Review

international lactation consultant association®

Journal of Human Lactation
2019, Vol. 35(3) 441–452

DOI: 10.1177/0890334419851805
journals.sagepub.com/home/jhl
SAGE

Effectiveness of the IBCLC: Have we Made an Impact on the Care of Breastfeeding Families Over the Past Decade?

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Abstract

Background: International Board Certified Lactation Consultants (IBCLCs) have been in existence for over 3 decades, are currently represented in 110 countries, and have the only internationally recognized certification to provide safe and evidenced-based care for breastfeeding women and their infants.

Research aim: To review the literature about the efficacy of IBCLCs on breastfeeding outcomes as well as studies that have examined the effectiveness of the IBCLC's role.

Methods: The design was a scoping review of the literature and critical analysis using PRISMA guidelines of existing studies published from 2008–2019. Qualitative and quantitative studies were reviewed.

Results: Twelve (*N* =12) studies met inclusion criteria. Seven themes emerged in the analysis including studies of the role of IBCLCs in resident physician education; IBCLC's role in breastfeeding interventions and the management of breastfeeding problems; the impact of IBCLCs in inpatient and outpatient settings; and the impact of geographic access to IBCLCs on breastfeeding rates. Certification of and ongoing professional development of IBCLCs are also discussed.

Conclusion: In this scoping review of existing literature assessing the effectiveness of IBCLCs in promoting and supporting breastfeeding, it is clear that IBCLCs play a positive role in supporting breastfeeding throughout the world. However, there are certain limitations that must be addressed. Recommendations for future research and clinical practice are discussed in the context of present limitations to breastfeeding expertise and support.

Keywords

breastfeeding, breastfeeding benefits, breastfeeding duration, human milk, International Board Certified Lactation Consultant

Background

The role of the International Board Certified Lactation Consultant (IBCLC) has been in existence since 1985 and is the only internationally recognized lactation professional certification (Academy of Breastfeeding Medicine, 2019: IBCLE, 2018). Rigorous guidelines for certification are based upon the accreditation standards and endorsement of the National Commission of Certifying Agencies (NCAA). Certification is granted through recognized education credits, extensive clinical hours, and the successful completion of a psychometric examination. Maintenance of the IBCLC credential requires recertification every 5 years by examination, or 75 continuing education credits and recertification by examination every 10 years (IBLCEc, 2018). According to the International Board of Lactation Consultant Examiner's (IBLCE, 2018) scope of practice, all IBCLCs must act within the confines of the practice guidelines and engage in education and practice within the authority of their credentials to protect the public and provide competent, safe, and evidence-based care. The *United States Surgeon General's Call to Action Report* (Office of the Surgeon General, Centers for Disease Control and Prevention, & Office on Women's Health, 2011) supported and recommended increased access to IBCLCs for breastfeeding mothers and infants. There are currently 31,181 IBCLCs represented across 110 countries (International Board of Lactation Consultant Examiners, 2019) and this number increases every year. Walker (2017)

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Date received: 23 April 2019; accepted: 30 April 2019.

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stated that the licensure of the IBCLC is a national and global necessity and achieving the highest level of education, expertise and skills in breastfeeding management empowers women to achieve their feeding goals.

According to the World Health Organization (WHO; 2018), 820,000 lives can be saved each year globally if 40% of infants were exclusively breastfed to 6 months. A UNICEF report (2018, https://www.unicef.org/breastfeeding/) stated that one in five infants are never breastfed in high-income countries and one in 25 in middle-to-low income countries. Maintaining exclusive breastfeeding is a challenge for many women. Breastfeeding women frequently report inadequate knowledge of breastfeeding, lack of social support, painful latch, sore or cracked nipples, and perceived or actual inadequate breast milk supply, as the most common reasons for early cessation of breastfeeding (Gilmour, Hall, McIntyre, Gillies, & Harrison, 2009; Steyn, Zunza, & Decloedt, 2017; Wagner, Chantry, Dewey, & Nommsen-Rivers, 2013). IBCLCs are specifically educated and certified to respond to these needs.

New public health issues have emerged in the last 2 decades that influence breastfeeding women and their infants. On a global level, the maternal mortality rate has more than doubled since 1990 with the United States' (US) rate highest of all high-income countries (28 per 100,000 live births in 2013; Molina & Pace, 2017). Rising maternal age, obesity, and cardiovascular disease are leading to chronic medical conditions associated with maternal death (Mann, Hollier, McKay, & Brown, 2018; Molina & Pace, 2017). Low-income women from rural areas and non-Hispanic black women are at higher risk of maternal death after childbirth (McDorman, Declerq, & Thoma, 2017). There is also an increase, in the US, of women with opioid use disorder (Center for Disease Control, 2018b; Wachman, Byun, & Phillip, 2010). Maeda, Bateman, Clancy, Creanga, and Leffert (2014) reported that the prevalence of women presenting in hospitals in the United States with opioid abuse or dependence has increased 127% from 1998–2011. McGothen and Cleveland (2018) reported 56% breastfeeding initiation rates in mothers with opioid use disorder compared to 82% in the general US population.

The Global Evidence and Policy for Save the Children Action Report on Preterm Birth (PMCH, Born Too Soon, WHO, 2012) cited that preterm births make up 11.1% of the world's live births, of which 60% are in South Asia and sub-Saharan Africa. According to this report, the number of preterm births was increasing in all but three countries, with the US and Brazil amongst the highest in high-income countries (12% or 1 in 9 births; PMCH, WHO, 2012). Risk factors for preterm birth are multifactorial and include a previous history of preterm birth, underweight, obesity, hypertension, diabetes, infection, multi-fetal pregnancy, and close interval pregnancies. Breastfeeding mothers of premature infants must overcome several challenges. These include issues related to sustaining mothers' milk supply to reduce the incidence of necrotizing enterocolitis, chronic lung disease, and sepsis, and improve neurodevelopmental outcomes for their infants (WHO, CDC, 2018a). Mothers of preterm infants also face factors associated with infant developmental immaturity and anatomical challenges, of which IBCLCs are educated and prepared to address (Amir & Bearzatto, 2016).

Key Messages

- Studies of the effectiveness of IBCLCs' roles in the last decade need review.
- IBCLCs are critical to the care of complex breastfeeding dyads.
- Global access to IBCLC's for diverse populations is needed.
- IBCLCs positively influence the care of breastfeeding families but more studies are needed.

As the landscape for maternal health needs changes, so too do the needs of women who choose to breastfeed. IBCLCs must respond to, and provide expert evidence-based care to, the ongoing and changing needs of the population health of breastfeeding women and infants throughout the world. Therefore, the aim of this manuscript is to provide a review of the literature of existing studies that have examined the effectiveness of the IBCLC role in the last decade (2008–2019).

Methods

Design

This scoping review was conducted according to PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). A scoping review of both quantitative and qualitative studies was chosen to respond to a broader question beyond the effectiveness of clinical lactation interventions and to identify gaps in the research (Khalil et al., 2016).

Sample

Inclusion criteria consisted of any published studies that assessed the efficacy of the IBCLC role and any study that explored the experience of the IBCLC as an effective provider. Exclusion criteria included any case studies involving less than three mother/infant dyads; commentaries or editorials; policy papers; pilot or feasibility studies; research protocols; integrative reviews, and studies that included the IBCLC with other healthcare or breastfeeding providers (e.g., peer counselors, certified lactation counselors (CLCs), physicians, or nurses, in direct comparison to the IBCLC). These studies were specifically excluded due to the risk of potential disproportionate lactation knowledge and preparation between groups. Studies comparing inter-rater reliability of assessment tools, and studies that included maternal experiences with multiple providers in

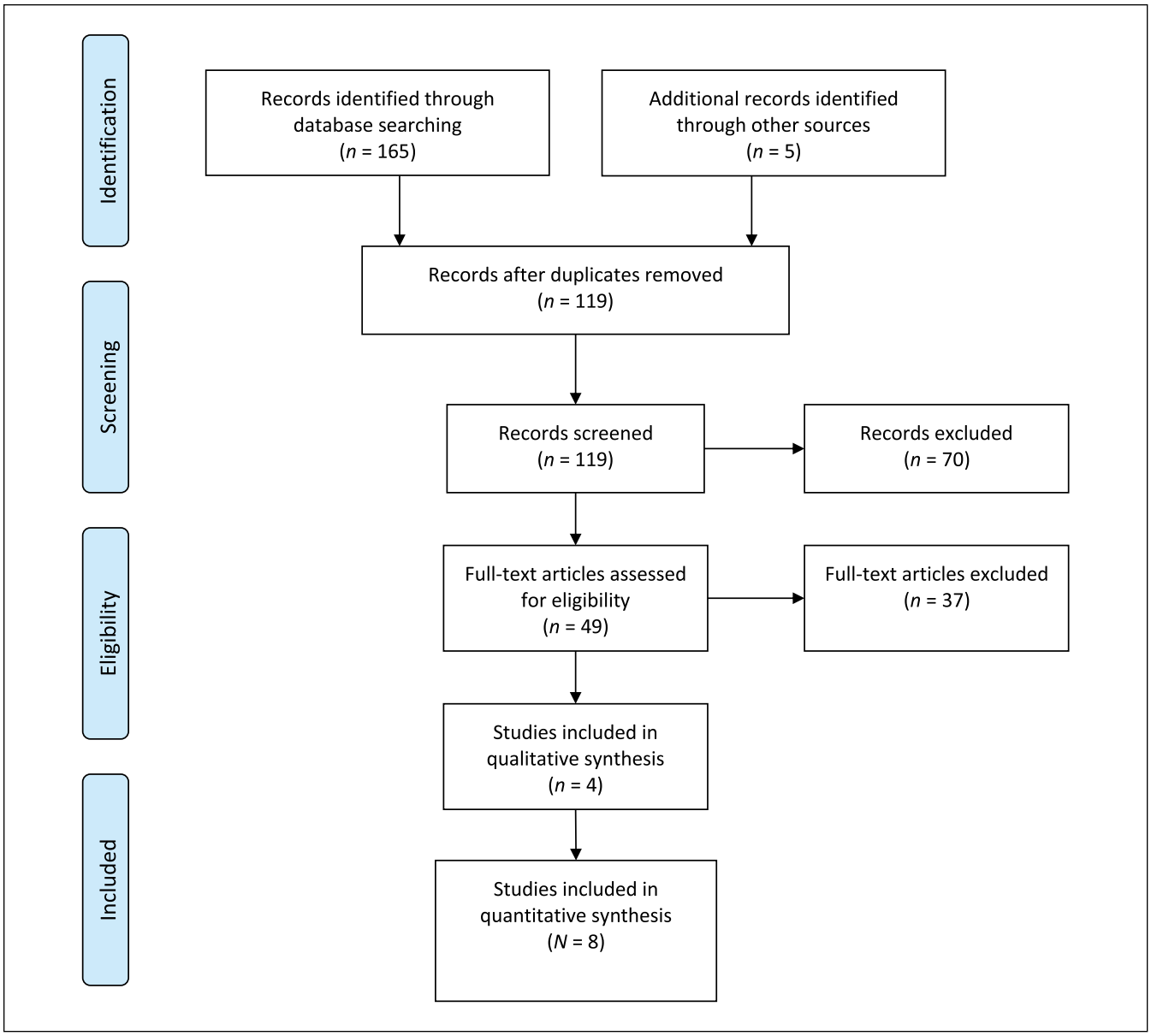

Figure 1. Efficacy of the IBCLC (2008–2019).

their care, were also excluded. The initial search yielded 165 records; 5 additional articles were located manually, through searching the reference lists of selected records. A total of 119 records were included after duplicates were removed (Figure 1). A total of 12 studies, quantitative studies ($n = 8$; two of which were mixed methods) and 4 qualitative studies ($n = 4$) were included.

Data Collection

To identify studies for inclusion in the review, a research informationist developed detailed search strategies in the following databases: PubMed, Scopus, CINAHL (EBSCO), PscyINFO (EBSCO), and Cochrane Database of Systematic Reviews. The search strategies use a variety of keywords including: International Board Certified Lactation Consultant(s), IBCLC(s), efficacy, and effectiveness. We included both quantitative and qualitative studies in English and were not limited to randomized controlled trials (RCTs). Publications that were retrieved were limited to the last 10 years (2008–2018) and any recent publications in 2019. To identify additional articles, the reference lists of relevant articles were manually searched, as were cited articles.

Data Analysis

Levels of evidence and analysis of included studies were determined by utilizing the level of effectiveness rating

scheme for evidence-based practice (Ackley, Swan, Ladwig, & Tucker, 2008). The levels of evidence chosen are based on the methodological quality of research design, validity, and applicability to the practice of the IBCLC role. To explore the effectiveness of the IBCLCs, several research designs were reviewed, including any systematic reviews or meta-analyses (Level I), randomized controlled trials (II), controlled trials without randomization (III), case control or cohort studies (IV), meta-syntheses (V), single descriptive or qualitative studies (VI), or opinions or expert consensus (VII; Ackley et al., 2008).

Results

Characteristics of the Sample

A majority of the studies ($n = 10$) were single/descriptive or qualitative studies and two were randomized controlled trial (RCT) intervention studies (Table 1). Table 2 summarizes the levels of evidence (Ackley et al., 2008).

Thematic Summaries

The reviewed studies tell a story of IBCLCs in several countries including the influence of the IBCLC on breastfeeding outcomes, as well as their experiences in practice, and the realities of achieving and maintaining the IBCLC certification. The seven themes emerging from the analysis were: (1) The influence of the IBCLC on resident physician lactation education (Albert, Heinrichs-Breen, & Belmonte, 2017; Tender et al., 2014); (2) the efficacy of the IBCLC with breastfeeding intervention studies (Carlsen, et al., 2013; Pound et al., 2015); (3) introduction and influence of an IBCLC in hospital and outpatient settings (Chiurco, Montico, Brovedani, Monasta, & Davanzo, 2015; Dweck, Augustine, Morris, Valdes-Greene, 2008); and (4) the relationships between geographical location of IBCLCs and initiation and exclusive breastfeeding rates (Ray, Demirci, Uscher-Pines, & Bogen, 2019). Qualitative studies included (5) the experience of the IBCLC in management of breastfeeding problems (Antsey et al., 2017; Teich, Barnett, & Bonuck, 2014); (6) issues concerning the certification process and access to the IBCLC credential (Thomas, 2018); and (7) progressing in one's professional development as an IBCLC (Vaughan, McMurray, Sidebotham, & Gamble, 2018).

IBCLC Role in Resident Physician Education. In a study conducted by Albert, Heinrichs-Breen, & Belmonte (2017) to increase knowledge and confidence in the management of breastfeeding using online training modules and 50 hr shadowing an IBCLC, resident physicians perceived knowledge and confidence increased post-test at 6 and 12 months post rotation ($p < .001$; $p < .001$, respectively). In a similar but less time-intensive intervention that included the shadowing of an IBCLC for a 1-hr session versus watching a 1 hr breastfeeding video, or 1 hr of attendance in a breastfeeding support group, knowledge improvement in IBCLC group was greater ($p = .001$; Tender et al., 2014).

The IBCLC in Breastfeeding Intervention Studies. In an RCT, Carlsen, Kyhnaeb, Renault, & Cortes-Michaelsen (2013) conducted a telephone-based breastfeeding support intervention for obese, lactating women over a 6-month period. One IBCLC performed the intervention in the study group, and the control group received standard care. The experimental group had a median breastfeeding duration of 120 days compared to 14 days in the control group ($p = .003$), and any breastfeeding was 184 days versus 108 days ($p = .002$). Breastfeeding did not achieve a significant influence on infant weight gain in either group in the study.

In another RCT with a qualitative component, Pound et al. (2015) performed a breastfeeding intervention for hospitalized, jaundiced infants using one IBCLC in a hospital setting and post discharge compared to standard breastfeeding support. There was no statistical significance between groups in exclusive breastfeeding at 3 month ($p = .40$). Mothers in the experimental group reported increased comfort and confidence in breastfeeding their infant, and mothers in the control group reported limited IBCLC support and a need for more knowledgeable providers in breastfeeding management.

In a qualitative study by Teich, Barnett, and Bonuck (2014) that explored breastfeeding problems and support in the early postpartum period, a majority of breastfeeding women reported breastfeeding problems—including difficulties with latch, sore and cracked nipples, and perceptions of insufficient milk supply. Breastfeeding women in this study reported that IBCLCs assisted and supported them with these issues.

Use of the IBCLC in Outpatient Primary Care. Morris and Gutowski (2015) performed a retrospective chart review of the influence of the introduction of one IBCLC into a pediatric primary care setting on exclusive breastfeeding rates and duration of breastfeeding. Data were retrieved from electronic health records (EHRs) of newborns 9 months before and 9 months after the introduction of an IBCLC who conducted face-to-face consultations and telephone and e-mail breastfeeding support. Higher rates of exclusive breastfeeding were reported in the post-IBCLC introduction group but results did not reach statistical significance ($p = .73$). A higher percentage of infants (26.5%) were breastfeeding at 1 year compared to infants in their practice prior to introduction to the IBCLC (14.2%).

Influence of the IBCLC in the Hospital Setting. Two research teams (Chiurco, Montico, Brovedani, Monasta, & Davanzo, 2015 and Dweck, Augustine, Pandya, & Valdes-Greene, 2008) explored the efficacy of the IBCLC in hospital settings. Chiurco et al. (2015) conducted an 18-month

Table 1. Characteristics of the Article Reviewed (*N* = 12).

First Author (Year)	Conceptual Framework	Design/Method	Sample/ Setting	Variables & Definition	Measurement	Data Analysis	Findings	Appraisal: Worth to Practice
Anstey (2017)	Grounded Theory	Prospective Cross-sectional Qualitative AIM: To explore IBCLCs perceived barriers to managing BF problems	*N* = 30 IBCLCs Theoretical sampling. Setting: Across Florida, US (from a variety of settings: hospital- and clinic-based, home based)	Perceptions of professional barriers to support, and management of lactation counseling	Semi-structured in-depth interviews in-person & via phone	Grounded theory methodology.	Working within the challenge of a cultural mindset (expectation of failure, racial or cultural differences in care) Influence of formula companies: mixed messages Lack of BF knowledge by providers other than IBCLCs a barrier, inadequate training Professional resistance by other healthcare providers despite evidence Direct barriers to BF support: institutional constraints (policies, financial, billing), lack of coordination between providers, maternal lack of self-efficacy & social barriers	Weaknesses: Possible researcher bias Limited sample of perceptions of AA IBCLCs or IBCLCs from Baby Friendly hospitals Strengths: Conducted member checks Conceptual model of indirect and direct factors to managing BF problems for the IBCLC **Level VI**
Heinrichs-Breen (2017)	None	Longitudinal pre-post one-group design Quantitative Non-randomized AIM: Increase BF support knowledge and confidence in resident physicians in management of BY dyads over a 12 month period	*N* = 45 1st year. Pediatric residents Convenience Tertiary medical center in in Midwestern US	Residents participated in AAP, ABM, WellStart modules, videos and minimum of 50 hr with 3 IBCLCs	BF knowledge: AAP BF Resident Curriculum pretest/ posttest Test 1st day of rotation (test 1), last day (2) & 6 (3) and 12 (4) months post-rotation	*M* [*SD*] & categorical (*N* (%)] Linear mixed model $p = 0.05$.	Knowledge Test 1 & 2 = [71.38(11.938) vs. 87.38(8.653) $p<.001$)]; Tests 1 & 3 = (71.38 (11.938) vs. 89.16 (6.91)], $p<.001$; Tests 1 & 4 = (71.38(11.938) vs. 90.31(7.058), $p<.001$)] No sig differences found between tests 2,3,4 ($p>.05$) Perceived confidence: Ability to address parents' questions about BF with resident confidence increasing test 1 to 3, 4 ($p<.001$); Perceived confidence in management of BF problems: $p<.001$	Weaknesses: Use of AAP pretest as posttest (threat to validity) Small sample of residents in one hospital Strengths: Amount of time spent with IBCLCs compared to limited time reported in similar studies. Key to successful program is dedication of IBCLCs to resident learning **Level VI**
Carlsen (2013)	None	RCT Quantitative AIM: To evaluate whether telephone-based BF support increases duration of BF in obese (BMI > 30) women with healthy term newborns	*N* = 207 BF dyads Intervention group (IG) (*n* = 105) Control Group (CG) (*n* = 102) Randomized Setting: Denmark	6 month structured interviews, management & IBCLC support vs. standard care Intervention: Telephone-based BF support with 1 IBCLC DV: Any BF, exclusive BF at 3 months & 6 months infant weight & length	Baseline chart reviews Telephone surveys of mothers	Independent student *t*-tests, Mann Whitney U test, Fischer's exact & Chi squared, binary logistic regression (*OR* & 95% CI), Cox regression (exclusive BF).	Median duration of BF was 120 d (25-75th percentiles: 14-142 d) compared with control group 41 d (p=0.003), Any BF median 184 d (IG) vs. 108 d (CG) (p=0.002). IG increased the adjusted ORs for exclusive BF at 3 mos. & ratios for partial BF at 6 mos. (95% CI: 1.36, 4.41; p=0.003 & 2.25 (95% CI; 1.24, 4.08, p=0.008) BF support not significant for infant growth at 6 mos.	Weaknesses: Recruited from a larger prenatal obesity program, highly motivated, homogeneous educated population One IBCLC conducting intervention possible bias Limited generalizability Strengths: RCT Large sample **Level II**
Chiurco,. (2015)	None	Pre-post Non-equivalent groups unmasked Quantitative AIM: Efficacy of the IBCLC role on BF initiation rates, BF care satisfaction, exclusive BF rates	*N* = 401 mother/ infant dyads 18-month intervention with one IBCLC, one medical center in Italy (not Baby Friendly; all RNs WHO and UNICEF trained)	Phase 1: Baseline survey BF rates Phase 2: IBCLC (18 months) care Phase 3: Posttest Replication (survey) data DV: Initiation of BF within 2 hr. of birth, maternal satisfaction with BF support, frequency of sore/cracked nipples, and exclusive BF at discharge	Telephone interview data, chart review, IBCLC record of professional activities	Data reported as absolute frequencies and percentages, 95% CI, two tailed Fischer *t*-tests, multivariate logistic regression models to adjust ORs to prenatal and postnatal experiences;	78% of BF women in IBCLC group BF within 2 hrs. of birth compared to baseline (68%) (p=0.004). % of BF women who reported significant help with BF (60% at baseline vs. 93% IBCLC group) ($p<001$). Frequency of sore/cracked nipples significantly lower in IBCLC group (Baseline 41.5% compared to 24.6%). No difference in exclusive BF rate between groups. Exclusive BF rate at discharge higher post IBCLC	Weaknesses: Intervention conducted by one IBCLC, possible bias One medical center Limited generalizability of findings Strengths: Large sample Measurement of isolated influence of IBCLC role **Level VI**

(continued)

Table 1. (continued)

First Author (Year)	Conceptual Framework	Design/Method	Sample/ Setting	Variables & Definition	Measurement	Data Analysis	Findings	Appraisal: Worth to Practice
Dweck, (2008)	None	Retrospective chart review Pre/post non-equivalent groups Quantitative AIM: Pre- and post-introduction of a NICU IBCLC and % of neonates receiving any MoM	*N* = 406 NICU infants *N* = 257 inborn *N* = 149 outborn. 1 IBCLC designated to the NICU with direct care within 24 hr of birth. Responsible for education of staff. Setting: One medical center in New York, USA	BF support & staff education at 3-month intervals Phase 1: Pre-intervention before IBCLC Phase 2: IBCLC Phase 3: Post-intervention period DV: % of neonates receiving any MoM at discharge and over time	Electronic Medical Record review	One-way analysis of covariance for continuous variables. Fischer's exact test for categorical variables. Kruskal-Wallis test to compare non-normally distributed variables over time. Test for trend of proportion used for any MoM during NICU stay. Logistic regression (odd of any MoM during stay; expressed as ORs).	*n* (%) of infants receiving any MoM during hospital stay increased significantly over time after start of IBCLC Greatest change in time period 3 (OR 1.32; 95% CI 1.03 to 1.71) & at discharge (OR; 95% CI 1.01–1.67).	Weaknesses: Intervention consisted of one IBCLC in one setting, possible bias No post discharge follow-up No social supports of mothers reported Limited generalizability of findings. Strengths: Measurement of the isolated influence of a designated NICU IBCLC **Level VI**
Morris (2015)	None	Retrospective chart review Pre/post non-equivalent groups. Quantitative AIM: Influence of an IBCLC in a pediatric primary care setting on BF duration and exclusivity rates	*N* = 256 newborns *N* = 120 pre-IBCLC; *n* = 166 post-IBCLC Face-to-face consults, telephone and e-mail support Setting: 1 suburban pediatric outpatient clinic in PA (US)	BF outcomes: exclusive BF, MoM and non-human milk, or human milk plus foods	EHR review 9 months pre-IBCLC and 9 months post intro of IBCLC	Chi-square analysis. Multinomial and binary logistic regression.	Post-IBCLC group: odds of 1.75x > exclusively BF until 4-6 mos. of age than pre-IBCLC group (p=.073). Post-IBCLC 1.83x > likely to be exclusively BF to 4-6 mos. than 1-2 mos. (p=0.80) IBCLC was significantly predictive of continued BF to 1 yr. Post-IBCLC group (26.5%) providing BM at 1 yr. vs. pre-IBCLC (14.2%) Post-IBCLC group 2.15x > likely to providing some BM to 1 yr. (p=0.21)	Weaknesses: 17/366 missing variables Homogeneous sample (98.4% white) w/ private health insurance (72.3%) Single site **Level VI**
Pound (2015)	None	RCT with qualitative component Mixed methods AIM: IBCLC intervention vs. standard care for BF jaundiced infants < 4weeks and exclusive BF at 3 months	*N* = 86 BF mothers of hospitalized jaundiced infants < 4 weeks of age. IBCLC group (*n* = 35) Random sampling Setting: One tertiary medical center in Ottawa, Canada	Exclusive BF at 3 months	Demographic and infant measurement BF duration collected from mothers from a BF diary. Data collection by phone. Open-ended questions	Fisher's Exact Test comparison of groups Risk ratios and 95% CIs, two-sided, with p-values < .05. Kaplan-Meier curves for exclusive BF between groups Conventional qualitative content analysis	No statistically sig difference between groups in exclusive BF at 3 months (RR 0.84, 95% CI, 0.156–1.24, p=0.40 Qualitative (*n*=35): reported increase comfort and confidence in BF CONTROL group: reported limited IBCLC support and request for knowledgeable BF providers.	Weaknesses: Support of jaundiced infant multi-factorial Non-generalizable **Level II**
Ray (2019)	None	Cross sectional observational design, unmasked Quantitative AIM: Assess geographic info systems for proportion of young children living within 15, 30, and 60 miles of IBCLCs in PA (US) and BF initiation rates	The entire population of PA (no exclusions) *N* = 484 IBCLCs Setting: Pennsylvania (US)	Geographic distances BF initiation rate Urban/rural designations	County BF rates IBCLC location; IBCLC website UDS rural-urban continuum codes PA DHHS BF rates PA birth certificate data	Geographic information systems methodology using multiple buffer rings in block groups Chi-square tests	Unequal distribution of IBCLCs across PA 80% live within 15 miles of an IBCLC Fewer children in rural areas live within 15 miles of an IBCLC Counties w/ high BF initiation rates had a 15 mile access to an IBCLC vs. 69% in counties with low BF initiation rates (p<.001)	Data identified IBCLC access lower in PA counties in rural areas and in counties with lower BF rates. Only one component in access to lactation support of BF women. **Level VI**

(continued)

Table 1. (continued)

First Author (Year)	Conceptual Framework	Design/Method	Sample/ Setting	Variables & Definition	Measurement	Data Analysis	Findings	Appraisal: Worth to Practice
Teich (2014)	Grounded theory	Longitudinal, Qualitative, semi-structured interviews nested in two RCTs AIM: Women's perceptions of early infant feeding experiences and PP barriers to successful BF	*N* = 67 BF women	I	Routine pre- and postnatal visits with an IBCLC Comparison of 3 groups: Electronically prompted guidance from prenatal care providers; PNC providers and IBCLC combined; Standard of care (control group)	Analyzed via grounded theory method. Further analyzed using a mixed methods analysis.	Majority had BF problems in the early PP period Perception of inadequate milk supply, problems with latch, medical problems perceived as precluding BF Frequent reports that IBCLCs assisted in management of BF problems	Small sample size No generalizability **Level VI**
Tender (2014)	None	Quasi-experimental Pre-post one-group Unmasked Quantitative AIM: evaluation of 3 brief (≤ 3 hr) time efficient curricula for improving resident physicians BF knowledge and skills in counseling BF women	*N* = 39 pediatric residents Setting: One medical center in Washington DC, US	Group 1: shadowed an IBCLC for 1 hr (*n* = 11) Group 2: watched a 25 min interactive video created by two of the authors (*n* = 16) Group 3: observed a regularly schedule BF class (*n* = 12)	23-question BF knowledge pretest/ posttest. Self-rated pre & post BF knowledge Likert scale (1–5)	Fishers exact test for baseline differences of groups. Analysis of covariance for posttest differences Nelson-Hsu procedure for comparison of 3 groups. Paired *t*-tests for pre- and post-scores.	All groups significantly improved their knowledge & confidence scores. IBCLC group had > improvement in knowledge than other groups (p=.02) & a higher rating on teaching methods (p=.01). All groups performed well on the posttest clinical skills scenario with no difference in groups	Weaknesses: Measurement scales not validated Small sample size limited generalizability of findings Strengths: Preliminary findings of efficacy of IBCLC role **Level VI**
Thomas, E. (2018)	Critical race theory framework	Prospective cross sectional qualitative AIM: To describe barriers and support that IBCLCs experience across the US to professional lactation certification	*N* = 36 IBCLCs *n* = 35 (97%) women *n* = 16 (45%) IBCLCs of color. Setting: multiple areas across the US	IBCLC perceptions of barriers and support to professional certification	Audio-recorded, semi-structured interviews by phone	In-depth thematic analysis within framework of critical race theory.	Existing healthcare providers experience advantages to certification: social networks, access to clinical hours, other resources at workplace Cost & race-related barriers: Discrimination identified as primary barrier: Race related comments re pass/fail of exam by mentors/ colleagues IBCLC exam deemed as neutral and unbiased although stereotypical threat needs to be addressed/ researched	Weaknesses Small sample size Skew sample toward educated, middle class IBCLC Sampling a limitation, self-selected web users Potential researcher bias identified Strengths Mix of IBCLCs included Captures information not available in other studies **Level VI**
Vaughan, (2018)	Donabedian structure-process-outcome model	Mixed methods prospective and cross-sectional quantitative & qualitative (online questionnaire). AIM: To investigate the factors that influence professional development and lifelong learning in IBCLC	*N* = 3946 IBCLCs Setting: Multi-national	Currently certified IBCLCs' perceptions of barriers/ facilitators of professional development and advancement of practice	Phase 1: Semi-structured interviews and focus groups Phase 2: Triangulated data from survey of larger population of IBCLCs	Frequency distributions, Content analysis.	15% response rate (from 8 countries) Phase 1: Motivation to advance practice, workplace influences, and impetus to re-certify Phase 2 93.6% intrinsically motivated to optimal evidence-based care IBCLCs participated in conferences, peer support, and reflective sessions	Weaknesses: Geographical & language barriers for focus groups and surveys (60% with English with primary language) Strengths Mixed methods, large sample size, IBCLCs from several countries **Level VI**

Note. AA = African American; AAP = American Academy of Pediatrics; ABM = Academy of Breastfeeding Medicine; BF = breastfeeding; BMI = body mass index) CDC = Center for Disease Control; CI = confidence interval; CV = control variable; DV = dependent variable; IBCLC = International Board Certified Lactation Consultant; IV = independent variable; LPs: lactation professionals; MoM: mother's own milk; NICU = neonatal intensive care unit; *OR* = odds ratio; PP = postpartum.

Table 2. Level of Effectiveness of Reviewed Studies ($N = 12$).

Level of Effectiveness[a]	*n* (%)
Level I: Systematic review or meta-analysis	0
Level II: Randomized controlled trial	2 (16.68)
Level III: Controlled trial without randomized	0
Level IV: Case-control or cohort study	1 (8.33)
Level V: Systematic review of qualitative or descriptive studies	0
Level VI: Qualitative or descriptive study (includes evidence implementation projects)	9 (75.0)
Level VII: Expert opinion or consensus	0

[a]Ackley, Swan, Ladwig & Tucker (2008).

intervention with the introduction of one IBCLC in a medical center in Italy and examined breastfeeding initiation rates (10% increase post-introduction of IBCLC, $p = .004$) and a 33% increase in maternal satisfaction with breastfeeding care and a 16.9% decrease in sore and cracked nipples. No differences were found in exclusive breastfeeding rates. Dweck, et al. (2008) reported a statistically significant increase in the percentage of infants receiving mother's own milk (MoM) in a neonatal intensive care unit (NICU) after the introduction of an IBCLC providing direct breastfeeding support [*OR*: 95% CI [1.01–1.67]).

Geographic Access to the IBCLC. In a cross-sectional study researchers explored geographic access to an IBCLC and breastfeeding rates across Pennsylvania. Ray et al. (2019) reported that fewer children in rural areas lived within 15 miles of an IBCLC and had lower breastfeeding rates. Counties with higher breastfeeding rates had higher rates of young children living within 15 miles of an IBCLC ($p < .001$).

Efficacy of the IBCLC in Management of Breastfeeding Problems. In their qualitative study of IBCLCs across the state of Florida, US, which explored perceived barriers to effective breastfeeding management, Antsey et al. (2017) cited themes related to cultural mindsets (e.g., racial and cultural differences in care, influence of mixed messages from formula companies, lack of knowledge, and inadequate training of other healthcare providers who interact with breastfeeding women). They also reported professional resistance to change despite evidence-based practices, institutional barriers (billing and financial constraints) and lack of coordination of care between providers. Maternal breastfeeding self-efficacy and social support were also discussed as barriers to the provision of breastfeeding care.

Certification and Access to the IBCLC. Thomas (2018) explored the barriers and support that IBCLCs experience with professional certification in a qualitative study. Professionals seeking certification who worked in healthcare settings experienced privileges and advantages in preparation for the IBCLC certification, including access to clinical hours, professional peer support, and educational and financial resources. Those seeking IBCLC certification in the community or in Women's, Infant's, and Children (WIC) supplemental nutrition programs (which primarily serve women and children in lower socioeconomic minority groups) identified barriers to certification, including the cost of the educational requirements and the examination, limited access to clinical hours, and limited educational and peer resources. Although, in general, the IBCLC examination was determined by the participants in this study to be fair and neutral, they also identified race and cultural-related barriers, including a perception of possible failure of the certification examination.

Professional Development of the IBCLC: Maintaining the Efficacy of the Role

In their mixed methods study, Vaughan et al., (2017) investigated factors associated with the professional development of IBCLCs through focus groups and online surveys ($N = 3946$). A vast majority of IBCLCs ($n = 3631$; 93.3%) reported being intrinsically motivated to provide evidence-based breastfeeding care. Various sources of ongoing professional development were reported, including attendance at conferences and peer support with reflective problem-solving sessions. Respondents reported a sense of pride with the IBCLC credential, and ongoing motivation to re-certify.

Although excluded from our analysis, the individual case studies ($n = 4$) also tell a story of the contribution of the IBCLC in complex clinical scenarios. For example, the successful re-lactation of a breastfeeding mother after an illness (Muresan, 2011); breastfeeding twins after breast cancer treatment and mastectomy (Michaels & Wanner, 2013); IBCLC assessment of an underlying clinical issues related to gastroesophageal reflux (GER) among breastfed infants (McFadden, 2017); and lactation support for a mother of an adopted newborn (Ersillia-Armeni & Belletini, 2011). Several commentaries ($n = 7$) discussed the critical role of the IBCLC in assessment and management of ankyloglossia related to breastfeeding outcomes (Amir, James, Kelso, & Moorhead, 2011; Ferres-Amat, Pastor-Vera, Rodriguez-Alessi, Mareque-Bueno, & Ferres-Padro, 2017; Fisher, 2016; Carlsen et al,. 2013; Garbin et al., 2013; Kendall-Tackett,

2017; Wattis, Kam, & Douglas, 2017), and the need for expert maternal medication evaluation and compatibility with breastfeeding ($n = 1$; Davanzo et al., 2016).

Discussion

The studies presented provide a variety of questions related to the efficacy of the IBCLC as well as a wide variation in primary outcome measures. The study designs have limitations, including small and homogenous sample sizes, specifically in the number of IBCLCs involved in the intervention studies, for example. Multi-site studies are needed to increase generalizability of findings.

The role of the IBCLC continues to evolve and to change as the interface of technology influences everyday living, even in more remote areas. As teleconferencing (tele-lactation) emerges as a feasible method to reach areas with limited access to IBCLCs, more intervention studies are needed (Rojjanasrirat, Nelson, & Wambach, 2012; Macnab, Rojjanasrirat, & Sanders, 2012). There is an urgent need for studies that delineate the role of IBCLCs in the context of the community in which they serve. To be able to extrapolate the findings from one community to another in a more global manner, there must be standardization of study protocols and objective measures to establish the role of the IBCLC in the management of the breastfeeding dyad.

Studies that explore the impact of the IBCLC in inpatient and hospital settings are also needed. In an integrative review about the literature focused on the integration of the IBCLC role into primary health care, Thurman and Allen (2008) cited five studies and concluded that there was positive correlation between IBCLC use and breastfeeding duration. As with the Morris and Gutowski's study (2015), presented in this review, the reliability and validity of the studies, however, could not be concluded due to small sample sizes, homogenous samples, and limitations of study designs.

The qualitative studies presented provided foundational information regarding access to the IBCLC certification, barriers to effective evidence-based breastfeeding support, maintenance of the IBCLC certification, and professional development. There is considerable work to be done to achieve the highest level of professionalism and access to evidence-based breastfeeding support of women and infants at a global level.

Other issues we identified include economic barriers to accessing care from an IBCLC. Without access to care that includes breastfeeding professionals, it is clear that breastfeeding rates are reduced. Efforts to provide adequate reimbursement for care from breastfeeding professionals ensures that qualified individuals will continue to work as IBCLCs. Herold and Bonuck (2016) reported that US states with higher reimbursement practices for IBCLCs had higher breastfeeding rates. They also found that, across 15 states in the US, no autonomous IBCLC billing existed unless the IBCLC billed under another credential (e.g., MD, NP, CNM). This finding also was supported by a US national survey of ($N = 2045$ IBCLCs; Chetwynd, Meyer, Stuebe, Costello, & Labbok 2013). Chetwynd et al. (2013) concluded that IBCLCs poorly communicated their healthcare activities to insurance companies, and insurance companies provided inconsistent reimbursement for lactation services. The Academy of Breastfeeding Medicine (Grawey, Marinelli, Holmes, & the Academy of Breastfeeding Medicine, 2013) has concurred, stating that insurance coverage for lactation services would greatly improve breastfeeding care at many levels.

As we move forward in determining the efficacy and impact of the IBCLC, Dodgson (2017) recommended a call for research and clear guidelines for the type of education needed, not only for the IBCLC but for various providers providing breastfeeding care with varied resources. Barriers to obtaining clinical practice hours and educational credit hours for the IBCLC certification must be addressed. Clear, consistent differentiation of the levels of the scope of practice must continue to be a global discussion to address perceived inequities in the IBCLC requirements (Dodgson 2017; Walker, Aldridge, Fink, & Fenick, 2017). Eden, Anstey, and Orriola (2018) identified cost as the greatest barrier to IBCLC certification and recommended flexible course schedules and scholarships to address the need of those interested in serving underserved populations around the globe. Online educational forums should also be at the forefront of established curricula to insure access to education for those individuals who serve more remote communities.

According to the International Lactation Consultant Association's (ILCA) position statement (Henderson et al., 2011), the IBCLC serves nine roles including advocate, clinical expert, collaborator, educator, facilitator, investigator, policy consultant, professional, and promoter of breastfeeding. Each one of these roles represents an opportunity for ongoing research and the professional development of IBCLCs and their influence on breastfeeding outcomes that ultimately improves maternal/child population health on both national and global levels.

Limitations that must be addressed to create a more complete evidence base are: lack of access to lactation support from professions in certain regions of the world, especially remote regions; the lack of well-designed research studies necessary to provide evidence both in breastfeeding rates and in a reduced burden of disease through higher rates of breastfeeding; delineation of online access to educational venues that support knowledge transfer among IBCLCs who cannot travel to attend regional or national meetings; and a more structured interface with insurance companies and other entities that recognize the vital role of the lactation professional in the care of the mother-infant dyad.

Limitations

A potential bias with this scoping review is that the lead author is an IBCLC with a favorable view of the IBCLC role

in promoting and supporting breastfeeding; however, the other authors are not. As with any review, despite a systematic method for identifying relevant publications on the topic, certain studies may have been missed.

Conclusions

We have assessed the effectiveness of the IBCLC in promoting and supporting breastfeeding. It is clear that the IBCLC has a positive role in supporting breastfeeding throughout the world. However, many unanswered questions remain.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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