


ORIGINAL ARTICLE

Mother's level of confidence in caring for her late preterm infant: A mixed methods study

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Aim and objectives: To examine what it means to be a mother of a late preterm infant including a mother's level of confidence in caring for her late preterm infant over time and the effect of maternal depression of this experience.

Background: Little is known about mothers' experiences of caring for their late preterm infants in the community, including their level of confidence and parenting stress within the context of a supported care environment by public health nurses.

Design: A mixed methods study, sequential explanatory quantitative and qualitative study.

Methods: A convenience sample of mothers with LPIs ($n = 71$) completed questionnaires on maternal confidence (3–4 weeks and 6–8 weeks), parenting stress (6–8 weeks), social support (6–8 weeks) and postpartum depression (6–8 weeks). A purposive sample of mothers ($n = 11$) underwent in-depth, semi-structured interviews.

Results: Maternal confidence decreased from 3–4 weeks–6–8 weeks after delivery, and similar results were found for mothers who reported depressive symptoms. Narratives of the mothers suggested the decrease in maternal confidence over time was influenced by the demanding characteristics of the late preterm infant, the prospect of their rehospitalisation and the mother's reported interactions with public health nurses. Depression had an effect on maternal confidence; that is, the depressed mothers demonstrated less confidence about their caretaking role than the nondepressed mothers at 6–8 weeks. Mothers did not discuss mental health issues, which may reflect the protective effects of social support on emotional instability or an inability to recognise postpartum depression.

Conclusion: The confidence of mothers with LPIs decreased over the first 2 months following delivery and being home with their infants. Assisting mothers to meet

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their personal needs and the needs of their infant should promote maternal skills, which will likely increase maternal confidence related to the care of their late preterm infant.

Relevance for Clinical Practice: Characteristics of LPIs contributed more to parenting stress score than parent characteristics; mothers however attempted to normalise the late preterm infant in order to minimise the parenting stress. Evidence-informed brief interventions tailored based on late preterm infant and parent characteristics may improve maternal confidence over time. Healthcare professional should provide education and anticipatory guidance prior to discharge, consistent care in hospital and postdischarge as this may impact maternal level of confidence. Future research needs to examine standards of care for discharge of LPIs and adherence to these standards.

KEYWORDS

health services, infant, late preterm infants, maternal, maternal health, public health

1 | INTRODUCTION

Mothers' ability to care for their infants can impact the physical, cognitive and socio-emotional development of their neonates (Baker et al. 2013; Liu, Chen, Yeh, & Hsieh, 2012). The knowledge, skills and feelings that underlie that ability, that is maternal confidence, require support (Badr, 2005; Loo et al., 2006; Shieh et al., 2010), especially when caring for late preterm infants (LPIs; 34^{+0/7} days and 36^{+6/7} days weeks' gestational age) who can appear less attentive and responsive in comparison to full-term infants (Barnard & Kelly, 2010). High maternal confidence leads to belief in caretaking ability, an increased sense of control and decreased stress, which could promote infant well-being (Baker et al. 2013; Liu, Chen, et al., 2012; Liu, Lee, et al., 2012; Loo et al. 2006).

When LPIs require attention or are stressed, they present differently from term infants (≥ 37 weeks' gestational age) (Barros et al. 2011; Bird et al., 2010; Horgan 2015). The behaviours of LPIs require careful interpretation; for example, the appearance of sleepiness during breastfeeding likely indicates the depletion of energy stores rather than satiety (Horgan 2015). Moreover, they appear less sensitive and exhibit less vocal or socially responsive behaviours to their caregivers due to neurological immaturity (Horgan 2015; Premji, Young, Rogers, & Reilly, 2012).

According to Abidin (1995) and Leigh and Milgrom (2008), infant characteristics can impact parents' stress. Mothers with low maternal confidence can transfer any feelings of inadequacy into stressful responses. Furthermore, mother's inability to respond appropriately to their infant's cues (dysfunctional parental behaviours) and the inability for the infant to respond to the mother's actions (dysfunctional child behaviours) can create dissonance between mothers and neonates (Leigh & Milgrom, 2008; Olafsen et al. 2007). Strained mother-infant interactions, whether due to infant and/or maternal

What does this paper contribute to the wider global clinical community?

- Our quantitative data showed that maternal confidence decreased over time regardless of whether the mother was depressed or not; however, depressed mothers demonstrated less confidence about their caretaking role than nondepressed mothers at 6–8 weeks after birth.
- Our qualitative data suggest maternal confidence is influenced by (i) dissatisfaction with hospital discharge practices, (ii) characteristics of the late preterm infant (e.g., feeding issues, positive interactions), (iii) potential rehospitalisation, (iv) prior postpartum experience as they are able to compensate for lack anticipatory guidance, (v) perceived lack of consistent care by public health nurses and (vi) social support.

characteristics, can lead to difficulties in adjusting to the parenting role (Leigh & Milgrom, 2008; Liu, Chen, et al., 2012). For example, difficulties in mother-infant interactions can predispose mothers to postpartum depression, which can contribute to a lack of active or sensitive engagement during interactions with infants (Singer et al. 2003; Tu et al. 2007). Mothers of preterm infants are an increased risk of postpartum depression when compared to mothers of term infants (Adewuya, Fatoye, Ola, Ijaodola, & Ibigbami, 2005; Gulamani, Premji, Kanji, & Azam, 2013).

The first few months after childbirth can prove challenging until mothers readily recognise the needs of their newborns and respond appropriately (Tarkka, 2003; Tarkka, Paunonen, & Laippala, 2000). The Public Health Agency of Canada (2014) has early intervention

programmes that support families through universal and targeted services (Jack, DiCenso, & Lohfeld, 2005). Public health nurse (PHN) provide early assessment services and care including breastfeeding support and referrals for maternal and infant health problems (Berreth, 2013). They conduct telephone assessments within 24 hr of hospital discharge and provide high priority home visits for families with high-risk neonates (Berreth, 2013; Jack et al., 2005). Public health nurses manage neonatal morbidities (e.g., jaundice, dehydration and failure to gain weight due to inadequate nutrition or unsuccessful breastfeeding) and maternal morbidities (e.g., signs and symptoms of postpartum haemorrhage, infection, mental health) (Bird et al., 2010; Premji et al., 2012; Wang, Dorer, Fleming, & Catlin, 2004). In Calgary, Alberta, Canada, PHNs support all new mothers and neonates recently discharged home from the hospital (Berreth, 2013) by offering face-to-face contacts (clinic or home visits) within 24–28 hr and follow-up contact(s) until the infant is 2 months old.

Their scope of practice notwithstanding a paucity of data exists to inform PHN practice to care for families of LPIs (Issel, Bekemeier, & Kneipp, 2012). Noticeably, this includes studies on mothers' experiences of caring for their LPIs in the community, including their level of confidence and parenting stress within the context of a PHN-supported care environment. This study aimed to examine what it means to be a mother of a LPI including a mother's level of confidence in caring for her LPI over time.

2 | METHODS

2.1 | Design

This study is part of a larger exploratory mixed methods study about the experiences of PHNs and parents in caring for LPIs in the community (Premji et al., 2015). A sequential explanatory mixed methods design (Creswell, 2015) was used whereby the quantitative data were first analysed followed by an interpretation of qualitative data informed by phenomenological inquiry (Creswell, 2003; Starks & Brown Trinidad, 2007), which were the rich narratives of mothers. The nature of mothers' experience was anticipated to be complex given morbidities associated with LPIs and dearth of information about best practices in caring for LPI that may potentially constrain the ability of PHNs to provide care. A sequential explanatory mixed methods approach held promise for revealing information and enabled a deeper understanding of the phenomenon (Hanson, Creswell, Clark, Petska, & Creswell, 2005).

2.2 | Participants and procedures

The sample included mothers with live-born LPIs, delivered in any hospital in Calgary, Alberta, between July 2013–June 2014. Public health nurses approached all mothers ($n = 239$) about volunteering; 79% ($n = 188$) agreed to be contacted. Ineligible mothers ($n = 24$) were those who (i) could not be reached after three attempts, (ii) had no or poor English proficiency, (iii) did not meet the timelines of the study, (iv) had family circumstances that precluded contact or (v) did not deliver

infants between 34^{+0 days}–36^{+6 days} weeks' gestational age (Figure 1). Eligible mothers were asked to participate in a questionnaire. A baseline measure of maternal confidence was taken by telephone at 3–4 weeks (Time 1) after the birth of the LPI. Maternal confidence was appraised again at 6–8 weeks (Time 2) with other measures including stress and depression, to understand the influence of PHNs' support on mothers' experience of caring for LPIs in the community. Time 2 data were collected via a mailed self-administered questionnaire that was returned using an addressed, stamped envelope.

From those who responded to the questionnaire, we purposively sampled mothers for in-depth interviews that permitted a detailed account of maternal confidence, including level of confidence and potential predisposing factors that influenced their level of confidence. Purposive sampling allowed for inclusion of mothers (i) who had LPIs of mixed lengths of hospital stay, (ii) who received care through different models of care (home or clinic visits) and (iii) who were along different trajectories of postpartum care. When multiple mothers met the criteria, random sampling was employed. Further details related to sampling for the qualitative approach can be found in source deleted for blinded review.

2.3 | Data collection

2.3.1 | Maternal confidence

The Maternal Confidence in Care Questionnaire (MCQ) administered at Time 1 and Time 2. The MCQ measures mothers' perceptions about ability to care for and recognise infants' needs using 14 Likert-type items (Badr, 2005), and is applicable to parents of premature infants (Zahr, 1991). Three subscales (Cronbach's alphas = 0.51–0.81) measure knowledge (six items), tasks (three items) and feelings (five items) (Badr, 2005). The MCQ has good to excellent internal consistency (Cronbach's alphas = 0.82–0.91) and moderately correlates with the parenting sense of competence scale ($r = .53, p < .05$) (Badr, 2005). Higher scores denote higher maternal confidence in the caretaking role.

2.3.2 | Stress

The 101-item Parenting Stress Index (PSI) questionnaire was administered at Time 2. The PSI assesses the degree of stress experienced by mothers of LPIs in parent and child domains (Abidin, 1995; Loyd & Abidin, 1985). The PSI has excellent internal consistency (Cronbach's alpha coefficient = 0.95), with high scores indicating high parenting stress (Loyd & Abidin, 1985).

2.3.3 | Social support

The Postpartum Social Support Questionnaire (PSSQ) was administered at Time 2. The PSSQ measures perceived emotional and instrumental social support using 50 Likert-type item with high scores indicating high social support. The PSSQ has excellent internal consistency (Cronbach's alpha coefficient = 0.95) (Hopkins &

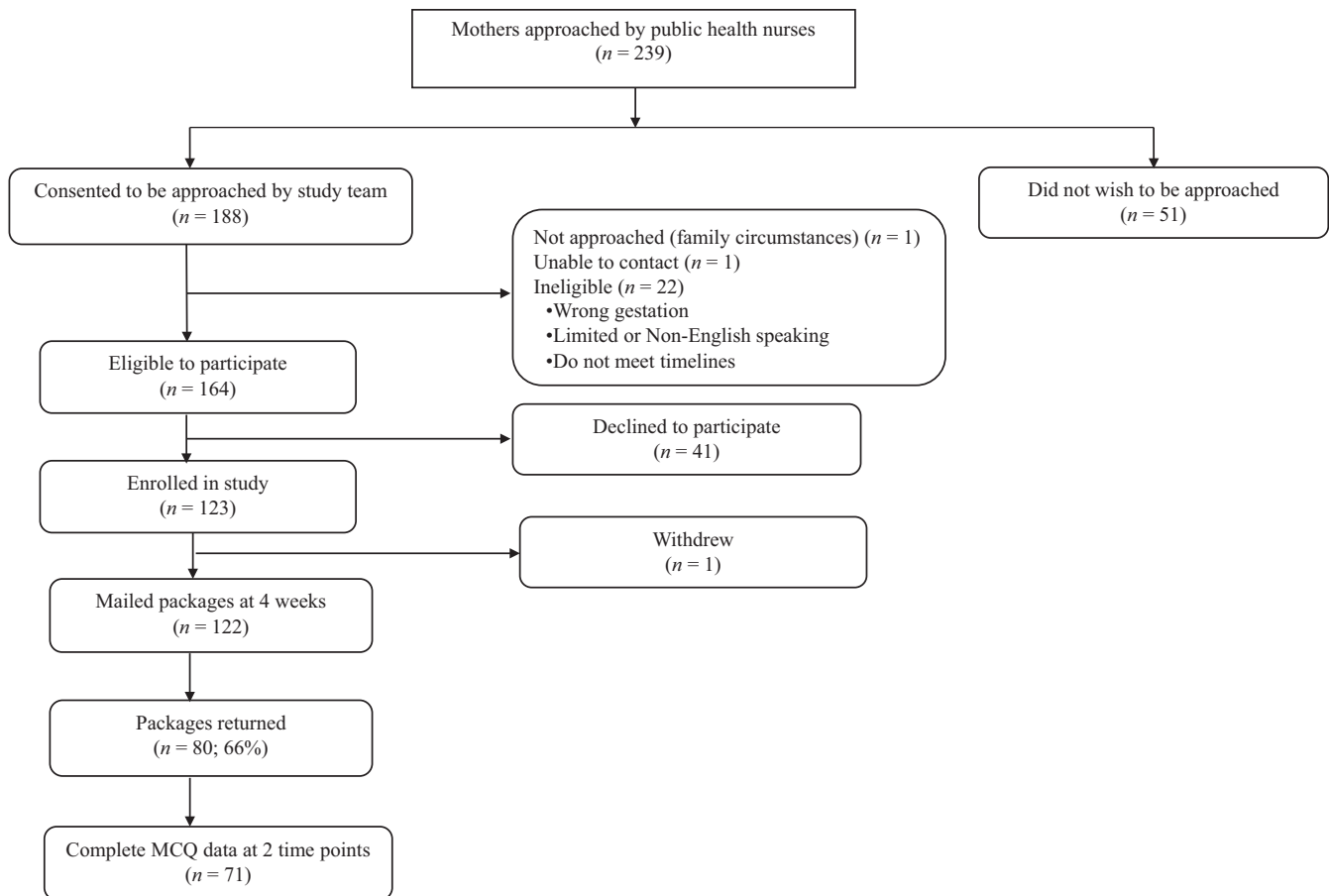


FIGURE 1 Flow of mothers through the study

Campbell 2008). Four subscales measure perceived social support from husband/partner (15 items), parents (11 items), parent(s)-in-law (nine items) and extended family and friends (15 items) with fair to good internal consistency (Cronbach's alphas = 0.75–0.88) (Hopkins & Campbell 2008). Exploratory factor analysis confirmed the four domains of the PSSQ, which accounted for 36% of the variance (Hopkins & Campbell 2008).

2.3.4 | Depression

The 10-item Edinburgh Postnatal Depression Scale (EPDS) is routinely used in Calgary to screen mothers for postpartum depression at 6–8 weeks after delivery (Time 2). We retrieved the data with permission from the Alberta Health Services PHANTIM system (an electronic database). A score of ≥ 10 indicates risk of postpartum depression. The EPDS has a sensitivity and specificity of 86% and 78%, respectively, a positive predictive value of 73%, a split-half reliability of 0.88 and an Cronbach's alpha of 0.87 (Cox et al. 1987).

2.3.5 | Interviews

Semi-structured individual interviews were conducted that lasted 60–90 min. The interview guide (Appendix 1) was informed by work of Abidin (1995) and Leigh and Milgrom (2008) and included

open-ended questions exploring (i) feeling related to being informed they were having a LPI, (ii) experience of caring for LPI since coming home, (iii) experience with PHN and (iv) feeling about husband/partner's participation in care. Two researchers (SP, GC) conducted the interviews in the participants' homes as per their request. All interviews were conducted in English, audio-taped with permission and transcribed verbatim. Transcripts were augmented with field notes that detailed behaviours of mothers and infants.

2.4 | Data analysis

Quantitative data analysis was performed using IBM SPSS Version 19.0. Where appropriate, categorical variables were collapsed to increase cell size or to allow for meaningful comparisons between groups. Descriptive statistics yielded overall maternal confidence levels for the entire sample at Time 1 and Time 2 and by depression status (depressed vs. nondepressed). Mothers whose MCQ scores fell in the upper 75th percentile, between 25th–75th percentile and lower 25th percentile were categorised as having high, medium and low maternal confidence level, respectively. Mothers whose PSI scores were at or above the 85th percentile were categorised as having high stress (Abidin, 1995; Loyd & Abidin, 1985). Parenting Stress Index raw scores were converted to T-

scores (Abidin, 1995; Loyd & Abidin, 1985) to facilitate comparison between the child and parent domains and subscales. Chi-squared tests and analysis of variance enabled comparison of participant characteristics by depression status (depressed vs. nondepressed) and level of maternal confidence (high vs. medium vs. low). A paired-sample *t* test permitted examination of differences in maternal confidence scores (overall and individual MCQ items) between Time 1–Time 2 for the entire sample of mothers. To better understand the effect of maternal depression on their experience, we analysed data of depressed mothers versus nondepressed mothers. An independent-samples *t* test determined differences in maternal confidence score between depressed and nondepressed at Time 1 and Time 2. All tests were conducted at a 5% significance level.

For the qualitative data, two researchers (GP, SP) independently reviewed transcripts and performed thematic analysis by highlighting noteworthy statements, hand coding these statements and identifying patterns in the written codes to determine central themes and relationships across participants' narratives (Creswell, 2003). Independent analysis and conversations between the two researchers, as well as peer debriefing with others on the research team, increased the credibility of the themes and relationships that emerged from the data (Graneheim & Lundman 2004). Qualitative analysis was used to amplify and explain the context underpinning the change (or lack thereof) in the mothers' level of confidence (i.e., MCQ scores) in caring for their LPI. An iterative strategy was used to code the transcripts in both a deductive and inductive manner, so as to identify overarching themes (Creswell, 2003). Continual triangulation among data sets, investigators' analyses, theoretical and methodological considerations allowed for a focused research process that maintained the purpose of the study and increased the dependability of the results (Graneheim & Lundman 2004).

2.5 | Ethics

The Conjoint Health Research Ethics Board at the University of Calgary (Ethics ID: REB15-3036_REN1) approved the study.

3 | RESULTS

From 166 eligible mothers, 41 (25%) refused to participate and one withdrew from the study due to time constraints (Figure 1). A total of 80 questionnaires were returned at Time 1 (response rate of 66% response rate), and 71 mothers provided complete data for Time 1 and Time 2. Eleven mothers participated in in-depth interviews. Participant characteristics are shown in Table 1. Mothers had a mean age of 32.1 (*SD* = 4.8) years. Eight mothers (11.3%) had a history of depression. The mean gestational age of the neonates was 35.3 weeks (*SD* = 0.86), and the mean birthweight was 2,551 g (*SD* = 438). No neonate experienced sepsis.

3.1 | Maternal confidence

At 3–4 weeks following delivery of their LPIs, mean MCQ score for the low confidence mothers (*n* = 19) was 48.47 (*SD* = 1.50), medium confidence (*n* = 32) was 52.53 (*SD* = 0.95), and high confidence (*n* = 20) was 55.40 (*SD* = 0.50). Lack of involvement of mothers in the discharge process appeared to contribute to their level of confidence, whereas prior parenting experience appeared to enhance their level of confidence in caring for their LPIs as evident from the following themes that emerged from qualitative data.

3.1.1 | Hospital-to-home transition: Gaining confidence

Mother's confidence varied depending on their experience with confidence building. Mothers with LPIs in the neonatal intensive care unit felt confident in their ability when they had an opportunity to master basic tasks, such as feeding, diapering, checking temperature and bathing prior to hospital discharge. Mother 11 roomed in with her LPI and commented: "Once I had done it [roomed in], I felt so much better having done it. Because you just get that confidence." Mother 10 did not participate in a care-by-parent programme and felt that "they did send us home with everything we needed to know" prior to discharge. Not all, however, felt prepared to care for their infant at home. Mother 7 suggested: "I cannot say they didn't teach anything, but for me, not so...care was not so...very casual...too casual."

3.1.2 | Experience helps with level of confidence

Maternal confidence appeared to be directly related to child care experiences. For instance, Mother 4 shared: "Some of me feeling confident...is because I've always been around babies and kids." Mothers with low confidence were more likely to be primiparous (i.e., first pregnancy; 73.7%; $\chi^2 = 7.88$; $p = .019$; Table 1). Four mothers expressed feeling more confident caring for their LPIs given their past pregnancies. Overall, mothers felt that "having a baby...this being your second, you're more confident and you kind of know what worked for the first baby" (Mother 2). One mother noticed differences in caring for her LPI compared to a term infant; explaining: "It is only 2 weeks, but [it] makes a lot of difference" (Mother 9), as her infant "couldn't latch well" and "wants to sleep more," while another found everything normal "aside from the feeding stuff" (Mother 5).

3.1.3 | Feeding issues undermined confidence

Feeding issues undermined the confidence of many mothers, even those who felt confident at the outset. For example, Mother 5 felt: "the general sort of baby care stuff...like things like that we're pretty good, yeah...And we feel pretty confident in all that stuff. I think the biggest issue really has been his feeding." Conversely,

TABLE 1 Participant characteristics

Characteristics	All mothers (n = 71)		Depressed mothers (n = 18)		Nondepressed mothers (n = 53)		Low maternal confidence (n = 19)		Normal maternal confidence (n = 32)		High maternal confidence (n = 20)		p
	n	%	n	%	n	%	n	%	n	%	n	%	
Maternal													
Age, years; M (SD)	32.1 (4.8)		33.7 (5.0)		31.6 (4.7)		31.9 (3.9)		33.0 (5.4)		31.0 (4.5)		.116 [†]
Current marital status													.436 ^{††}
Single with partner	1	1.4	0	0.0	1	1.9	0	0.0	1	3.1	0	0.0	
Married	62	87.3	16	88.9	46	86.8	15	78.9	29	90.6	18	90.0	
Common law	8	11.3	2	11.1	6	11.3	4	21.1	2	6.3	2	10.0	
Highest education level													.669 ^{††}
Elementary or high school	2	2.8	0	0.0	2	3.8	0	0.0	1	3.1	1	5.0	
Graduate high school	7	9.9	2	11.1	5	9.4	0	0.0	3	9.4	4	20.0	
College, trade, university	10	14.1	2	11.1	8	15.1	3	15.8	4	12.5	3	15.0	
Graduated college/trade/Uni	42	59.2	12	66.7	30	56.6	14	73.7	18	56.3	10	50.0	
Some graduate school	1	1.4	0	0.0	1	1.9	0	0.0	1	3.1	0	0.0	
Completed graduate school	9	12.7	2	11.1	7	13.2	2	10.5	5	15.6	2	10.0	
Combined household income													.077 ^{††}
<\$30,000	4	5.6	0	0.0	4	7.5	2	10.5	1	3.1	1	5.0	
\$30,000 - 59,999	7	9.9	0	0.0	7	13.2	0	0.0	4	12.5	3	15.0	
\$60,000 - 79,999	11	15.5	5	27.8	6	11.3	3	15.8	4	12.5	4	20.0	
\$80,000 - 99,999	14	19.7	6	33.3	8	15.1	5	26.3	6	18.8	3	15.0	
\$100,000 or more	35	49.3	7	38.9	28	52.8	9	47.4	17	53.1	9	45.0	
Mother born in Canada	46	64.8	9	50.0	37	69.8	14	73.7	18	56.3	14	70.0	.383 ^{††}
Mother's ethnic background ^a													.270 ^{††}
White/Caucasian	45	63.4	11	61.1	34	64.2	15	78.9	20	62.5	10	50.0	
Black/African N American	2	2.8	0	0.0	2	3.8	0	0.0	2	6.3	0	0.0	
Latin American	1	1.4	0	0.0	1	1.9	0	0.0	1	3.1	0	0.0	
First Nations/Metis	4	5.6	0	0.0	4	7.5	1	5.3	1	3.1	2	10.0	
Arab/W Asian/S Asian	5	7.0	3	16.7	2	3.8	1	5.3	3	9.4	1	5.0	
Filipino/Southeast Asia/Chinese	10	14.1	4	22.2	6	11.3	2	10.5	4	12.5	4	20.0	
Mixed/Other	3	4.2	0	0.0	3	5.7					3	15.0	
Gravid													.019 ^{††**}
Primiparous	33	46.5	9	50.0	24	45.3	14	73.7	11	34.4	8	40.0	
Multiparous	38	53.5	9	50.0	29	54.7	5	26.3	21	65.6	12	60.0	

(Continues)

TABLE 1 (Continued)

Characteristics	All mothers (n = 71)	Depressed mothers (n = 18)	Nondepressed mothers (n = 53)	p	Low maternal confidence (n = 19)	Normal maternal confidence (n = 32)	High maternal confidence (n = 20)	p					
Mental health/risk behaviours ^b				0.713 [†]			0.508 [†]						
History of depression	8	11.3	2	11.1	6	11.3	3	15.8	4	12.5	1	5.0	
History of alcohol use	1	1.4	0	0.0	1	1.9	0	0.0	1	3.1			
History of tobacco use	2	2.8	0	0.0	2	3.8	0	0.0	1	3.1	1	5.0	
Social worker involvement	1	1.4	0	0.0	1	1.9	0	0.0	0	0.0	1	5.0	
Other	2	2.7	1	5.6	1	1.9	1	5.3	1	3.1	0	0.0	
Late preterm infant													
GA, weeks; M (SD)	35.3 (0.86)	35.1 (0.94)	35.4 (0.82)		35.3 (0.87)	35.4 (0.87)	35.3 (0.85)		.847 [†]			.145 [†]	
BW, grams; M (SD)	2551 (438)	2427 (437)	2594 (434)		2556 (484)	2609 (406)	2456 (446)		.477 [†]			.164 [†]	
n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex													
Boy	35	49.3	10	55.6	25	47.2	6	31.6	19	59.4	10	50.0	
Girl	36	50.7	8	44.4	28	52.8	13	68.4	13	40.6	10	50.0	
Delivery													
Vaginal	48	67.6	12	66.7	36	67.9	15	78.9	22	68.8	11	55.0	
Caesarean section	23	32.4	6	33.3	17	32.1	4	21.1	10	31.3	9	45.0	
Health issues at birth													
Respiratory ^c	11	15.5	1	5.6	10	18.9	3	15.8	2	6.3	6	30.0	
Cardiovascular ^c	5	7.0	1	5.6	4	7.5	1	5.3	1	3.1	3	15.0	
Hypoglycaemia ^c	4	5.6	0	0.0	4	7.5	2	10.5	1	3.1	1	5.0	
Hypothermia ^d	8	11.3	2	11.1	6	11.3	4	21.1	3	9.4	1	5.0	
Jaundice ^c	40	56.3	7	38.9	33	62.3	16	84.2	14	43.8	10	50.0	
Feeding difficulties ^c	24	33.8	8	44.4	16	30.2	9	47.4	9	28.1	6	30.0	

Uni, university; N, north; W, west; S, south; Dep, depressed; Norm, normal; Conf, confidence; GA, gestational age; BW, birthweight.

^a1 missing value.

^b57 missing values.

^c3 missing values.

^d4 missing values.

[†]One-way ANOVA.

[‡]Pearson's Chi-squared test.

[§]Two-sided Fisher's exact test.

* $p < .05$.

TABLE 2 Paired-sample *t* test on individual Maternal Confidence Questionnaire items between Time 1–Time 2

MCQ Items	Time 1		Time 2		Paired-sample <i>T</i> test		
	M	SD	M	SD	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Knowledge Subscale (total = 24)	22.4	1.54	21.65	1.84	3.80	70	<0.000
I know when my baby wants me to play with him/her	3.62	0.59	3.32	0.58	3.44	70	0.001
I know how to take care of my baby better than anyone else	3.87	0.34	3.80	0.4	1.52	70	0.133
When my baby is cranky, I know the reason	3.65	0.51	3.46	0.53	2.50	70	0.015
I can tell when my baby is tired and needs to sleep	3.85	0.36	3.85	0.4	0.00	70	1.000
I know what makes my baby happy	3.70	0.46	3.65	0.48	0.75	70	0.454
I can tell when my baby is sick	3.71	0.54	3.56	0.63	1.84	70	0.070
Task Subscale (total = 12)	11.86	0.46	11.86	0.46	0.00	70	1.000
I can give my baby a bath	3.93	0.26	3.97	0.17	-1.76	70	0.083
I can feed my baby adequately	3.94	0.23	3.92	0.28	0.82	70	0.418
I can hold my baby properly	3.99	0.12	3.97	0.17	1.00	70	0.321
Feeling Subscale (total = 18)	17.99	1.73	17.32	2.05	2.52	70	0.014
I feel frustrated taking care of my baby	3.34	0.77	3.17	0.81	1.54	70	0.128
I would be good at helping other mothers learn how to take care of their infants	3.34	0.67	3.10	0.72	2.46	70	0.016
Being a parent is demanding and unrewarding	3.55	0.81	3.42	0.89	0.89	70	0.374
I have all the skills needed to be a good parent	3.79	0.41	3.70	0.46	1.42	70	0.159
I am satisfied with my role as a parent	3.97	0.17	3.93	0.26	1.14	70	0.260
Total Confidence Score	52.25	2.79	50.83	3.40	3.77	70	<0.000

MCQ, Maternal Confidence in Care Questionnaire.

Mother 8: felt “unconfident” because “with breastfeeding, you never know what volume they’re getting,” and did not know if her infant received enough milk to prevent dehydration and failure to thrive. Despite the feeding issues, on the MCQ item 7: “I can feed my baby adequately,” mothers self-reported that they could adequately feed their infant with scores close to ceiling at both time points; the mean scores did not change over time ($t = 0.83$; $p = .42$). Moreover, the mean total MCQ score for task items that related to confidence in feeding, bathing and holding the baby remained unchanged over time ($p = 1.00$; Table 2).

3.1.4 | Positive interactions with late preterm infants and social support ultimately shaped maternal confidence

Often, any initial lack of confidence changed after mothers had positive interactions with their LPIs. After these occasions, mothers became more comfortable and confident in their maternal role. Mother 5 described her child as: “getting more alert; he’s getting stronger; he’s feeding better; he’s gaining weight; he’s gaining sort of the required amount of weight. So, I’m really comfortable at this.” Mother 10 described the progress over a 3- to 4-week period in milk production and commented: “I’m producing as much as she needs. She’s satisfied, she gets that drunk look. . . I love that look ‘cause I know I have provided for her’.” Another mother explained how she was the least confident “first couple of days home. . . feeling like. . . should I give him more bottles? . . . I’ve gotten over that ‘cause his weight gain has been so good that I’m more confident” (Mother 8).

Mothers appeared very thankful for their support systems, and some mothers attributed any increase in maternal confidence to having “a good support system” (Mothers 4 and 8); “if I ever need anything. . . that’s where some of me feeling confident came from too” (Mother 8). In this regard, most mothers considered the social support from their husbands as the most influential in building their maternal confidence. Mother 1 raved that her husband “stays up later than I do so he takes care of her [older daughter] if she wakes up, which I never expected and in the morning, he wakes up and goes to work and takes care of her before.” Similarly, another mother talked about “just knowing that if I had a bad day or something, I could call him and just say, hey, you know, what should I do?” (Mother 11). Having family support increased confidence as it enabled the mother to devote time to feeding and getting some time to rest. Mother 8 explained: “I felt really, really confident because my husband was home and looking after our older one so I got to spend all the time. . . focusing on the feeding.” Some mothers took exception to any lack of acknowledgement, especially from family, of the challenges associated with caring for a premature infant. For example, Mother 5 complained about her mother’s statement concerning the infant’s weight: “that’s not a preemie.” Family did not always appreciate the uniqueness of the LPIs. Consequently, mothers felt they lacked support, and for some, this had serious consequences. Mother 7 thought that she should bring her children “back to China and stay there for a while. Because at least I got some help there. Because my family is there.” Mother 9 shared: “I have also fear because we are alone here. My family, my parents, my husband’s parents also, they are not here. We don’t have friends yet because we just came last September to Calgary.” Interestingly,

regression analysis examining the effect of social support measured by the PSSQ on maternal confidence scores at 6–8 weeks after delivery indicates that a unit increase in social support results in a 0.023 increase in confidence (95% CI: 0.001 to 0.045; $t = 2.13$; $p = .037$). More specifically, of the four domains of social support measured by the PSSQ, partner support was found to be significant, with a one-unit increase in partner support resulting in a 0.079 increase in maternal confidence (95% CI: 0.004–0.155; $t = 2.10$; $p = .040$).

3.2 | Maternal confidence with time

The confidence of the mothers in this study decreased from Time 1 ($M = 52.25$, $SD = 2.79$)–Time 2 ($M = 50.83$, $SD = 3.40$; $t = 3.77$; $p < .001$). Figure 2 displays the distribution of mother's confidence scores at these two time points, which illustrates more variability at Time 2 as evident from the number of outliers representing mothers with low confidence scores distinct from the rest of the data. The boxplot of the paired differences in MCQ scores reveals that decrease in maternal confidence was more substantial than increase in maternal confidence. Knowledge and feeling decreased with time ($t = 3.80$; $p = <.001$ and $t = 2.52$; $p = .014$, respectively; Table 2). Confidence in caretaking tasks remained unchanged over time ($t = 0.00$; $p = 1.00$). The mother's narratives provided insight into the struggles related to the mothers' knowledge, caretaking tasks and feelings when caring for their LPIs after discharge and explain the change over time. The following themes emerged from the mother's narrative.

3.2.1 | Inability to recognise and grasp the unique characteristics of late preterm infants

During the interviews, the researchers observed that not all mothers recognised feeding distress such as choking, a look of panic with

protruding eyes, splayed hands, pooling of milk, disorganised behaviour and sleepiness. Mothers tended to normalise rather than respond to these cues. For example, Mother 3 described the pooling or dribbling of milk: "I think my milk supply just got really big and then it was pooling, like milk was just everywhere." Another mother explained: "once in a blue moon she'll finish, like leave 10 ml or something like that left so it's not much concern. But like, as of late, she's always finishing" (Mother 11). Mother 8, who previously had an early preterm birth, stated: "[I] found it very non-stressful and very exciting, just exciting to have a baby that was going to be normal."

3.2.2 | Mothers' mixed experiences with public health nurses

In the early postpartum period, mothers regarded visits by PHNs favourably because they represented an important resource or "wealth of knowledge" (Mother 8) and because they "were all super helpful...giving us all these resources and so... I just have to go and check out my folder, pull them out and contact them" (Mother 11) (source deleted for blinded review). Many mothers, however, perceived their encounters with PHNs less favourably (source deleted for blinded review). A major complaint concerned the lack of consistency in the information about appropriate feeding strategies (source deleted for blinded review). One mother explained: "we had a lot of nurses come and tell us different things and change up the feeding schedule and nobody really like understood how things started off in the first place" (Mother 3)—these mothers report "finding that really frustrating" (Mother 5). As a result, mothers felt overwhelmed; for instance, one mother shared that if she received consistent care "it would have made a big difference in my ability to feel confident in what I was doing" (Mother 3).

Besides the perceived lack of consistent care about appropriate feeding strategies, the mothers complained that PHNs also

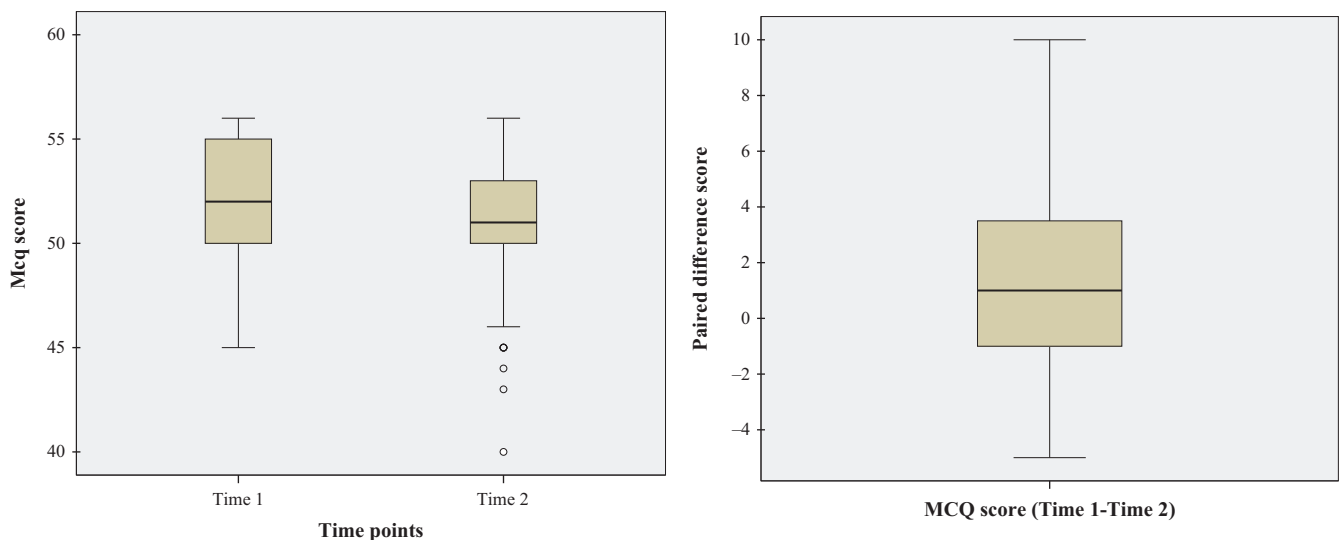


FIGURE 2 Boxplots for maternal confidence scores over time of the entire sample and paired differences in Maternal Confidence in Care Questionnaire scores from Time 1–Time 2 of the entire sample ($n = 71$). o = outlier

inadvertently undermined maternal confidence. According to Mother 5: “every time...I’m being told what I’m doing wrong.” Mother 7 explained how she felt when she was told what she was doing was wrong: “I feel so sorry...I’m a bad mom, I leave you guys be so cold and so cold hungry, I didn’t know.” Although no one questioned the intentions of the PHNs, they left some mothers feeling “like a really bad parent” (Mother 10) (source deleted for blinded review). Only one mother spoke about maintaining confidence from the beginning. When the researcher clarified whether her confidence level had remained the same the mother answered “since day one I’ve been pretty set in my ways and (both laugh) this is my baby and I’m going to do what I think is best for her” (Mother 1).

3.3 | Parenting stress

None of the mothers had an overall raw total stress score greater than the 85th percentile, indicating clinically significant high stress. Mothers also had low life stress ($M = 11.17$, $SD = 6.73$; range 0–38), although two mothers were over the threshold, indicating high stress. Defensive responding captures social desirability bias or unwillingness to acknowledge difficulties (problems, stress or negativity) in mother–infant relationship (Abidin, 1995; Loyd & Abidin, 1985). The mean defensive score was 33.71 ($SD = 8.61$, range 16–52), and 11 mothers had clinically significant scores (i.e., scores below 24), indicating that these mothers wanted to minimise the stress in their lives resulting from the birth of their LPI. The themes that emerged from the mother’s narratives provide insight into the sources of mothers’ stress; they include:

3.3.1 | Mothers’ sources of stress: Parenting Stress Index child domain and parent domain

Two mothers had a high raw stress score in the child domain (Table 3). Although mothers did not have a high raw stress score in the parent domain, some mothers had high stress scores for *role restriction* ($n = 16$) and *health* ($n = 11$). Parent domain T-scores ($M = 47.71$; $SD = 6.45$) were lower than child domain T-scores ($M = 50.14$; $SD = 6.08$; $t = -3.247$; $p = .002$). There was a moderate positive linear relationship between the parent and child domain T-scores ($r = .54$; $p < .001$). In other words, if the mothers felt stress because of their child’s characteristic(s), they also felt stress related to their own personal parent characteristics. Regression analysis indicated that for every one-unit increase in child domain stress, a corresponding 0.57 (95% CI: 0.35–0.80; $t = 5.06$; $p < .001$) increase in parent domain stress and 0.66 (95% CI: 0.49–0.84; $t = 7.52$; $p < .001$) increase in the total stress score were seen. This suggests that for this sample, child characteristics of LPIs contribute more to the total stress score than parent characteristics.

3.3.2 | Health issues increased stress

Health issues experienced by LPIs such as jaundice and the associated threat of rehospitalisation proved stressful for some mothers.

TABLE 3 85th percentile cut-off scores for the Parenting Stress Index domains and number of mothers categorised as normal and high stress

PSI domain name	High stress cut-off score/85th percentile	Mothers with normal stress		Mothers with high stress	
		n	%	n	%
Child domain	137	63	96.9	2	3.1
Distractibility/hyperactivity	28	54	83.1	11	16.9
Adaptability	34	56	86.2	9	13.8
Reinforces parent	16	61	93.8	4	6.2
Demandingness	28	63	96.9	2	3.1
Mood	15	56	86.2	9	13.8
Acceptability	22	64	98.5	1	1.5
Parent domain	171	65	100.0	0	0.0
Competence	42	64	98.5	1	1.5
Isolation	20	61	93.8	4	6.2
Attachment	20	64	98.5	1	1.5
Health	15	54	83.1	11	16.9
Role restriction	24	49	75.4	16	24.6
Depression	29	64	98.5	1	1.5
Partner relationship	23	57	87.7	8	12.3
Total stress	309	65	100.0	0	0.0
Life stress	27	63	96.9	2	3.1

PSI, Parenting Stress Index.

Mothers with low confidence had the highest proportion of jaundiced infants (84.2%) with a significant difference between groups (medium = 43.8%, high = 50.0%; $\chi^2 = 7.03$; $p = .03$). Mother 4 shared how she was “a little nervous and upset” when the PHN informed her, reiterating, “if I couldn’t keep the temperature up to go back to the hospital with him...I’m upset and start crying cause...I don’t really want to go back there but it’s the best thing for him.” In addition to temperature instability, mothers reported other problems after discharge, including “were readmitted to [hospital] Friday night” (Mother 5) or “had to go to the health clinic the next day because of the jaundice test was a little high” (Mother 6). All mothers complained about the difficulties associated with feedings, which proved “very frustrating” (Mother 1) and “so stressful” (Mother 5) (source deleted for blinded review). They described the LPI as “really disorganized” (Mother 5), and “sputtering and kind of choking” (Mother 2) with feeding; and another had an infant with a “sucking issue” (Mother 5), which in a similar case resulted from the infants not having “enough energy to suck” (Mother 7).

3.4 | Maternal confidence and postpartum depression

Within the sample, 18 mothers (25.4%) were categorised as depressed and 53 mothers (74.6%) were categorised as

nondepressed. Depressed mothers did not have different maternal and infant characteristics than nondepressed mothers (Table 1). Both depressed (T1: $M = 51.78$, $SD = 2.65$; T2: $M = 49.39$, $SD = 4.16$; $t = 3.15$; $p = .006$) and nondepressed mothers (T1: $M = 52.41$, $SD = 2.84$; T2: $M = 51.32$, $SD = 2.99$; $t = 2.55$; $p = .014$) were significantly more confident at Time 1 compared to Time 2. Maternal confidence scores differed between the depressed ($M = 49.39$, $SD = 4.16$) and nondepressed ($M = 51.32$, $SD = 2.99$, $t = 2.13$; $p = .036$) mothers at Time 2, with depressed mothers showing greater range in MCQ scores and data skewed towards the lower end of MCQ scores (Figure 3). Postpartum depression appeared to influence maternal confidence over time. Mothers did not talk about their depressive state; however, they did identify infant characteristics and circumstances that increased parent stress.

4 | DISCUSSION

In our study, mothers reportedly experienced differences in how hospital nursing staff provided discharge care. Similar to findings in other studies (Shieh et al., 2010; Wataker, Meberg, & Nestaas, 2012), mothers who participated in a neonatal intensive care, family care programme or discharge education programme seemed to be better informed and reported more confidence in caring for their infants. Unfortunately, a handful of mothers in our study reported how unprepared they were to care for their LPIs at home as they did not receive any information regarding the unique needs and behaviours of LPIs. The lack of education or anticipatory guidance, it seemed, impacted their level of confidence.

Public health nurses represent a great resource to mothers following discharge from hospital; however, based on the interviews, the relationship between mothers and PHNs has room for improvement. Some mothers also articulated the need for consistent care

and the benefit of having one PHN follow the mother until the time she no longer required assistance. This would benefit the relationship as well as prevent the accumulation of contradictory messages mothers are receiving. Public health nurses' work is informed through multiple processes (i.e., standards of practice, guidelines and procedures) that are socially organised and may explain the inconsistencies observed by mothers of LPIs in our study.

Maternal dissatisfaction as a result of inconsistency in hospital discharge practices and PHNs care practices reflects concerns regarding quality of care. A closer examination of standards of care for discharge of LPIs and adherence to these standards of care by healthcare providers in community is warranted. This is especially important for mothers with high-risk infants, such as LPIs, who are found to have a higher rehospitalisation rate compared to term infants (Kuzniewicz, Parker, Schnake-Mahl, & Escobar, 2013). Rehospitalisation was articulated as a source of anxiety and stress for the mothers in our study. Perceptions regarding quality of postpartum care are influenced by type (telephone vs. home) and amount of contact (Goulet, D'Amour, & Pineault, 2007). Moreover, there is limited evidence to inform policies and guidelines regarding the nature of postpartum care (Miller, Dane, & Thompson, 2014). What is evident, and of particular relevance to the LPI, is that (i) evidence from a systematic review of 17 studies indicated that home visitation improved parent–infant interaction (Goyal, Teeters, & Ammerman, 2013), and (ii) a universal postnatal nurse home visit programme that provided evidence-informed brief interventions scaled based on risk effectively reduced emergency department visits and overnight hospital stays, as evidenced by a recent randomised controlled trial (Dodge, Goodman, Murphy, O'Donnell, & Sato, 2013).

In our study, prior postpartum experience may have provided an advantage for mothers when presented with difficulties in caring for LPIs, even if they did not receive proper discharge care. More mothers with high confidence levels had a prior birth when compared to mothers with low confidence levels. Their experience apparently compensated for a lack of social support and anticipatory guidance. In the case of one mother, her earlier postpartum experience proved instrumental in caring for her new LPI, the skills seem transferrable. Our findings reinforces Liu, Chen, et al. (2012) results that maternal confidence positively correlates with parity though the association is weak ($r = .21$, $p < .01$), which the researchers attributed to the stress experienced by first-time mothers during the transition to motherhood. In our sample, regression analysis suggested a relationship between social support and maternal confidence, with mothers expressing more confidence when their partners were supportive. Unfortunately, as we only examined social support at one time point (6–8 weeks), we cannot make any inferences on the relationship between social support and maternal confidence over time.

Although all mothers identified that LPIs were demanding with respect to feeding, mothers maintained they could adequately feed their infant. Many mothers, as well as those around her, tended to *normalise* the LPI. The mothers' desire to minimise the stress, particularly from the health issues encountered (e.g., jaundice, feeding problem), was reflected in the defensive scores. About 15% ($n = 11$)

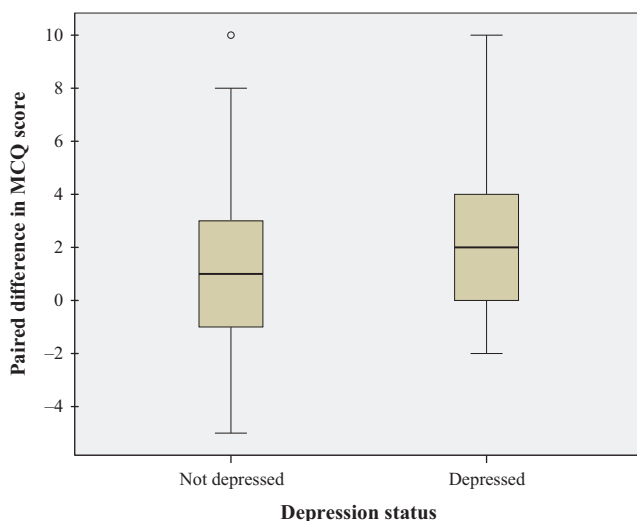


FIGURE 3 Boxplots for the paired difference in Maternal Confidence in Care Questionnaire scores of depressed ($n = 18$) and nondepressed ($n = 53$) mothers from Time 1–Time 2. o = outlier

of mothers had clinically significant defensive scores, suggesting the actual stress experienced may be higher (Abidin, 2012). Although mothers self-reported low overall stress, characteristics of LPIs contributed more to the total stress score than parent characteristics. A moderate positive linear relationship was observed between child and parent domain stress scores. About 22.5% ($n = 16$) of mothers reported high role restriction, which typifies the extent to which these mother felt restricted in their freedom and identity given the needs and/or demands of their LPI (Abidin, 1995). Mothers' narratives, however, did not suggest they were frustrated or experiencing role strain.

Contrary to the belief that mothers' confidence increases when they spend more time with their infants (Shieh et al., 2010) and receive support from PHNs (Aston et al., 2016), our data do not corroborate this belief. In our study, maternal confidence decreased between 3–4 weeks–6–8 weeks after delivery, notwithstanding support from PHNs. One of the themes that emerged from the qualitative analysis, mothers' mixed experiences with PHNs, could provide an explanation. Public health nurses had the best intentions when it came to making sure that the child was well taken care of, but a deficit-based approach reportedly employed by some PHNs left them feeling like they were bad mothers, not meeting their infant's needs. According to Aston et al. (2016), PHNs can achieve a reciprocal relationship when they use a strength-based approach that entails reassuring the mothers, using purposeful language, alleviating anxiety and fear, interacting in a nonjudgemental manner while assessing the mothers' perspective and readiness in caring for her infant.

According to the Canadian Mental Health Association's BC Division (2012), 8%–12% of mothers exhibit postpartum depression. In our sample, 25% ($n = 18$) had depressive symptoms, possibly associated with an unexpected early birth and the higher stress levels of caring for LPIs. In our study, unfamiliarity about the unique characteristics and needs of LPIs manifested as lack of knowledge and decreasing feelings towards caring for their LPIs, resulting in stress, lack of maternal confidence in care and postpartum depression (Abidin, 1995; Leigh & Milgrom, 2008; Liu, Chen, et al., 2012). Mothers of LPIs report higher stress at delivery and 6-weeks postpartum than mothers of term infants (Baker et al. 2013). Liu, Lee, et al. (2012) described an association between high maternal confidence and low parenting stress after adjusting for maternal parity and infant temperament. In our study, although maternal confidence decreased with time for both depressed and nondepressed mothers, maternal confidence scores differed significantly between groups at 6–8 weeks. Depressed mothers showed greater range in MCQ scores, and data skewed towards the lower end of MCQ scores.

When mothers in our study spoke about the effects of caring for their LPI on their confidence, none mentioned postpartum depression. Mothers may not have recognised postpartum depression. Alternately, the mothers could have, given that they had other stressors with which to contend, overlooked its impact on their confidence and focused instead on the lack of social support. Mothers described their functional, social support system (e.g., someone doing household chores) as the most important factor associated with

maternal confidence. Indeed, Leahy-Warren, McCarthy, and Corcoran (2012) also found that as functional social support for the activities of daily living increased, postpartum depression decreased at 6 weeks. Mothers not born in Canada comprised 35.2% of our sample and demonstrated a greater risk for postpartum depression. One mother who had recently moved into the city also appeared to struggle with the limited availability of functional social support.

4.1 | Limitations

The use of a 4-point rather than a 5-point Likert-type scale ("always" no longer appears) introduced a systematic error, so the total score ranged between 14–56, with high scores denoting higher maternal confidence. Only 43.3% of the enrolled mothers completed the MCQ at two time points introducing nonresponse bias that affects both internal validity and external validity. Another limitation concerns the sample of mothers as the study includes women from Calgary, Alberta, Canada, with higher than average education and household incomes. Finally, in the quantitative analysis, postpartum depression appeared to influence maternal confidence over time, but the qualitative study failed to illuminate this phenomenon. In the quantitative research approach, the small sample size ($n = 71$) impacts reliability of finding (i.e., type 2 error), while multiple testing impacts conclusion validity (i.e., type 1 error). Although saturation was reached with a sample size of 11 mothers, interview questions could have done more to capture the interrelationship particularly among mothers with depression.

5 | CONCLUSION

The confidence of mothers with LPIs decreased over the first 2 months following delivery and being home with their infants. This decrease can be attributed to the special demands of the LPI, concerns about the risk of rehospitalisation and the deficit-based approach of PHNs to educating and guiding the new mothers. Maternal confidence levels of depressed and nondepressed mothers of LPIs also decreased with time with differences noted between groups at 6–8 weeks after delivery. The stress of caring for LPIs exacerbates mental health issues. Public health nurses may positively influence maternal role by assisting mothers to: (i) improve maternal knowledge about the characteristics and behaviours of LPIs, (ii) anticipate potential challenges with care (e.g., feeding issues) and (iii) develop skills to manage feeding and health needs of LPIs through a strength-based approach. Any such improvements will likely increase maternal confidence related to the care of their LPI and have the potential to reduce positive screens for postpartum depression.

6 | RELEVANCE FOR CLINICAL PRACTICE

Characteristics of LPIs contributed more to parenting stress score than parent characteristics; mothers however attempted to normalise

the LPI in order to minimise the parenting stress. Evidence-informed brief interventions tailored based on LPI and parent characteristics may improve maternal confidence over time. Healthcare professional should provide education and anticipatory guidance prior to discharge, consistent care in hospital and postdischarge as this may impact maternal level of confidence. Future research needs to examine standards of care for discharge of LPIs and adherence to these standards.

CONTRIBUTIONS

SSP, SR, GC, AD, AKL and MY conceptualized, planned, and implemented the study. SSP, GP, MH, TW completed the analysis with input from GC, AD, SR, and MY. SSP and GP drafted the article with significant editing by SSP, and all authors critically examined, revised, and approved the final version.

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APPENDIX 1

INTERVIEW GUIDE FOR MOTHERS' EXPERIENCES OF CARING FOR LATE PRETERM INFANTS

1. Can you tell me more about what it was like when you were told your baby was a late preterm infant? What was that like for you?
2. Describe your experience of caring for your baby since coming home?
 - When thinking back on the initial days you were home after discharge from hospital, what do you remember about those days? (For those who have been home for a couple of weeks).
 - Tell me about the last feeding of your baby. What was that like for you?
 - Tell me about the moments you feel confident about caring for your baby (i.e., looking after your late preterm infant).
 - Tell me about the challenges in caring for your baby?
 - How did you cope? Who or what helped you during these periods?
 - What other resources would have proved helpful during these periods?
4. Have you met with the public health nurse since coming home from the hospital? What was that experience like for you?
4. How do you feel about your husband/partner's participation in care?