Review

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Perceptions, Experiences, and Outcomes of Lactation Support in the Workplace: A Systematic Literature Review

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Abstract

Background: Despite legislation requiring break time and a private space to express milk, variations exist in accommodations for breastfeeding employees in the United States.
Research Aims: We aimed to describe employee and employer perceptions of and experiences with workplace lactation support in the United States and to identify research needed to inform workplace lactation support programs.
Methods: We searched Academic Search Complete, Business Search Complete, CINAHL, MEDLINE, PubMed, and PsycInfo for peer-reviewed articles published from 2009 to 2019 (n = 1638). We included 27 articles. Studies were categorized into four non-exclusive themes: (a) employee perceptions of and experiences with workplace lactation support; (b) employer reports of workplace lactation support; (c) association between workplace lactation support and business outcomes; and (d) association between workplace lactation support and breastfeeding outcomes.
Results: Analyses of associations between lactation support at work and employee breastfeeding outcomes (n = 14, 52%), and employee perceptions of and experiences with lactation support at work (n = 14, 52%) were most common, followed by employer reports of lactation support (n = 3, 11%) and associations between lactation support at work and job satisfaction (n = 3, 11%). Results indicated that workplace lactation support varied by employer, and that employee perceptions of and experiences with workplace lactation support varied by demographic and employment characteristics. The use of cross-sectional designs, unvalidated instruments, and limited representation from women with low incomes and minorities were common study limitations.
Conclusions: More research is needed to learn about experiences of employers and low-income and minority women with workplace lactation support and associations with business-relevant outcomes.

Keywords

breastfeeding, breastfeeding barriers, breastfeeding experience, breastfeeding support, lactation workplace programs

Background

Despite known benefits of breastfeeding (Eidelman et al., 2012), large numbers of mothers in the United States do not breastfeed, and many more do not breastfeed for at least 1 yr as recommended by the American Academy of Pediatrics. In 2016, 83.8% of infants in the United States were ever breastfed, 36.2% were breastfed for up to 1 yr, and 25.4% were exclusively breastfed for at least 6 months (Centers for Disease Control and Prevention, 2019). For many mothers, returning to work postpartum is a critical transition that is negatively associated with breastfeeding duration (Burns & Triandafilidis, 2019; Mangrio et al., 2018; Thomas-Jackson et al., 2016). On average, mothers working full time in the United States return to work at 10 weeks postpartum, and 50% report not being able to stay at home as long as desired (Kornfeind & Sipsma, 2018). As the percentage of mothers with children under the age of three in the workforce

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continues to increase, from 34% in 1975 to 62% in 2018 (U.S. Bureau of Labor Statistics, 2019), the potential influence of the workplace environment on breastfeeding initiation and duration is substantial.

Researchers have previously investigated breastfeeding initiation and duration among working women, as well as perceptions of lactation support in the workplace. In a national cohort of working Australian women, researchers found that job autonomy and hazardous working conditions predicted breastfeeding intentions (Spitzmueller et al., 2018). Researchers have also found that women in lower paying jobs experience less flexibility in access to breastfeeding accommodations at work (Hardison-Moody et al., 2018; Majee et al., 2016). Results from other studies indicate that employed mothers have inadequate workplace facilities to breastfeed, struggle to find the time to breastfeed during work, and are conflicted between their obligations as a mother and as an employee (Burns & Triandafilidis, 2019; Cantu et al., 2018; Jantzer et al., 2018; Spitzmueller, Wang et al., 2016). Length of maternity leave, adequate time to express milk at work, and perceived level of workplace support are other important factors with reported influences on breastfeeding duration (Bai et al., 2015; Kim et al., 2018; Lubold, 2016; Scott et al., 2019; Spitzmueller, Wang et al., 2016; Wallenborn et al., 2019). Given this growing body of evidence about the influence of workplace characteristics on breastfeeding outcomes, it is now a public health goal to increase the proportion of employers with programs that support breastfeeding employees (U.S. Department of Health and Human Services, 2018).

Accommodations for employees who breastfeed are occurring more frequently in the United States. However, lactation support at work can vary widely among organizations and industries, and each state requires different levels of support for employees who breastfeed (Hawkins et al., 2015; Snyder et al., 2018). In March 2010, the Patient Protection and Affordable Care Act (ACA) amended Section 7 of the Fair Labor Standards Act to require that employers with 50 or more employees provide breastfeeding mothers with adequate break time and a private space other than a restroom for mothers to express milk (U.S. Department of Health and Human Services, 2013). Consistent with the law, private space and break time for milk expression are the most common forms of support provided by employers (Dinour & Szaro, 2017). The Society for Human Resource Management (2018) reports that nearly half (49%) of organizations offered onsite lactation rooms in 2018, while only 11% offered lactation support services that include counseling and education. Onsite childcare and corporate lactation programs designed to provide education and support for lactating employees are less common, but have the most consistent association with longer breastfeeding duration in research studies (Dinour & Szaro, 2017; Hilliard, 2017). To support women in meeting their breastfeeding goals, it is beneficial to understand more about employers' and employees' experiences with workplace lactation support. Systematic reviews of workplace lactation support completed in the last 10 years were not specific to the United States (Dinour & Szaro, 2017; Steurer, 2017) and included analyses of associations with breastfeeding and job-related outcomes, but not employee or employer perceptions of and experiences with the support provided (Dinour & Szaro, 2017; Hilliard, 2017; Steurer, 2017). Therefore, a summary of the literature on the perspectives and experiences of this critical stakeholder group is lacking.

The aims of this systematic literature review were to (a) describe employee and employer perceptions of and experiences with workplace lactation support in the United States; and (b) identify research needed to inform workplace lactation support programs.

Key Messages

- Employers in the United States have increased workplace lactation support in response to federal laws and the growing number of mothers of young children in the workforce.
- Employee and employer perceptions of and experiences with workplace lactation support vary by demographic, employment, and organizational factors.
- Few researchers have examined whether workplace lactation support affects business-relevant outcomes like job satisfaction.
- There is a lack of studies that have adequate participation from low-income and minority women, well-controlled prospective and longitudinal designs, and settings outside of education, healthcare, and the military.

Methods

Design

We conducted a systematic review of the literature to identify studies that had assessed employee or employer perceptions and/or experiences with workplace support for breastfeeding in the United States. A systematic approach allowed us to identify all relevant research and conduct a critical appraisal of our findings. We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for reporting systematic reviews (Moher et al., 2009) and included observational and interventional studies.

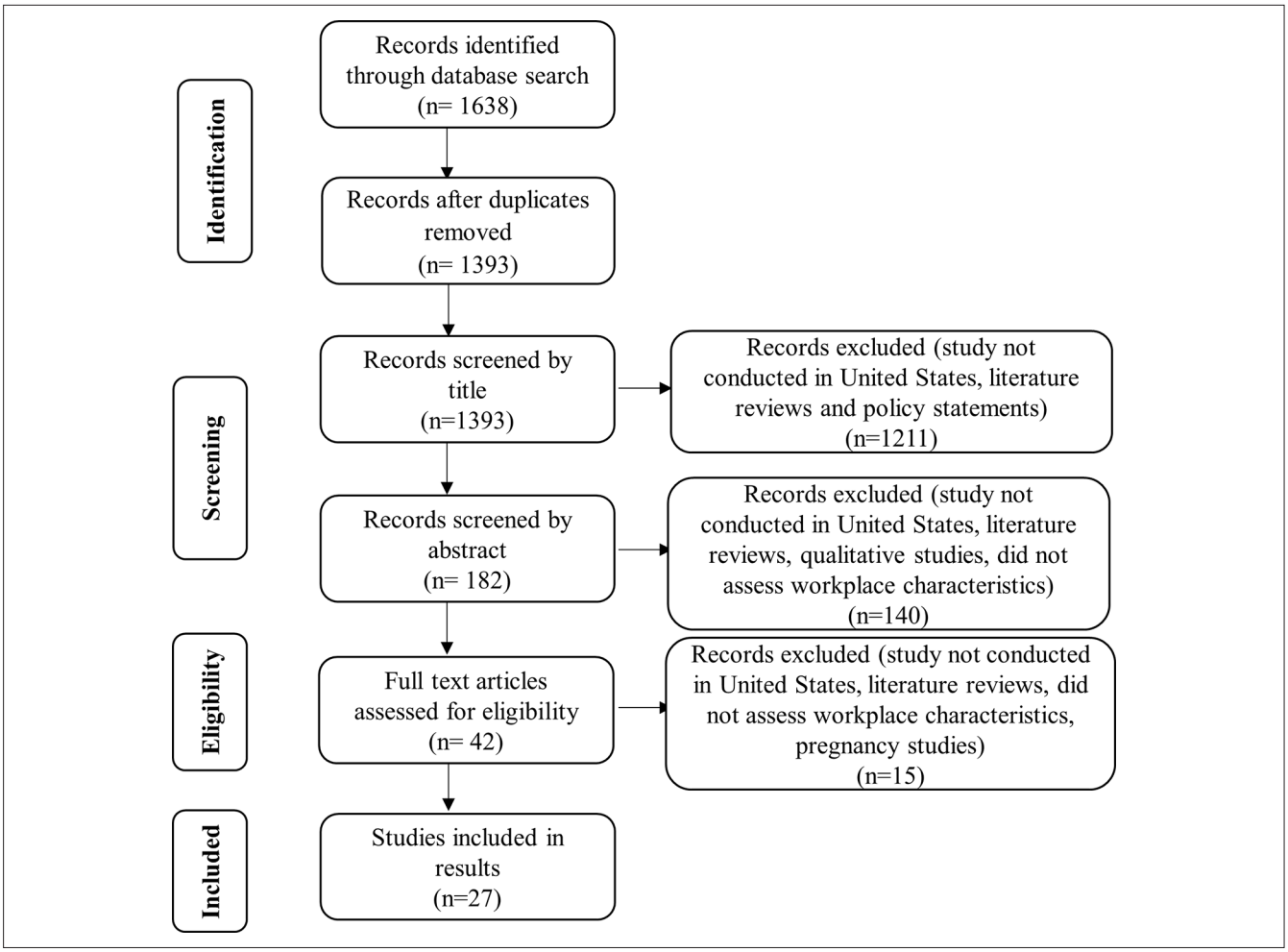

Figure 1. PRISMA Diagram Showing Study Selection and Inclusion and Exclusion Criteria.

Sample

We targeted peer-reviewed articles that included research about employee or employer perceptions and experiences with workplace lactation support. Only English-language articles with settings in the United States were included in results. Qualitative studies, review articles, studies about instrument development, policy statements, and non-human studies were excluded. Studies using both qualitative and quantitative methods were included. However, only quantitative results were reported for those studies, consistent with prior systematic reviews (Dinour & Szaro, 2017; Hilliard, 2017; Steurer, 2017).

Our initial search resulted in 1638 articles (Figure 1). After removing duplicates and screening by title, 182 articles remained. A review of abstracts resulted in 42 articles that required full text review. Of the 42 articles, we excluded 15 articles that did not meet study inclusion criteria: studies conducted outside of the United States (n = 3); review articles or policy statements (n = 1); studies about instrument development (n = 3); studies that did not assess workplace supports for breastfeeding (n = 7); and studies about pregnancy or childbirth (n = 1). Thus, 27 articles remained for inclusion in this review.

Data Collection

We searched the following six major databases for articles published between January 2009 and December 2019: Academic Search Complete; Business Source Complete; CINAHL; MEDLINE; PubMed; and PsycInfo. Search terms included the following: (breastfeeding OR breastfeed OR lactation OR lactating) AND (work OR workplace OR return to work OR working OR employee OR employer) AND (attitudes OR experience OR perceptions OR knowledge). Breastfeeding was defined to include either feeding human milk directly from the breast or as expressed milk (Noel-Weiss et al., 2012). The research team reviewed the title of each article to determine articles to exclude from further review (i.e. qualitative studies, reviews, commentaries, studies conducted outside of the United States, and studies about

Table 1. Article Themes

Employee Perceptions of and Experiences With Workplace Support for Breastfeeding and Variations by Setting[a]	Employer Reports of Workplace Support for Breastfeeding and Variations by Setting[b]	Associations Between Workplace Support for Breastfeeding and Business Outcomes[c]	Associations Between Workplace Support for Breastfeeding With Breastfeeding Outcomes[d]
Dabritz et al. (2009)	Osband et al. (2011)	Waite and Christakis (2015)	Dabritz et al. (2009)
Uriell et al. (2009)	Hojnacki et al. (2012)	Jantzer et al. (2018)	Uriell et al. (2009)
Orth et al. (2013)	Magner and Phillipi (2015)	Scott et al. (2019)	Guendelman et al. (2009)
Alvarez et al. (2015)			Mandal et al. (2010)
Dixit et al. (2015)			Sattari, Serwint, Neal et al. (2013)
Martin et al. (2015)			Alvarez et al. (2015)
Spitzmueller et al. (2016)			Waite and Christakis (2015)
Cantu et al. (2018)			Lubold (2016)
Henry-Moss et al. (2018)			Spitzmueller et al. (2016)
Abbott et al. (2019)			Snyder et al. (2018)
Ames and Burrows (2019)			Scott et al. (2019)
Juengst et al. (2019)			Stack et al. (2019)
Pearson et al. (2019)			Whipps and Honoroff (2019)
Zhuang et al. (2019)			Zhuang et al. (2019)

Note. Themes were not mutually exclusive and articles may include more than one theme.
[a]Theme includes articles that assessed employee beliefs, understanding and interpretation of workplace lactation support.
[b]Theme includes articles that reported on available workplace lactation support from the employer perspective.
[c]Theme includes articles that examined the association between perceptions of workplace lactation support and job-related outcomes such as job satisfaction.
[d]Theme includes articles that examined the association between perceptions of workplace lactation support and breastfeeding initiation or duration.

training professional nurses or childcare providers). Next, members of the research team reviewed and rated abstracts for articles identified for further review to determine if the study design, outcomes, and setting met inclusion criteria. Abstracts were each reviewed by two members of the research team with inter-rater reliability of 0.89 based on percent agreement. Following the review of abstracts, we reviewed the full text of remaining articles to determine if inclusion criteria were met. The research team met to discuss each of the articles, and decisions regarding which articles to include were made based on consensus. Findings were critically evaluated to identify practices regarding workplace support for breastfeeding and opportunities for further research to inform programs to increase breastfeeding rates among working mothers.

Data Analysis

For our first aim of describing experiences with workplace lactation support, we conducted a thematic review and categorized articles using four non-exclusive themes, with some studies including more than one theme (Table 1). Themes were derived using thematic content analysis (Krippendorff, 2018; Watson et al., 2018). Following data collection, two authors independently identified key themes based on the objectives and outcomes of each article. Themes were discussed and a final set of themes was agreed upon. For each of the four themes, we present a narrative summary of the corresponding articles, including comparisons of findings from the articles where feasible.

For our second aim of identifying research needed to inform workplace lactation programs, we reported the major findings along with an assessment of study quality, strengths, and limitations. Study strengths and limitations were extracted by one research team member and reviewed by all research team members to ensure agreement. In addition to strengths and limitations that may have been reported by the original study authors, each study was reviewed for additional strengths and limitations, and findings were summarized. Overall study quality was assessed using the Study Quality Assessment Tools from the National Heart, Lung, and Blood Institute (n.d.). The tools, which include questions that guide reviewers in rating studies as good, fair, or poor based on internal validity and the risk of bias, have been used in prior systematic reviews of the literature (Bickerdike et al., 2017; Koppen et al., 2016). First, each study was reviewed and independently rated for quality by two members of the research team. Raters achieved 70% agreement at this stage. Next all members of the research team met to discuss the ratings and come to an agreement on a final overall quality rating for each article. Studies with a high risk of bias (e.g., from sample selection, data collection, or analysis method) were rated poor, while studies with low risk of bias were rated good. Studies with moderate risk of bias were rated fair.

Results

Sample Characteristics

Table 2 summarizes the participants, design, and results of the 27 studies included in this review. Twenty studies (74%) used a cross-sectional survey, one was a case study (4%), four used longitudinal data (15%), and two used a cohort design (7%). Sample sizes ranged from 66 to 1964 participants. Samples included working mothers, healthcare workers, active duty military, lawyers, residency program directors, and other employers, as well as women and men with and without breastfeeding experience. Workplace characteristics assessed included lactation facilities, break time to express milk, breastfeeding and maternity leave policies, and employer and colleague support for breastfeeding.

Quality Assessment

Table 3 summarizes the strengths and limitations of each article and overall study quality. Nine studies (32%) were rated good, 12 studies (42%) were rated fair, and 5 (21%) were rated poor (Figure 2). Studies rated good had the following strengths: large samples, validated questionnaires, and multivariate regression models. Limitations common among studies rated fair or poor included the use of convenience samples and potential for response bias, use of questionnaires that had not been validated, reporting bivariate associations without adjusting for potential confounding variables, failure to address potential recall bias, and use of samples with limited generalizability.

Employee and Employer Experiences With Workplace Lactation Support

Employee Perceptions of and Experiences With Workplace Lactation Support. Fourteen studies (52%) included employee perceptions of and experiences with workplace support for breastfeeding (Table 1). Instruments used to measure perceptions of and experiences with lactation support varied across studies, which precluded direct comparisons. Specifically, only Martin et al. (2015) used a workplace lactation support scale (i.e., Workplace Breastfeeding Support Scale). For the remainder of the studies, authors self-developed items, resulting in no common measures across the articles under this theme. However, there was a consistent finding that not all women perceived adequate lactation support at work via access to lactation facilities and break time for milk expression (Abbott et al., 2019; Dixit et al., 2015; Henry-Moss et al., 2018; Pearson et al., 2019). Perceptions of workplace lactation support varied by occupation and role (Alvarez et al., 2015; Cantu et al., 2018; Martin et al., 2015; Uriell et al., 2009), and by race/ethnicity and education (Dabritz et al., 2009; Martin et al., 2015). Physician mothers valued support from colleagues (Juengst et al., 2019), while also reporting concern about their colleagues taking on additional burdens because of their need for lactation breaks (Ames & Burrows, 2019; Cantu et al., 2018; Orth et al., 2013). In two studies examining experiences with written workplace lactation policies (Dabritz et al., 2009; Orth et al., 2013), researchers found that while women valued having a policy, many were unaware of policies at their institutions.

Employer Reports of Workplace Lactation Support. Three studies (11%) included reports on lactation support from the employer perspective (Table 1). Results from these studies indicated notable variations in available supports even within the same industry. Access to lactation facilities varied by organizational size, with larger organizations more likely to provide instrumental supports including lactation rooms and milk storage (Hojnacki et al., 2012; Osband et al., 2011). In one Michigan study where less than 3% of companies surveyed reported having a written policy for breastfeeding or expressing milk at work, most employers handled requests for lactation support on a case-by-case basis (Hojnacki et al., 2012). The authors did not examine why employers did not have a written lactation policy, but did find that organizations with more family-friendly benefits overall had higher breastfeeding support scores as measured by time and structural support (Hojnacki et al., 2012). While none of the studies measured workplace culture towards breastfeeding, Magner and Phillipi (2015) reported on how Oregon Health Sciences University encouraged breastfeeding by including breastfeeding as an option for postpartum employees to earn wellness program points.

Associations Between Workplace Lactation Support and Business-Relevant Outcomes. Only three studies (11%) included associations between employee perceptions of lactation support in the workplace and a business-relevant outcome (Table 1). Results from all three studies indicated a positive association between workplace lactation support and job satisfaction, although the specific measures varied. Manager support was significant in the healthcare setting (Scott et al., 2019; Waite & Christakis, 2015), while time support was significant in the setting of a large organization (Waite & Christakis, 2015) and among women living in a rural Midwest town (Jantzer et al., 2018). Scott et al. (2019) and Waite and Christakis (2015) measured job satisfaction with the question "Taking everything into consideration, how do you feel about your job as a whole?" Jantzer et al. (2018) measured job satisfaction using the Job in General scale, which includes 18 items that assess overall employee satisfaction with their jobs.

Associations Between Workplace Lactation Support and Breastfeeding Outcomes. More than half of the studies in our review (n = 14, 52%) included an assessment of associations between employee perceptions of workplace support for breastfeeding and breastfeeding outcomes (Table 1).

Table 2. Description of 27 Peer-Reviewed Studies Examining Workplace Lactation Support by Publication Date, 2009–2019

First Author, Year, Setting	Study Design	Sample Description (*n*)	Workplace Characteristics Assessed	Primary Outcomes	Major Findings
Dabritz et al., 2009 Yolo County, California	cross-sectional; mixed methods	Women RTW or school (*n* = 399); convenience sample	LF, BT, BF policies	WS, BF outcomes	Reported LF availability differed by race/ethnicity/education. One-third of mothers reported no knowledge of workplace/school BF policy. BT positively associated with BFD at 6 months.
Guendelman et al., 2009 California	cohort	FT working mothers in SCPSP (*n* = 770)	ML	BF stable ≤ 30 days PP, BFD	Short PP ML associated with ↑ risk of early BF cessation. ↑ impact for non-managers, women with inflexible jobs.
Uriell et al., 2009 United States	cross-sectional; web-based survey	Women who had been pregnant and in Navy for >1 year (*n* = 1795)	LF, BT	BF rates, BFD, BF support	↓ BF rates for Navy women vs. civilians (13% vs. 42% at 6 months). ~80% reported receiving BT. Lack of LF primary work-related reason for BF cessation (↑ burden for enlisted women vs. officers).
Mandal et al., 2010 United States	secondary analysis of longitudinal survey	Working pregnant and PP women in the IFPS II (*n* = 1964)	ML	BF initiation, BFD	Available ML and actual ML not associated with BF initiation; ML ≤ 12 weeks associated with ↓ BFD.
Osband et al., 2011 United States	cross-sectional; Web-based survey	Pediatric residency program directors who were members of APPD (*n* = 132)	LF, BF policy	BF training, BF policies	10% reported official BF policy for residents; ↑ support (LF, storage, breast pumps) reported at primary than secondary teaching hospitals.
Hojnacki et al., 2012 Michigan	cross-sectional survey	Michigan-based companies (*n* = 151)	BF policy, LF, BF education, ML	BF support	Most companies allowed ME at work (94%), provided time (73%), and LF (78%). Larger companies had ↑ BF support; < 3% had written BF policies.
Orth et al., 2013 United States	cross-sectional; Web-based survey	Male and female obstetrics and gynecology residents (*n* = 404)	Colleague support for BF, BF policies	BF experiences and attitudes	No difference in perceptions of colleague support for BF by prior BF experience; 43% of BF residents felt they placed extra demands on colleagues; 85% of residents felt a BF policy was important and 7% believed their program had one.
Sattari et al. 2013 Maryland and Florida	cross-sectional; surveys conducted in person or via phone	Female physicians with ≥ 1 biological child (*n* = 130)	ML policy, BT, WS	work-related predictors of BFD	BT, perceived support for BF at work from colleagues and program director/chief; and ML duration positively associated with BFD. Perceived special accommodations were negatively associated with BFD.
Alvarez et al., 2015 Maryland and Florida	cross-sectional; web-based survey	Women who were law students, lawyers or physicians (*n* = 76); convenience sample	WE, LS, BT	BF initiation, BFD	Lawyers reported less supportive WE than physicians; EBF and BFD positively correlated with supportive WE, having LF and BT (r_s = 0.4).
Dixit et al., 2015 United States	cross-sectional	Female pediatricians in training with or without children (*n* = 927)	ML policy, BT, LF and equipment, childcare	BF support, BF attitudes	Limited BF support during medical training. Work demands and insufficient milk supply were major reasons for formula supplementation. Failure to meet BF goals associated with negative emotions that influenced BF counseling.
Martin et al., 2015 United States	cross-sectional; Web-based survey	Active-duty military women who had breastfed (*n* = 318)	WS	BF support	↓ perceptions of WS for less educated, Hispanic, enlisted (vs. officer) and for army (vs. air force). Lack of BT and LF were major barriers.
Magner & Phillipi, 2015 Portland, Oregon	case study	Women working at OSHU Hospital (*n* = 152)	Wellness program	BF as a healthy behavior for employees	Employees logged an average of 12 weeks of BF per employee and 23 human milk donations in 11 months.

(Continued)

Table 2. Continued

First Author, Year, Setting	Study Design	Sample Description (*n*)	Workplace Characteristics Assessed	Primary Outcomes	Major Findings
Waite & Christakis, 2015 Seattle, Washington	cross-sectional; emailed survey	Female employees of a hospital and a large corporation with child < 5 years old (*n* = 551)	WS (manager, coworker, organizational, time, physical environment)	JS, BFD	↑ workplace lactation support scores associated with ↑ JS. Manager/coworker support important in hospital setting; time support important in corporate setting. BFD not associated with WS.
Lubold, 2016 United States	secondary analysis of longitudinal survey	Working pregnant women in the IFPS II (*n* = 746)	ML, JS	BFD	RTW ≤ 3 months PP associated with shorter BFD (5 fewer weeks overall; 15 fewer weeks for full time mothers). ↑ JS not associated with longer BFD.
Spitzmueller et al. 2016 United States	Study 1: secondary analysis of longitudinal survey; Study 2: cross-sectional	Study 1: BF mothers in IFPS II, who RTW ≤ 1 year PP (*n* = 859); Study 2: Working mothers with children enrolled in childcare centers (*n* = 95)	WS, LF, BT	BF support, BFD, job attitudes, well-being	Perceived WS predicted BF goal intentions; longer BF intentions were associated with ↓ odds of BF cessation after RTW (*OR* = 0.86). Perceived WS (*OR* = 0.70) and supervisor negative comments (*OR* = 8.10) associated with EBF cessation in first 6 months. BF mothers reported more family–work conflict and role overload.
Jantzer et al., 2018 South Dakota	Cross-sectional; web-based survey	Women in rural Midwest; ≥ 18 years old; have expressed milk or will in the future. (*n* = 87)	WS (time, coworker, manager, organizational)	Work enhancement/interference with personal life, JS	Adequate BT ↑ work enhancement of personal life β = .34, *p* = .015; and work enhancement of personal life ↑ JS β = .57, *p* < .001, with BT as a mediating factor. Negative correlation between WS and perceived workplace interference with personal life.
Cantu et al., 2018 Medical University in Arkansas	Cross-sectional; web-based survey	Female faculty physicians, medical students, residents and fellows with BF experience (*n* = 97)	BT, LF, team support, work hours, schedule, ML	BF experiences, perceived barriers to successful BF	97% of participants reported ≥ 1 barrier to successful BF. Barriers included lack of BT (72%), unpredictable schedule (64%), lack of LF (50%), short ML (47%), and long working hours (43%). Trainees identified more barriers than faculty physicians (median 5 vs. 3, *p* = 0.014).
Henry-Moss et al., 2018 Philadelphia, Pennsylvania	Cross-sectional; web-based survey	Women working at Penn Medicine who had expressed milk at work in the past 5 years (*n* = 151)	Work interference, LF	Experience with ME at work, LF preferences	38% of participants reported that their job prevented them from reaching their BF goal. Participants used a median of 3 LF at work. 49% ranked hospital grade pump first among desired LF equipment; 83% preferred multiple occupancy LF.
Snyder et al., 2018 Nebraska	Cross-sectional; Web-based survey	Women who RTW and BF in the last 5 years (*n* = 1060)	WS, WE, type of employment	ME duration, goals and satisfaction	ME duration varied by employment type (e.g. < 1 month: 22.8% for service industry vs. 2.5% for professionals, *p* = 0.04); % women meeting ME goals varied (e.g. 71.4% for service industry vs. 86.6% for professionals, *p* = 0.002). Women in the service industry and education reported the lowest levels of informal and direct support.
Abbott et al., 2019 Tacoma, Washington	5–6-month follow-up of RCT cohort; telephone survey	RCT participants who were primiparous women in the US Army (*n* = 80)	LF, unit/service support	BF practices, perceived unit/service support.	43.8% of participants were still BF; 53% felt mostly/very supported by unit and 50% felt mostly/very supported by Army; 36.7% reported having adequate space and privacy for ME at work
Ames & Burrows, 2019 Michigan	Cross-sectional study; web-based survey	Male and female resident physicians at University of Michigan (*n* = 82)	Support for ME, WE, co-resident support	BF experiences, perception of BF effects on co-residents	BT was a major challenge for BF residents. The emergency department was rated least accommodating. 40% of BF residents felt ME negatively impacted their team vs. 10% of co-residents.

(Continued)

Table 2. Continued

First Author, Year, Setting	Study Design	Sample Description (*n*)	Workplace Characteristics Assessed	Primary Outcomes	Major Findings
Juengst et al., 2019 United States	Cross-sectional study; web-based survey	Physician mothers (*n* = 844) recruited via social media and a professional organization listserv	LF, BT, perceived discrimination resulting from ME	Family leave and RTW experiences	Lack of LF (32.2%) and BT (48.2%) were most common negative experiences and having emotional support (59.7%) was most common positive experience reported after RTW with first child
Pearson et al., 2019 United States	Cross-sectional study; printed survey	Female ANES and trainees attending a professional meeting (*n* = 66); convenience sample	ML, LF, BT	ML, LF, BT, BFD	% reporting adequate outcomes were: ML (52.3%), LF and BT (45.2%) and BFD (58.3%)
Scott et al., 2019 North Carolina	Cross-sectional survey; administered online	Female employees of a large health system who BF in past 3 years (*n* = 165)	WS (manager, coworker, organizational)	BFD, EBF, JS	Managerial support effect: 0.39 *SD* ↑ in median JS, *OR* (95% CI) = 1.47 (1.03–2.09) for EBF; Organizational support effect: 0.27 *SD* ↑ in JS, *OR* (95%CI) = 1.80 (1.05–3.09) for EBF
Stack et al., 2019 United States	Cross-sectional survey	Residents at 6 teaching hospitals who gave birth during residency (*n* = 77)	ML duration	BFD, burnout, satisfaction with BFD	BFD 4.2 months lower for > 6 weeks vs. < 6 weeks ML ($p = 0.01$)
Whipps & Honoroff, 2019 United States	Secondary analysis of longitudinal survey	Working women in the IFPS II, (*n* = 1468)	Time off work, perceived WS	near EBF	Positive association with time off work and perceived WS: $\beta = 0.16$, and 0.14; time off work significant only for women with low perceived WS
Zhuang et al., 2019 United States	Cross-sectional; web-based survey	Working mothers via Qualtrics Research Suite (*n* = 500)	Coworker support	BF intention, self-efficacy	Perception of coworker support ↑ for BF women ($M = 5.13$ vs. 4.47, $p < .001$) and positive predictor of BF self-efficacy, $\beta = .50$, $p < .001$

Note. ANES = anesthesiologists; APPD = Association of Pediatric Program Directors; BF = breastfeeding; BFD = breastfeeding duration; BT = break time for milk expression; EBF = exclusive breastfeeding; FT = full time; IFPS II = Infant Feeding Practices Study II; JS = job satisfaction; LF = lactation area(s) or facilities; M = median; ME = milk expression; ML = maternity leave; OSHU = Oregon Health and Sciences University; PP = postpartum; RCT = randomized controlled trial; RTW = return to work; SCPSP = Southern California Prenatal Screening Program; WE = work environment; WS = workplace or employer support.

Table 3. Assessment of the Strengths, Limitations, and Overall Quality of Reviewed Studies (*N* = 27)

Author (year)	Strengths	Limitations	Overall Quality Rating
Dabritz et al. (2009)	Included mothers of young infants, which may have reduced recall bias of BFD; used multivariate models to assess various workplace characteristics	Convenience sample; questionnaire not validated; potential misclassification of BFD; limited generalizability	Fair
Guendelman et al. (2009)	Large sample size (*n* = 770); used validated questionnaires; assessed impact of ML on BF initiation and cessation as well as impact of job roles and flexibility; high response rate (73%)	One third of participants had not yet returned to work and > 50% were still BF; limited generalizability	Good
Uriell et al. (2009)	Large sample size (*n* = 1795) weighted to be representative; compared experiences of enlisted vs. officers; offers recommendations for improving navy policy	Unclear research question; questionnaire not validated; potential for recall bias; did not explain weighting procedure	Poor
Mandal et al. (2010)	Large, national sample (*n* = 1470); robust multivariate analyses; frequent, longitudinal collection of data limited the potential for recall bias	Limited generalizability to low-income and non-white women	Good
Osband et al. (2011)	High response rate (69.8%); surveyed residency directors from a national organization; assessed LF and BF policies	potential recall and response bias; notable item nonresponse and > 20% unsure responses for secondary teaching hospitals	Fair
Hojnacki et al. (2012)	One of few studies that surveyed employers about BF support; used instrument that was designed specifically to measure formal BF support in U.S. companies	Low response rate (19.1%); potential response bias; limited generalizability to business sectors without family-friendly benefits; small sample sizes for select independent variables	Fair
Orth et al. (2013)	Large sample size (*n* = 404); survey validated in target population; adequate statistical power	Potential recall and response bias; low response rate (6%); limited generalizability of results outside of obstetrics and gynecology	Fair
Sattari et al. (2013)	Multivariate models; questionnaire piloted in target population	Convenience sample; potential recall bias; limited generalizability to specialties other than surgery and internal medicine	Fair
Alvarez et al. (2015)	Examined multiple workplace characteristics including environment, time and space for lactation; examined exclusive BF duration and overall BF duration	Small sample size (*n* = 76); inclusion criteria varied by subgroup; potential response bias; did not address potential confounders	Poor
Dixit et al. (2015)	Large sample size (*n* = 864) that included interns, residents and fellows; explored a variety of workplace supports including onsite childcare and access to lactation	Low response rate (7.5%); did not include statistical analysis to test stated hypothesis; potential for response and recall bias; unvalidated questionnaire	Fair
Magner and Phillipi (2015)	Described development and preliminary outcomes of an employee wellness program to promote BF and improve BF culture in the workplace	Unknown participation rate among eligible employees; limited outcomes measures; did not measure perceptions of workplace culture	NA
Martin et al. (2015)	Used validated questionnaire; limited recall bias with sample of women who BF within 3 years; included participants from diverse branches of military	Convenience sample; low participation from African Americans, Asians and coast guard; potential response bias	Fair
Waite and Christakis (2015)	Large sample size (*n* = 551); used validated questionnaire; multivariate models adjusted for potential confounders; examined associations with different domains of WS	Limited generalizability to non-white and low-income women; potential response bias with use of a convenience sample	Good

(Continued)

Table 3. Continued

Author (year)	Strengths	Limitations	Overall Quality Rating
Lubold (2016)	Applied propensity score matching to a large nationally representative sample (n = 746); adjusted for potential confounders; examined a large set of work characteristics	Limited generalizability to non-white, low income women; data collected during 2005–2007 may not reflect current trends; did not assess BT or space to express milk—two key WS characteristics	Good
Spitzmueller et al. (2016)	Applied a conceptual framework based on role theory; used data from a large nationally representative sample in Study 1; used multivariate models that adjusted for relevant covariates	Limited generalizability to non-White ethnicities; small sample size and unknown data collection dates (Study 2); select measures not validated (Study 2)	Good
Cantu et al. (2018)	Included women in different stages of medical training/practice; survey allowed respondents to identify multiple perceived barriers to BF	Convenience sample; single-center study with limited generalizability to other settings; questionnaire not validated; potential for recall bias; no adjustment for confounders	Poor
Henry-Moss et al. (2018)	Large sample size (n = 409); participants included women in diverse job roles in the healthcare setting; measured preferences for various aspects of LF including walking distance, equipment, and occupancy	Convenience sample from a single institution; potential for recall bias of BF experiences from 5 yr prior; unclear process for survey development; limited generalizability to non-white, low-income women; sampling bias	Fair
Jantzer et al. (2018)	Used validated instruments; explored four domains of workplace support for BF; used path analysis	Small convenience sample (n = 87); limited generalizability to non-rural settings	Good
Snyder et al. (2018)	Large sample size (n = 1060) with women from diverse job roles; examined multiple aspects of employer support and work environment	Survey not validated; indirectly assessed relationship between WS and BFD; potential for recall bias; unaddressed potential confounders; limited generalizability	Poor
Abbott et al. (2019)	Longitudinal study examining BF practices; high follow-up rate; broad assessment of demographic characteristics	Small sample size (n = 80); potential selection bias; survey not validated; limited generalizability	Fair
Ames and Burrows (2019)	Included perspectives from resident mothers and their co-residents	Survey not validated; use of convenience sample (response bias); failure to address recall bias; small sample of BF women (n = 12)	Poor
Juengst et al. (2019)	Large national sample representing diverse physician specialties (n = 844); survey developed using Delphi method	Convenience sample; survey not validated; recall and sampling bias; unclear eligibility response rate	Fair
Pearson et al. (2019)	High response rate (91.7%); involves an understudied occupational group	Small convenience sample (n = 66); low statistical power; survey not validated; selection and recall bias; limited generalizability	Fair
Scott et al. (2019)	Validated survey examining multiple domains of WS; robust multivariable models; limited recall bias with sample of women who BF in past 3 years	Missing data for two WS domains; limited generalizability to non-white women and women with low incomes	Good
Stack et al. (2019)	Multi-site sampling; used content validation to develop survey items; good response rate (52%)	Small convenience sample (n = 77), potential response and recall bias; no adjustment for potential confounders	Fair
Whipps and Honoroff (2019)	Nationally representative sample of working mothers; longitudinal study of BF trajectories; robust multivariable models adjusting for confounders	Data collected in 2005–2007; single-item measure of WS; Limited generalizability to non-white women	Good

(Continued)

Table 3. Continued

Author (year)	Strengths	Limitations	Overall Quality Rating
Zhuang et al. (2019)	Among limited studies of coworker support, perceived stigma and BF behavior; diverse and large sample size (n = 500); used validated measures; examined potential confounders	Convenience sample; potential recall bias; examined overall coworkers support and not specific types of support previously reported in the literature	Good

Note. BFD = breastfeeding duration; PP = postpartum; ML = maternity leave; BF = breastfeeding; WS = workplace or employer support; BT = break time for milk expression; LF = lactation area(s); ME = milk expression; JS = job satisfaction; BF = breastfeeding, NA = not applicable for case study. Study strengths, limitations based on authors' assessment. Overall quality rating (Good, Fair, Poor) is based on risk of bias and was guided by the Study Quality Assessment Tools (National Heart, Lung, and Blood Institute (NHLBI), n.d.). Studies in each quality category were primarily characterized by the following features: Good: validated questionnaire, multivariate regression models adjusted for confounding, large sample size, addresses potential for recall bias, grounded in theoretical framework. Fair: convenience sample or samples with limited generalizability, unvalidated questionnaires, did not adjust for potential confounders, did not address potential recall bias, low response rate, unclearly defined independent or dependent variables. Poor: unclear research question; small sample size; study population not clearly defined or fitting of research aim; undefined independent or dependent variables; unclear data analytic procedures, did not adjust for potential confounders.

Workplace lactation support via maternity leave was not a significant predictor of overall breastfeeding initiation (Mandal et al., 2010) although a measure of organizational support that included maternity leave, lactation facilities, and other supports after returning to work increased odds of exclusive breastfeeding two-fold in a sample of healthcare workers (Scott et al., 2019). Coworker support was associated with increased breastfeeding self-efficacy, but did not directly influence intention to continue breastfeeding in multivariate models (Zhuang et al., 2019). Perceptions of a supportive workplace environment was associated with increased breastfeeding duration in some studies (Alvarez et al., 2015; Spitzmueller, Wang et al., 2016), while other studies found no significant effect (Scott et al., 2019; Waite & Christakis, 2015). Women working in the service industry reported lower levels of informal and direct support for breastfeeding at work and shorter durations of milk expression than professionals (Snyder et al., 2018). Consistently across studies, longer maternity leave was associated with increased breastfeeding duration (Guendelman et al., 2009; Sattari, Serwint, Neal et al., 2013; Stack et al., 2019). Perceived workplace support was also positively associated with duration of exclusive breastfeeding in two studies (Scott et al., 2019; Whipps & Honoroff, 2019).

Discussion

Although evidence of the benefits of workplace lactation support is growing, many organizations in the United States still do not provide adequate accommodations for breastfeeding employees. The aim of this review was to describe employee and employer perceptions of and experiences with workplace lactation support and to identify research needed to inform workplace lactation support programs. A key finding is that lactation support in the workplace varies by organizational size and setting, and that employees' perceptions of and experiences with lactation support at work vary by demographic and employment characteristics. Research about employer experiences with workplace lactation support and business-relevant outcomes like job satisfaction, while limited, leads us to suggest that investments in workplace lactation support may influence these outcomes positively. To our knowledge, no prior reviews have examined associations between workplace lactation support and job satisfaction in the United States.

Like authors of prior systematic reviews (Dinour & Szaro, 2017; Hilliard, 2017; Kim et al., 2018), we found that women with greater workplace lactation support experienced longer breastfeeding duration although these associations were not consistent across studies. Kim et al. (2018) and Dinour and Szaro (2017) also concluded that there was a positive association between workplace lactation support and breastfeeding initiation. We were unable to conclude the same based on the studies included in this review, except for a study by Scott

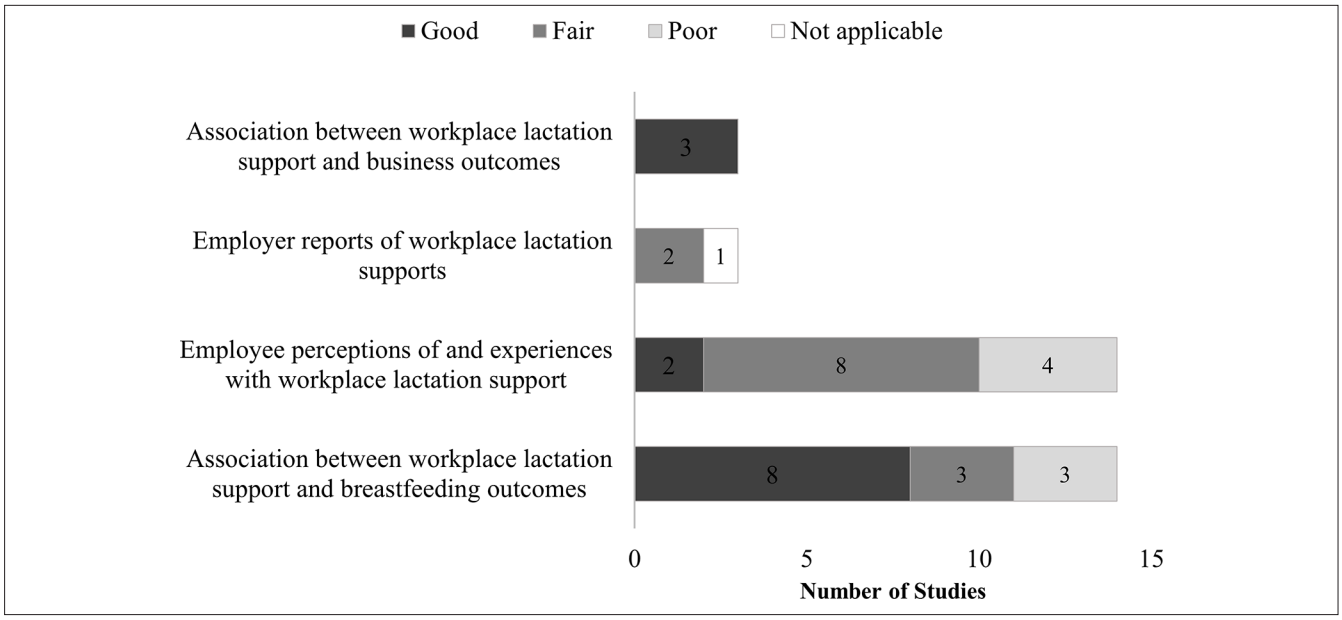

Figure 2. Study Themes and Quality Ratings Among 27 Studies of Workplace Lactation Support. Study quality assessed using the Study Quality Assessment Tools from the National Heart, Lung, and Blood Institute (NHLBI, n.d.). Themes are non-exclusive categories.

et al. (2019), who reported a positive association between workplace lactation support and odds of exclusive breastfeeding. Incongruence between their findings and ours may stem from differences in scope of the reviews. Authors of previous reviews focused on lactation programs and specific instrumental supports (e.g. break time and lactation facilities), while our review included additional domains like coworker, manager, and overall organizational support. Measures of workplace lactation support also varied in the studies included in our review and all three of the studies that used a validated workplace lactation support scale (Martin et al., 2015; Scott et al., 2019; Waite & Christakis, 2015) reported limitations and poor reliability statistics, which could influence findings.

Our findings indicate that research about workplace lactation policies and comprehensive lactation programs in the last decade is scant. While a few studies in this review assessed awareness or existence of lactation policies (Dabritz et al., 2009; Hojnacki et al., 2012; Orth et al., 2013; Osband et al., 2011), none examined potential relationships with breastfeeding experiences of working mothers. Having a clear written or published policy is a recommended way to acknowledge and support the needs of employees who breastfeed (U.S. Department of Health and Human Services, 2017). When enforced, a workplace lactation support policy can help to reduce variations in experiences of employees in large organizations and organizations with multiple work locations that may differ in accommodations for breastfeeding employees. Comprehensive programs for workplace lactation support, which usually include access to breast pumps, lactation space, and break time for milk expression, along with an educational component (e.g. breastfeeding materials, access to lactation support providers or breastfeeding classes), have had a positive influence on any and exclusive breastfeeding at 6 months in limited settings (Dinour & Szaro, 2017). Employers and employees could benefit from a better understanding of the combination of workplace lactation supports that improve employee experiences and breastfeeding duration.

Several studies in this review included physicians, residents, and other healthcare professionals. The emphasis on this population, especially those specializing in obstetrics, gynecology, and pediatrics, is notable because the personal experiences that healthcare professionals have with breastfeeding can influence their advocacy and support for patients who are breastfeeding and those who desire to do so (Sattari et al., 2016). Moreover, women comprise nearly 80% of the healthcare workforce (U.S. Bureau of Labor Statistics, 2019). Evidence of an association between workplace support for breastfeeding and job satisfaction among healthcare workers (Scott et al., 2019; Waite & Christakis, 2015) provides additional support for initiatives to improve breastfeeding experiences and reduce barriers to breastfeeding among this demographic after returning to work. Froh and Spatz (2016) reported that employees at a Pennsylvania healthcare system with a comprehensive lactation program had breastfeeding initiation and duration rates that were higher than the national average, and offered comprehensive lactation programs as one potential strategy for improving breastfeeding rates in this population. More research is needed to identify and evaluate strategies to achieve this goal.

We identified several useful areas for future research from the results of this review. First, research about employer perspectives and business-relevant outcomes is limited to a few studies without representative samples. Job satisfaction is an important outcome for women and employers because it predicts performance and longevity in a role (Leider et al., 2016; Lu et al., 2019). Further research about the relationships between workplace lactation support and other business-relevant outcomes (e.g., absenteeism, staff turnover, and employee morale) would be valuable for a fuller understanding of the business implications of providing lactation support and to confirm associations identified in studies conducted more than 20 years ago (Cohen & Mrtek, 1994; Cohen et al., 1995). Second, there is a need for studies with longitudinal and randomized designs to support causal inferences and for robust validated measures on workplace lactation support to enable cross-study comparisons. Third, most of the studies in our review were conducted in education, healthcare, and military settings. Studies involving other industries and employment settings (e.g., retail, agriculture, airline) can provide guidance for broad implementation of workplace lactation programs. Finally, there is a need for studies that include larger samples of working women with low-incomes and racial/ethnic minorities. Notably, black or African American mothers with children under age three were more likely than white mothers to be in the U.S. workforce in 2018 (70.7% vs. 62.0%) and both black and Hispanic women reported lower median earnings than white women (U.S. Bureau of Labor Statistics, 2019). Despite prior studies documenting disparities in breastfeeding for this population (Kozhimannil et al., 2016), contemporary data examining this relationship and solutions for addressing these gaps is lacking. These recommendations, based on U.S. studies, align with global goals for improving breastfeeding rates through multifactorial interventions that aim to address both societal attitudes and work and employment conditions (Rollins et al., 2016).

Limitations

The summary of outcomes provided in this study may be limited by the search terms, which were designed to target perceptions of and experiences with workplace support for breastfeeding and did not include terms specific to breastfeeding and business-relevant outcomes (e.g., breastfeeding initiation, duration, exclusivity; job satisfaction, job retention, employee absence). However, important themes relating to these outcomes emerged in our results. While we limited our inclusion criteria to quantitative outcomes, measurements for workplace lactation support varied across studies, limiting the potential for meta-analyses. Applying a consistent definition of workplace support for breastfeeding using validated instruments would facilitate comparisons across work settings and over time. Our inclusion of only studies with quantitative outcomes also excluded studies that have examined this research question using qualitative measures. Finally, we limited this review to studies conducted in the United States in recognition of the role of national policies and culture on organizational practices. Therefore, conclusions may not be generalizable to other countries. A more global review of this topic could identify additional themes and opportunities for further investigation.

Conclusion

Findings of this review support a conclusion that employees and employers have varying experiences with workplace lactation support based on individual, employment, and organizational factors. Future researchers should emphasize the use of rigorous study designs and validated measures of workplace lactation support, inclusion of employers and low-income and minority women, and the measurement of business-relevant outcomes.

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