1).

Prevalence of Symptoms

Owing to the possibility that the EPDS scores were strongly positively skewed, the distribution of EPDS scores was verified. However, results indicated that for the current sample, the EPDS scores were normally distributed, with a mean of 10.6, standard deviation of 5.8 and skewness of 0.5; therefore, no transformations were necessary. This allows us to evaluate the EPDS as a continuous variable, as well as examining group differences among women scoring above and below the cut-off point. This
The dual approach is of value because of the debate regarding the appropriate cut-off point to be used in studying pregnant women. Forty-two percent of the participants scored at or above the cut-point of 12 for depression on the EPDS.

Independent samples $t$-tests indicated that women with scores of 12 or higher on the EPDS had significantly more somatic symptoms than those with scores $< 12$, $t(117) = –4.02$, $p < .001$ ($M = 8.1$, $SD = 3.6$ vs. $M = 5.5$, $SD = 3.4$, respectively). Table 2 shows the differences in somatic symptoms reported between the two groups.

In order to verify whether the functional status subscales were redundant with the EPDS, a correlation matrix was computed. Correlations between the EPDS and the physical functioning, role functioning, social functioning, bodily pain and general health perceptions subscales of the SF-20 were only moderate (ranging from $-0.23$ to $-0.39$). However, not unexpectedly, the correlation between the mental health scale and the EPDS was strong ($r = 0.70$). Therefore, the mental health subscale of the SF-20 was considered redundant with the EPDS, and was not considered in the following analysis.

Multivariate analysis of variance of the five scales of the SF-20 indicated that there was a significant group difference ($F(5,113) = 5.46$, $p < .001$). Post-hoc univariate tests indicated that women with scores of 12 or higher

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**TABLE 1**

Demographic information on study participants

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>EPDS $\geq$ 12</th>
<th>EPDS $&lt; 12$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$(N = 50)$</td>
<td>$(N = 69)$</td>
</tr>
<tr>
<td>Mean age of participants</td>
<td>30.2 (4.9)</td>
<td>30.9 (5.0)$^a$</td>
</tr>
<tr>
<td>Percent of women expecting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>first child</td>
<td>38</td>
<td>44</td>
</tr>
<tr>
<td>second child</td>
<td>46</td>
<td>41</td>
</tr>
<tr>
<td>third or more children</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Mean years of schooling$^b$</td>
<td>12.9 (2.1)</td>
<td>13.4 (2.1)</td>
</tr>
<tr>
<td>Percent of women employed outside the home</td>
<td>36</td>
<td>39</td>
</tr>
<tr>
<td>Mean occupational status at present$^c$</td>
<td>3.7 (1.5)</td>
<td>4.1 (1.5)</td>
</tr>
<tr>
<td>Mean occupational status prior to migration$^d$</td>
<td>4.2 (1.7)</td>
<td>4.8 (2.1)</td>
</tr>
<tr>
<td>Mean EPDS score</td>
<td>16.1 (3.9)</td>
<td>6.6 (3.0)</td>
</tr>
</tbody>
</table>

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$a$ Standard deviations in parentheses.

$^b$ $n = 67$ for the group scoring $< 12$ on the EPDS and $n = 50$ for the group scoring 12 or more.

$^c$ $n = 26$ for the group scoring $< 12$ on the EPDS and $n = 16$ for the group scoring 12 or more.

Data available for women who were employed at the time of the interview.

$^d$ $n = 41$ for the women scoring $< 12$ on the EPDS and $n = 36$ for the group scoring 12 or more.

Data available for women who were employed before coming to Canada.
on the EPDS had significantly poorer functional status than those scoring below 12, on all five scales: physical, social and role functioning, pain and general health perceptions.

**Correlates of Depression**

Women with scores of 12 or higher on the EPDS reported significantly more stressful life events in the previous year than did women scoring below that cut-off point, $t(117) = -4.98, p < .001$ ($M = 2.5, SD = 1.7$ vs. $M = 1.1, SD = 1.3$). Table 3 shows the differences in stressful life events reported between the two groups.

Independent samples $t$-tests indicated that women with scores of 12 or more on the EPDS reported significantly fewer network members across domains ($t(114.03) = 2.82, p < .01$). The composition of the networks differed in that women with scores $> 12$ reported significantly fewer relatives (means of 0.7 vs. 1.6, $t(117) = 2.22, p < .05$), fewer women (means of 3.8 vs. 4.7, $t(117) = 2.04, p < .05$) and fewer people from the same ethnic background (means of 4.4 vs. 5.9, $t(117) = 2.56, p < .05$) than did women with scores $< 12$ on the EPDS. There was also less satisfaction with support across domains ($t(79.45) = 2.68, p < .01$) and greater need for support across domains ($t(117) = 3.19, p < .01$). There were no significant differences between women scoring above and below 12 on the EPDS on any item of the social participation domain or on negative interactions with network members. Table 4 reports means and standard deviations.
for the number of network members in the categories of perceived and enacted support, as well as support satisfaction and need for support in the other domains. These results indicate that although women scoring 12 or more on the EPDS did not generally report less enacted support, they tended to be less satisfied with the support that they received than were women scoring below that cut-off point. Women scoring 12 or more on the EPDS also reported a greater need for support, particularly in terms of practical assistance and intimate interactions.

Multivariate analysis of variance with the four scales of the DAS indicated a significant group difference ($F(4,109) = 4.91, p < .001$). Post-hoc univariate tests indicated that women with scores of 12 or more on the EPDS had significantly poorer dyadic adjustment on all four subscales: Dyadic Consensus ($F(1,112) = 15.40, p < .001$), Dyadic Satisfaction ($F(1,112) = 9.29, p < .01$), Affectional Expression ($F(1,112) = 12.62, p < .001$) and Dyadic Cohesion ($F(1,112) = 6.97, p < .01$).

Length of stay in Canada was associated with depressive symptomatology: 49% of the women who had resided in Canada for less than 5 years had scores of 12 or higher on the EPDS, compared with 29.5% of women who had lived in Canada for more than 5 years ($F^2 = 4.46, p < .05$). Life stress and marital quality were not related to length of stay, but there was a difference in social network composition: women who had been in Canada for less than 5 years reported fewer relatives in their networks.
There were no differences in support from friends, or in satisfaction from support from different types of network members.

Predicting Depression during Pregnancy

Previous as well as the current research has investigated risk for depression based on a cut-off point of 12/13 on the EPDS. This cut-off point is clinically useful in terms of identifying patients who are at risk for depression. However, using such a cut-off may mask differences between individuals who fall into the same category but who have higher or lower levels of depressive symptomatology. It is, therefore, important to investigate

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depressive symptomatology and the risk factors associated with depressive symptomatology on a continuum.

In order to investigate the direct and indirect effects of such risk factors as stressful life events, marital adjustment and social support measures on the extent of depressive symptomatology, a path analysis was conducted. It was expected that all these risk factors would have a direct effect on depressive symptomatology. Figure 1 represents the direct and indirect paths of the risk factors for depressive symptomatology. However, for purposes of simplification, only the significant paths are shown. The analysis included a series of multiple regression analyses. In the first analysis that was conducted, direct entry of the following variables was used to predict depressive symptomatology during pregnancy: recent stressful life events, marital adjustment, satisfaction with social support and need for social support. However, only three variables showed a direct effect on depressive symptomatology, accounting for 34% of the variance: need for social support ($\beta = .39$); satisfaction with social support ($\beta = -.27$); and marital adjustment ($\beta = -.22$).

A second multiple regression analysis was conducted to assess the variables that predicted satisfaction with social support. Direct entry of the following variables was used: recent stressful life events, marital adjustment and need for social support. Marital adjustment ($\beta = .36$) and need for social support ($\beta = .36$) were significant predictors of satisfaction with social support, accounting for 23% of the variance. A similar analysis examined the variables that predicted need for social support. Accounting for 22% of the variance, stressful life events ($\beta = .27$), marital adjustment ($\beta = -.22$) and satisfaction with support ($\beta = .37$) were significant.

Figure 1 Predictors of depression during pregnancy.
predictors of need for social support. A further analysis revealed that stressful events were a significant predictor of marital adjustment ($\beta = -0.35$), accounting for 13% of the variance.

Based on these regressions, several indirect pathways leading to depressive symptomatology were found (Fig. 1). Stressful life events had an indirect effect on depressive symptomatology, through poorer marital adjustment and greater need for and satisfaction with social support (indirect effect = 0.24).

**Discussion**

This study of a community sample of pregnant immigrant women indicates that these women are at high risk for depression, with 42% scoring above the cut-off point on the EPDS. Assuming, based on previous research using this measure with pregnant women, a positive predictive value of 50%, it is likely that at least half of these women would in fact meet criteria for a depressive disorder if they were evaluated clinically. This rate is similar to that reported in research with other high-risk groups, such as low income or minority women (Kelly et al., 2001; Zayas et al., 2002).

The level of distress was corroborated by the numerous somatic symptoms and poorer functional status reported by this group of women; these findings lend support to the use of the EPDS as a screening tool with immigrant women. Research with primary care patients has shown that those who report six or more somatic symptoms are likely to have current mood or anxiety disorders (Kroenke, Jackson, & Chamberlin, 1997); the mean number of somatic symptoms in our index group was 8.1 compared with 5.5 in our comparison group. It is of interest that the somatic symptoms that distinguished between the index and comparison groups were generally not pregnancy-related: reports of nausea were comparable in both groups, whereas women in the index group suffered more often from symptoms such as dizziness, fainting and memory loss. This suggests that emotional factors may have played a role in the development of these symptoms.

Although demographic factors, such as maternal age, parity, education and occupational status, were not related to depressive symptoms during pregnancy, psychosocial risk factors such as the experience of stressful life events, a lack of social support and unsatisfactory marital relations were significantly and independently related to depressive symptoms in pregnant immigrant women. Thus, women who reported more depressive symptoms described networks that included fewer women, fewer relatives and fewer people from their own ethnic group; these women also reported less satisfaction with and greater need for social support. It is likely that in
their countries of origin, they would have relied on the support and assistance of other women (relatives and friends), particularly during pregnancy and the postpartum period (cf. Landale & Oropesa, 2001). Length of residence in Canada was also related to network composition, with more recent immigrants reporting fewer relatives in their networks. It is possible that women who had been in Canada for 5 years or more had been joined by other relatives, through family class immigration programs or by having paved the way for migration of family members. The support of relatives or other network members from one’s own ethnic group, who are familiar with the norms and customs surrounding childbirth, might be particularly valued by pregnant women. Higher levels of marital dissatisfaction may also reflect changes in social networks due to migration. Women with few relatives and other women in their networks may expect more support from their husbands; this may constitute a shift from traditional spousal roles, and may result in marital strain.

Stress associated with migration, such as problems with housing, and problems with discrimination or prejudice, were more common among women scoring 12 or higher on the EPDS. These types of stressors have been found to be more common among immigrants than among native-born Canadians (Kirmayer et al., 1997). In addition, there was evidence that changes in income may have been associated with depressive symptoms, in that the index group were more likely to report stress related to work and finances.

The results of this study also suggest that the relationship between stressful life events and depression during pregnancy is mediated by marital adjustment and social support. That is, women who experience stressful life events are more likely to report marital strain, a greater need for support, and less satisfaction with support received, and consequently report more depressive symptoms.

An important limitation of this study was that there were no control groups of non-pregnant immigrant women or pregnant Canadian-born women, to compare the prevalence of both risk factors and depressive symptoms. Previous research with a large community sample of immigrant and non-immigrant women who were administered the EPDS at 6 weeks postpartum found that immigrants were at higher risk for depression than native-born women (9.4 vs. 5.5%, respectively) (Zelkowitz & Milet, 1995). The risk factors identified in this study have also been found to be related to depression in childbearing women in general community samples (Katofsky et al., 2000). Further study, including qualitative approaches to data collection, would also be useful in order to elucidate the meaning of these stressors in the lives of immigrant women. For example, the reasons why women were dissatisfied with their support networks or with the marital relationship could be explored in greater depth.
Another limitation of this study was that information regarding previous psychiatric history of the participants was not obtained. It is therefore not known whether women who reported more depressive symptoms had exhibited mental health problems prior to the pregnancy, or whether pregnancy exacerbated these symptoms.

This study examined two of the three domains outlined in Rogler’s framework for studying the impact of migration on mental health, looking at social networks and socio-economic factors, but not issues of culture. Future research should study how acculturation may affect childbearing immigrant women; it would also be useful to address the question of change through direct questioning.

The findings of this study indicate that childbearing immigrant women are at high risk for depressive symptoms during pregnancy. The risk factors associated with depressive symptoms include those found in community studies of native-born women, such as life stress, marital problems and lack of social support, as well as those more specifically related to immigration, such as the experience of discrimination in the host country. The extent to which depressive symptoms carry over in the postpartum period will be examined in a 2- and 6-month follow-up of the current sample. Questions regarding service utilization, and satisfaction with services received, also form part of the follow-up study. These data may help us to devise appropriate interventions for childbearing immigrant women, in order to promote the well-being of the mothers and their infants. Because immigrants are far less likely than native-born people to seek help for mental health problems (Kirmayer et al., 1997), screening and outreach programs may be essential to identify childbearing immigrant women who are vulnerable to depression due to the presence of psychosocial risk factors. Provision of instrumental support, such as childcare, material support such as baby furniture, diapers and clothing, and emotional support through doulas and other new mothers in the community, may be beneficial in this high-risk group.

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