

Résumé

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**L'allaitement et les femmes autochtones :  
validation de l'échelle de mesure  
de l'auto-efficacité en matière d'allaitement,  
version abrégée**

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L'objectif de cette enquête méthodologique, qui s'inscrit dans le cadre d'une étude de cohorte prospective, est d'évaluer la fiabilité et la validité de l'échelle de mesure de l'auto-efficacité en matière d'allaitement, version abrégée (BSES-SF), chez les femmes autochtones. L'échantillon est composé de 130 femmes autochtones allaitantes ayant séjourné en salle postpartum dans un hôpital de soins tertiaires urbain ou un hôpital rural. Les femmes ont fourni des renseignements de base pendant leur hospitalisation et ont été contactées par téléphone à la quatrième et à la huitième semaine postpartum afin d'évaluer leur méthode pour allaiter leur nourrisson. Selon l'enquête, la BSES-SF est un outil valide et fiable pour évaluer l'auto-efficacité chez les femmes autochtones en matière d'allaitement. Des différences importantes ont été constatées en ce qui a trait au score de la BSES-SF en milieu hospitalier, chez les femmes qui, à quatre semaines postpartum, nourrissaient leur nourrisson exclusivement au sein, avec une méthode mixte ou uniquement au biberon ( $F(2) = 7,31, p = 0,001$ ). Les auteurs concluent que les femmes autochtones affichant une faible auto-efficacité en début de période postpartum risquent d'arrêter d'allaiter de façon précoce et bénéficieraient d'un soutien supplémentaire en matière d'allaitement.

Mots clés : femmes autochtones, allaitement, échelle de mesure de l'auto-efficacité en matière d'allaitement, BSES-SF

# Breastfeeding and Aboriginal Women: Validation of the Breastfeeding Self-Efficacy Scale – Short Form

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The purpose of this methodological investigation, part of a prospective cohort study, was to test the reliability and validity of the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) among Aboriginal women. The sample comprised 130 breastfeeding Aboriginal women from the postpartum ward of an urban tertiary care hospital or a rural community hospital. The women provided baseline information while in hospital and were telephoned at 4 and 8 weeks postpartum for assessment of their method of infant feeding. The BSES-SF was found to be a valid and reliable tool for assessing breastfeeding self-efficacy among Aboriginal women. Significant differences were found in BSES-SF in-hospital scores among women who at 4 weeks postpartum were exclusively breastfeeding, combination feeding, or solely feeding formula ( $F(2) = 7.31, p = 0.001$ ). The authors conclude that Aboriginal women with low breastfeeding self-efficacy in the early postpartum period may be at risk for early cessation and could benefit from additional breastfeeding support.

**Keywords:** Aboriginal health, breastfeeding self-efficacy, health promotion, perinatal nursing, psychometrics

## Introduction

Due to the compelling advantages associated with human milk, breastfeeding has been identified as the optimal source of nutrition for infants (Ip et al., 2007). The American Academy of Pediatrics (2005), the Canadian Pediatric Society (2005), Health Canada (2004), and the World Health Organization (2001) all recommend that infants be exclusively breastfed for the first 6 months of life and beyond, with the addition of complementary foods.

Although rates of breastfeeding initiation have increased over the past 20 years in Canada and the United States, breastfeeding duration remains a concern, as many women discontinue breastfeeding well before current recommendations (Centers for Disease Control, 2010; Chalmers et al., 2009). Further, the majority of mothers are not exclusively breastfeeding to 6 months postpartum. Recent studies suggest that only 50% of mothers are breastfeeding at 6 months, with fewer than one in five doing

so exclusively (Centers for Disease Control, 2010; Chalmers et al., 2009; Li, Zhao, Mokdad, Barker, & Grummer-Strawn, 2003; Sheehan, Watt, Krueger, & Sword, 2006). Rates are even lower in low-income populations, minority/racial groups, and adolescents (Anderson, Damio, Chapman, & Perez-Escamilla, 2007; Mossman, Heaman, Dennis, & Morris, 2008; Ryan & Zhou, 2006). As evidence suggests that breastfeeding has a dose response effect (Ip et al., 2007; Kramer & Kakuma, 2002), low rates of breastfeeding imply that many infants may not be receiving the maximum health benefits that breastfeeding affords. This may be especially true for Aboriginal infants, as research studies have identified lower rates of both initiation and duration of breastfeeding among Aboriginal women in comparison to non-Aboriginal women (Black, Godwin, & Ponka, 2008; Martens, 2002; UNICEF, 2009). For example, a retrospective chart review of women who gave birth over the 7-year period 1997 to 2003 in Moose Factory, Ontario, found a breastfeeding initiation rate of 51.9% (Black et al., 2008) — much lower than the Canadian initiation rate of 78% during the same period. Similarly, Manitoba South First Nations reported breastfeeding initiation rates are between 43% and 65%, with only 40% to 50% of Aboriginal mothers breastfeeding to 12 weeks postpartum and 20% to 30% to 6 months (as cited in Martens, 2002).

Improving breastfeeding rates is difficult as variables influencing breastfeeding outcomes are multifactorial and complex. The reasons why some Aboriginal women breastfeed and others decide to formula feed their infant have rarely been studied (Willows, Hanley, & Delormier, 2012). Additionally, little attention has been given to how the historical, social, and community context may influence breastfeeding among Aboriginal women. One qualitative study conducted in Saskatoon, Saskatchewan, found diverse variables influencing Aboriginal women's decision to breastfeed, including contextual (sociocultural and environmental), attitudinal, cognitive (knowledge, information and beliefs), experiential (previous infant-feeding experiences), and psychological factors (Wagner, 2005). However, researchers have suggested that, to adequately address low breastfeeding rates, interventions should focus on modifiable variables.

One potentially modifiable variable is breastfeeding self-efficacy. Breastfeeding self-efficacy, defined as a mother's confidence in her perceived ability to breastfeed her infant (Dennis, 1999), has been broadly studied both theoretically and empirically. Dennis (1999) developed the Self-Efficacy Framework based on Bandura's (1977) social cognitive theory and the Breastfeeding Self-Efficacy Scale (BSES) (Dennis & Faux, 1999), which was modified to the Breastfeeding Self-Efficacy Scale-Short

Form (BSES-SF) (Dennis, 2003). Using these scales, researchers have identified breastfeeding self-efficacy as a salient variable affecting breastfeeding outcomes in diverse countries. Further, researchers have advocated for the routine assessment of breastfeeding self-efficacy and the development and testing of a breastfeeding self-efficacy-enhancing intervention.

Given the lower rates of breastfeeding among Aboriginal women, focusing on improving Aboriginal women's breastfeeding self-efficacy may be one promising intervention. However, as few studies have focused on variables affecting breastfeeding outcomes among Aboriginal women it is undetermined if the factors affecting breastfeeding are similar or different to those of non-Aboriginal women. It may be premature to assume that breastfeeding self-efficacy is a salient variable and that the BSES-SF is a valid and reliable tool for identifying Aboriginal women at risk for early discontinuation of breastfeeding due to low breastfeeding self-efficacy. The purpose of this study was to extend the psychometric testing of the BSES-SF among a sample of breastfeeding Aboriginal women in the early postpartum period.

### **Self-Efficacy Theory**

According to Bandura (1977), self-efficacy is a cognitive belief that our actions can produce the outcomes we desire. Therefore, values of self-efficacy provide the foundation for many individual behaviours, including motivation, well-being, and personal accomplishment. For example, when individuals believe that they are capable of producing a desired outcome, they are more likely to pursue the behaviour(s) that will lead to that outcome. Alternatively, if individuals believe that they are not capable of producing a desired outcome, they are less likely to act or persevere, especially if confronted with any barriers. Therefore, individuals tend to select tasks and activities that they feel confident about and to avoid those that they do not feel confident about.

Dennis's (1999) self-efficacy framework conceptualizes the role of self-efficacy in explaining and predicting behaviour. In relation to breastfeeding, the framework indicates that a woman's breastfeeding self-efficacy will influence (a) whether she chooses to breastfeed or bottle-feed, (b) her level of effort or persistence regarding breastfeeding, (c) her thought patterns, and (d) her emotional reactions to breastfeeding. Thus, the model proposes that women who are confident about their ability to breastfeed will be more likely to initiate breastfeeding, invest great effort in breastfeeding and persist if difficulties are experienced, and have positive thought patterns and emotional reactions to breastfeeding.

### **Breastfeeding Self-Efficacy Scale**

Breastfeeding self-efficacy may be measured using the BSES (Dennis & Faux, 1999) or the BSES-SF (Dennis, 2003). The BSES was originally developed as a 33-item self-report tool to measure breastfeeding confidence (Dennis & Faux, 1999). Content validity of the BSES was based on a literature review, interviews with breastfeeding women, and expert judgement, as recommended by Lynn (1986). The tool was pilot tested and then psychometrically analyzed with a convenience sample of 130 Canadian breastfeeding women. While the psychometric testing of the BSES demonstrated that it was both a valid and a reliable tool for assessing breastfeeding self-efficacy, internal consistency statistics suggested item redundancy. Consequently, an additional methodological study was undertaken and 18 items were deleted using explicit reduction criteria (Dennis, 2003), resulting in a new 14-item instrument (BSES-SF). Internal consistency using Cronbach's alpha for the BSES-SF was 0.94. Construct validity of the BSES-SF was assessed using principal components factor analysis, comparison of contrasted groups, and correlations with measures of similar constructs. Support for the predictive validity of the instrument was demonstrated through significant mean differences in BSES-SF in hospital scores between women who were breastfeeding or formula feeding at 4 and 8 weeks postpartum.

Additional methodological studies have been conducted in Australia (Creedy et al., 2003); Brazil (Oria, Ximenes, de Almeida, Glick, & Dennis, 2009; Zubaran et al., 2010); Canada (Dennis, Heaman, & Mossman, 2011; Kingston, Dennis, & Sword, 2007); China (Dai & Dennis, 2003); Poland (Wutke & Dennis, 2007); Puerto Rico (Molina Torres, Davila Torres, Parrilla Rodriguez, & Dennis, 2003); Spain (Oliver-Roig et al., 2012); Turkey (Alus Tokat, Okumus, & Dennis, 2010; Eksioglu & Ceber, 2011); the United Kingdom (Gregory, Penrose, Morrison, Dennis, & MacArthur, 2008); and the United States (McCarter-SpaULDING & Dennis, 2010). While these studies represent diverse countries and languages, they also include various cohorts of women, including adolescents (Dennis et al., 2011), ethnically diverse women in the United Kingdom (Gregory et al., 2008), and Black women in the United States (McCarter-SpaULDING & Dennis, 2010). In these studies, breastfeeding self-efficacy in the early postpartum period consistently predicted breastfeeding duration and exclusivity across the postpartum period. In particular, women with low breastfeeding self-efficacy were more likely to have shorter breastfeeding duration and were less likely to exclusively breastfeed. Overall, the results of these studies suggest that the BSES is a reliable and valid measure that can be used by health professionals internationally to assess breastfeeding

self-efficacy in order to identify women at risk for early discontinuation of breastfeeding so that supportive interventions may be provided. However, prior to using the tool with Aboriginal women, further psychometric testing should be conducted.

Based on the previous testing of the BSES-SF instrument, three hypotheses were made with respect to the Aboriginal women in the present study: (1) those who had higher breastfeeding self-efficacy in the early postpartum period (in hospital) would breastfeed longer (duration) and have higher rates of breastfeeding exclusivity, (2) those who had breastfed previously would have higher breastfeeding self-efficacy than those who had not, and (3) those who had depressive symptoms would have lower breastfeeding self-efficacy.

## **Methods**

### **Sample**

This methodological investigation was conducted as part of a prospective cohort study evaluating variables affecting breastfeeding outcomes among Aboriginal women. After hospital and university ethics approval was obtained, participants were recruited from the maternity ward at either a tertiary care centre or a rural hospital in northwestern Ontario between July 7, 2010, and March 2, 2011. Those eligible were breastfeeding Aboriginal women who had given birth to a healthy term infant and were expected to be discharged home with the infant. Aboriginal ancestry was identified by self-report. All new breastfeeding women were informed that there was a research study underway regarding breastfeeding among Aboriginal women and each woman was asked if she would like to voluntarily disclose whether she was of Aboriginal heritage. Additional inclusion criteria were ability to read and speak English and telephone accessibility for the purpose of completing follow-up questionnaires. A woman was excluded if breastfeeding could be precluded by some factor, such as infant prematurity/illness, multiple births, or maternal complications. For the purposes of the study, a woman was considered to be breastfeeding if her infant had received breast milk by breast or bottle or if she had not yet initiated breastfeeding but intended to breastfeed.

### **Instruments**

**Baseline demographic information.** A baseline questionnaire was administered upon the woman's entry into the study, which was usually within 48 hours postpartum. Questions addressed maternal characteristics, such as age, education, marital status, community of residence (urban or rural),

and breastfeeding goals and intentions. This questionnaire had been used in a previous breastfeeding study, which included Aboriginal women, without difficulty (McQueen, Dennis, Stremler, & Norman, 2011).

**Breastfeeding self-efficacy.** The BSES-SF is a 14-item self-report instrument (Dennis, 2003) that was used to assess breastfeeding self-efficacy at baseline (in hospital) and 4 and 8 weeks postpartum. All items were preceded by the phrase “I can always” and anchored with a five-point Likert scale ranging from *not at all confident* to *always confident*. All items were presented positively, and scores were summed to produce a range from 14 to 70, with higher scores indicating higher breastfeeding self-efficacy. The internal consistency of the tool, using Cronbach’s alpha, was .94 (Dennis, 2003).

**Depressive symptomatology.** The Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden, & Sagovsky, 1987) is a 10-item self-report instrument used to assess for depressive symptoms. Items are rated on a four-point scale to produce a summative score ranging from 0 to 30, with higher scores indicating lower maternal mood state. This instrument does not diagnose postpartum depression but rather is the most frequently used instrument for assessing postpartum depressive symptomatology (Boyd, Le, & Somberg, 2005). A cut-off score of greater than 9 was used to identify depressive symptoms (including minor depression) as recommended for non-clinical community samples (Cox et al., 1987). As no studies were found that validated the use of the EPDS among Aboriginal women in North America, use of a lower cut-off score may also increase the sensitivity of the measure (Matthey, Henshaw, Elliott, & Barnett, 2006).

**Breastfeeding duration and exclusivity.** Breastfeeding duration and exclusivity data were obtained using an infant-feeding questionnaire administered by telephone at 4 and 8 weeks postpartum. The questionnaire specifically addressed feeding method at the time of the telephone call, level of breastfeeding, and reasons for any change(s) in feeding method or level. If a woman indicated that she was breastfeeding, breastfeeding level was further defined using the classification by Labbok and Krasovec (1990): (a) exclusive breastfeeding (breast milk only); (b) almost exclusive breastfeeding (breast milk and other fluids, but not formula); (c) high breastfeeding (< 1 bottle/day); (d) partial breastfeeding (at least 1 bottle of formula/day); or (e) token breastfeeding (breast given to comfort baby but not for nutrition). If a woman was no longer practising any breastfeeding (e.g., was formula feeding), the date of breastfeeding discontinuation was recorded to determine the number of weeks of breastfeeding.

### **Data Analysis**

Consistent with the original validation study of the BSES-SF (Dennis, 2003), the reliability of the BSES-SF (in hospital within 48 hours post-partum) was evaluated using the following methodological approaches. An online data-capture tool using Web-based programming was created to enable direct data entry from the survey into the data set. The online data-capture forms organized the data into a data set, which maintained a complete response for each individual. Once all data were entered and the data set was checked for errors/missing values, the data were analyzed using the Statistical Analysis System (SAS) Version 9.2 to provide the following: (a) item-summary statistics, (b) inter-item correlations, (c) corrected item correlations, (d) the reliability coefficient based on Cronbach's alpha, and (e) the reliability coefficient estimate when an item was deleted. Construct validity was assessed using factor analysis and compared to previously published constructs. The predictive validity was determined by evaluating the relationship between the instrument scores and the recorded infant-feeding method using one-way analysis of variance.

## **Results**

In total, 150 eligible Aboriginal women were approached to participate in the study. Of those, 132 (88%) agreed to take part. Of these women, 130 (98.5%) provided the baseline demographic information in hospital during the recruitment period, while 105 (80.7%) completed the 4-week infant-feeding follow-up and 102 (78.5%) completed the 8-week infant-feeding follow-up. This sample size was adequate for the analysis, as the minimum requirement for psychometric testing of the instrument has been identified as 70 (5 participants for each of the 14 items) (Dennis & Faux, 1999).

### **Demographic Data**

The average age of the participants was 24.5 years ( $SD = 6.1$ ). While many of the women were married/common-law ( $n = 83$ , 68%), almost one third ( $n = 39$ , 32%) were single (see Table 1). Most of the women reported that their partner was supportive of their choice to breastfeed ( $n = 109$ , 85.9%). Of the participants, 70% ( $n = 89$ ) reported having a high-school education and 87.3% ( $n = 96$ ) indicated an average annual household income under \$40,000, the majority (64.5%) under \$20,000. Half of the women reported living in a city ( $n = 63$ , 42.9%). For 35% ( $n = 45$ ) of the women, this was their first baby. Of the 85 multiparas, 82% ( $n = 73$ ) had previously breastfed for various durations, with a range of 1 week to 3 years.

<b>Table 1 Demographic Characteristics of the Sample</b>		
<b>Characteristic</b>		<b>n (%)</b>
<b>Marital status</b> (n = 122)	Married/common law	83 (68)
	Single	39 (32)
<b>Education</b> (n = 128)	Elementary school	13 (10.2)
	High school	89 (69.5)
	College/university	26 (20.3)
<b>Income</b> (n = 110)	≤ 19,999	71 (64.5)
	\$20,000–39,999	25 (22.7)
	\$40,000–59,999	8 (7.3)
	≥ \$60,000	6 (4.7)
<b>Community</b> (n = 128)	Urban	63 (49.2)
	Rural	65 (50.8)

### ***Reliability and Internal Consistency***

The mean total BSES-SF score measured in hospital was 51.32 ( $SD = 11.74$ ), with an item mean of 3.69, ranging from 3.43 to 3.94. Internal consistency for survey responses in hospital using Cronbach's alpha was 0.95. In addition, a procedure to compute the change in the Cronbach's alpha coefficient when an item was dropped from the total set of questions indicated only a negligible change in the overall alpha estimates. Correlation coefficients between individual items and the total survey ranged from 0.65 to 0.81 for the in-hospital data collection, with no single item scoring below the recommended alpha of no less than 0.30 for item retention.

### ***Construct Validity***

**Factor analysis.** Following the item analysis, the data were processed using a Pearson Product Moment Correlation procedure to produce correlation coefficients for an exploratory factor analysis. Kaiser's Measure of Sampling Adequacy was also calculated ( $MSA = 0.95$ ) to assess the appropriateness of conducting the factor analysis. The overall measure of sampling adequacy and the individual sampling adequacy estimates for each item in the survey were above 0.8, indicating that the survey was suitable for factor analysis using the exploratory approach. Next, factor analysis using *varimax* as the *orthogonal rotation* was run to determine if distinct factors (constructs) could be identified within the BSES-SF. The results of factor analysis confirmed that there was a single primary factor with an eigenvalue of 7.63 that explained 83.1% of the variance for the

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BSES-SF applied to this cohort. Factor loadings (see Table 2) were all greater than the recommended .32 for item retention (Tabachnick & Fidell, 2006).

**Table 2 BSES-SF Items With Principal Component Factor Loadings and Commonalities**

Item	Loading	Communality
1. Determine that my baby is getting enough milk	.73	.63
2. Successfully cope with breastfeeding like I have with other challenging tasks	.72	.61
3. Breastfeed my baby without using formula as a supplement	.68	.73
4. Ensure that my baby is properly latched for the whole feeding	.74	.73
5. Manage the breastfeeding situation to my satisfaction	.83	.79
6. Manage to breastfeed even if my baby is crying	.77	.63
7. Keep wanting to breastfeed	.73	.60
8. Comfortably breastfeed with my family members present	.60	.43
9. Be satisfied with my breastfeeding experience	.79	.74
10. Deal with the fact that breastfeeding can be time consuming	.66	.55
11. Finish feeding my baby on one breast before switching to the other breast	.72	.67
12. Continue to breastfeed my baby for every feeding	.78	.73
13. Manage to keep up with my baby's breastfeeding demands	.81	.76
14. Tell when my baby is finished breastfeeding	.75	.66

**Correlation with other theoretical constructs.** According to Bandura's (1977) Self-Efficacy Theory, performance accomplishment (past experience) is recognized as one of the most influential sources of self-efficacy as the basis of one's personal experiences. It was therefore hypothesized that women who had previously breastfed an infant would have higher breastfeeding self-efficacy than primiparous women and multiparous women who had never breastfed. Significant differences in breastfeeding self-efficacy were found between women who had previously breastfed ( $M = 54.33, SD = 11.04$ ), primiparous women ( $M = 48.32, SD = 10.97$ ), and multiparous women who had never breastfed ( $M = 41.89, SD = 13.97; F(2) = 7.43, p = 0.0009$ ). Similarly, as low mood state may lower self-efficacy (Bandura, 1977), the relationship between breastfeeding self-efficacy and the presence of depressive symptoms was evaluated. Using an EPDS cut-off score of  $> 9$ , women were classified as having possible depressive symptoms versus not having depressive symptoms. Women who scored  $> 9$  on the EPDS at 4 weeks postpartum had significantly lower mean BSES-SF scores at 4 weeks postpartum ( $M = 49.73, SD = 11.09$ ) than women whose EPDS scores were  $\leq 9$  ( $M = 56.69, SD = 10.94; t(100) = -12.99, p < 0.001$ ).

### **Predictive Validity**

Predictive validity was determined by comparing breastfeeding self-efficacy scores measured in hospital against their reported method of infant feeding at 4 and 8 weeks postpartum using one-way analysis of variance. Statistically significant differences were found in baseline BSES-SF scores among women who at 4 weeks postpartum were exclusively breastfeeding ( $M = 56.05, SD = 9.31$ ), combination feeding ( $M = 48.24, SD = 12.72$ ), or solely formula feeding ( $M = 45.63, SD = 11.77$ ) ( $F(2) = 7.31, p = 0.001$ ). Similarly, significant differences were found in baseline breastfeeding self-efficacy scores among women who at 8 weeks postpartum were either exclusively breastfeeding ( $M = 56.74, SD = 9.38$ ), combination feeding ( $M = 49.09, SD = 13.09$ ), or formula feeding ( $M = 44.17, SD = 10.09$ ) their infants ( $F(2) = 9.33, p = 0.0002$ ).

### **Discussion**

The purpose of this study was to examine the reliability and validity of the BSES-SF with Aboriginal women. The results of the psychometric analysis are consistent with those of the original study of the BSES-SF (Dennis, 2003) and other methodological studies testing the BSES-SF with ethnically diverse samples (Alus Tokat et al., 2010; Gregory et al., 2008; Kingston et al., 2007; McCarter-Spaulding & Dennis, 2010; Wutke & Dennis, 2007; Zubaran et al., 2010). The testing of the BSES-SF

demonstrated that it is both a valid and a reliable tool for assessing breastfeeding self-efficacy among Aboriginal women. In particular, the high Cronbach's alpha is comparable to the original BSES-SF Cronbach's alpha of 0.94 (Dennis, 2003) and exceeds the recommended alpha for established instruments (Nunnally & Bernstein, 1994). The overall mean BSES-SF scores in hospital (51.32) were slightly lower than the original scales mean of 55.88 (Dennis, 2003), as was the item mean (3.69 vs. 3.99) and the item range (3.43–3.94 vs. 3.71–4.13). Direct comparison of BSES-SF scores between studies requires further analysis. However, since Canadian surveys have identified Aboriginal women as having lower breastfeeding rates than the general population of women, it is possible that breastfeeding self-efficacy was one variable affecting breastfeeding outcomes among this cohort of Aboriginal women (Black et al., 2008; Martens, 2002; UNICEF, 2009). Further evaluation of breastfeeding self-efficacy is required before any specific conclusions can be drawn.

The evidence for construct validity is consistent with the results of previous research (Alus Tokat et al., 2010; Creedy et al., 2003; Dennis, 2003; Dennis & Faux, 1999; McCarter-SpaULDING & Dennis, 2010; Molina Torres et al., 2003) and with breastfeeding self-efficacy theory (Dennis, 1999). In particular, multiparous women who had breastfed previously had significantly higher breastfeeding self-efficacy than primiparous women. A negative correlation between breastfeeding self-efficacy and depressive symptoms has also been found previously (Dai & Dennis, 2003; Dennis, 2003; Zubaran et al., 2010), suggesting that depressive symptoms influence maternal breastfeeding cognitions and behaviours.

The negative relationship between depressive symptoms and infant-feeding method was identified in a time-sequence analysis whereby women with depressive symptoms at 1 week postpartum were significantly more likely to discontinue breastfeeding by 4 or 8 weeks postpartum (Dennis & McQueen, 2007). Similarly, a qualitative systematic review found that women with depressive symptoms in the early postpartum period may be at risk for negative feeding outcomes, including decreased breastfeeding duration, decreased levels of exclusive breastfeeding, decreased breastfeeding self-efficacy, and increased breastfeeding difficulties (Dennis & McQueen, 2009). Thus, identification of women with depressive symptoms is required not only to reduce the negative effects of postpartum depression but also to promote increased rates of breastfeeding duration and exclusivity.

Perhaps the most clinically significant finding of the present study is the predictive validity of the BSES-SF. This finding is consistent with those of other studies that have reported a strong relationship between breastfeeding self-efficacy and duration (Alus Tokat et al., 2010; Dai & Dennis, 2003; Gregory et al., 2008; Molina Torres et al., 2003; Mossman

et al., 2008; Oria et al., 2009; Wutke & Dennis, 2007; Zubaran et al., 2010). It is also congruent with the breastfeeding framework (Dennis, 1999) and provides health professionals an opportunity to identify women in hospital who are at high risk for discontinuing breastfeeding.

The benefit of using the scale with Aboriginal women is twofold. First, health professionals can use the BSES-SF as a tool for identifying Aboriginal women at risk for early discontinuation of breastfeeding due to low breastfeeding self-efficacy so that supportive interventions can be initiated. Extensive research suggests that the addition of support (professional and/or peer) is effective in increasing rates of breastfeeding duration and exclusivity (Britton, McCormick, Renfrew, Wade, & King, 2007; Hannula, Kaunonen, & Tarkka, 2008). This finding is consistent with that of a chart audit conducted among First Nations women in Sagkeeng, Manitoba, on the effectiveness of two community breastfeeding initiatives: prenatal instruction by a community health nurse, and postpartum support by a peer counsellor (Martens, 2002). The women who received postpartum peer counselling were significantly less likely to wean by 8 weeks postpartum and reported fewer problems with breastfeeding and greater satisfaction with breastfeeding. Second, the individual items of the BSES-SF can be used to identify specific areas of high or low breastfeeding self-efficacy. This type of assessment focuses on the individual needs of women so that interventions can be woman-centred and based on maternal goals (Hoddinott, Craig, Britten, & McInnes, 2012). In particular, noting women's individual responses to each of the 14 BSES-SF items can identify where a woman scores high (4–5) and where she scores low (1–3). This fosters a strengths-based approach (Smith, Edwards, Martens, & Varcoe, 2007) whereby the new mother's confidence (high-scoring items) can be acknowledged and reinforced. Strategies to specifically address low-scoring items such as difficulty latching, perception of insufficient milk, or discomfort feeding in the presence of family members may also be implemented using the four sources of self-efficacy information: (1) performance accomplishment (past experience), (2) vicarious experience (observation of others), (3) verbal persuasion (encouragement), and (4) physiologic states (emotional arousal) (Bandura, 1977). This type of intervention has been pilot tested, with preliminary findings identifying a trend towards improved breastfeeding self-efficacy, duration, and maternal satisfaction (McQueen et al., 2011).

However, some caution is warranted in developing breastfeeding interventions for Aboriginal women. While this study provides preliminary evidence of the reliability and validity of the BSES-SF, interventions for Aboriginal women who are breastfeeding must be culturally sensitive as well as effective. Historically, Aboriginal women breastfed their infants and learned traditional childbearing and breastfeeding methods from

members of their community, including their mothers and grandmothers (Dodgson & Struthers, 2003). Thus, strategies such as community-based approaches that include grandmothers, Elders, and/or peers may be appropriate (Martens, 2002). Smith and colleagues (2007) suggest that key factors in developing breastfeeding programs are acknowledging and incorporating cultural values and norms, tribal customs, and intellectual traditions.

Limitations of the study include self-report to obtain breastfeeding outcomes. Although researchers have documented a high level of accuracy in self-report feeding practices (Launer et al., 1992), others report that preventive health behaviours tend to be overestimated (Bowman, Redman, Dickinson, Gibberd, & Sanson-Fisher, 1991). Additionally, while the sample size was theoretically adequate for analysis, the loss to follow-up from baseline to 8 weeks postpartum was high, at 21.5%. Finally, the sample comprised Aboriginal women who were breastfeeding their healthy term infants and residing in northwestern Ontario. Many women were not eligible to participate because they had decided to formula feed and/or had an infant who was premature or in neonatal intensive care. Thus, the findings are not generalizable to all Aboriginal women.

## **Conclusion**

Psychometric testing of the BSES-SF revealed that it is both a reliable and a valid tool for assessing breastfeeding self-efficacy in a sample of Aboriginal women. Further research is needed regarding variables affecting breastfeeding among Aboriginal women and effective interventions that are culturally sensitive.

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