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## Workplace breastfeeding support and job satisfaction among working mothers in the United States

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### Abstract

**Background:** Job satisfaction is associated with health and productivity. Workplace support for breastfeeding may affect working mothers' job satisfaction.

**Methods:** We analyzed responses from 488 women from the Infant Feeding Practices Study II (2005-2007). Using logistic regression, we assessed whether workplace breastfeeding problems at 3 months postpartum were related to low job satisfaction concurrently and, for a subsample ( $n = 265$ ), at 9 and 12 months postpartum.

**Results:** Compared with women reporting no problems, women reporting three or more problems had higher odds (odds ratio [OR] = 4.76; 95% confidence interval [CI]: 2.03-11.18) of low job satisfaction at 3 months, and at 12 months (OR = 6.88, 95% CI: 1.33-35.58) after controlling for baseline job satisfaction. Models isolating problems with break time and space to pump/nurse showed more modest results.

**Conclusions:** Work-related breastfeeding problems at 3 months postpartum were associated with low job satisfaction concurrently and at follow-up. Improving workplace breastfeeding accommodations could improve mothers' job satisfaction.

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#### AUTHOR CONTRIBUTIONS

Whitley designed the research study, conducted analyses, and wrote the draft. Ro and Choi guided the design of the study and the analysis and critically revised the content. All three authors provided final approval before publication and agree to be accountable for all aspects of the work.

#### SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

#### CONFLICT OF INTERESTS

The authors declare that there no conflict of interests.

#### DISCLOSURE BY AJIM EDITOR OF RECORD

Paul Landsbergis declares that he has no conflict of interest in the review and publication decision regarding this article.

#### ETHICS APPROVAL AND INFORMED CONSENT

This study was performed at the University of California Irvine. It was reviewed by the University of California Irvine Institutional Review Board and determined to be exempt. Our work did not require informed consent because we used an existing data set and did not have contact with human subjects.

## Keywords

breastfeeding; job satisfaction; lactation; work-family conflict; working parents

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## 1 | INTRODUCTION

### 1.1 | Job satisfaction and work-family conflict

Job satisfaction is used to indicate overall socioemotional wellbeing of workers<sup>1</sup> and results “from the appraisal of one’s job as achievement or facilitating the achievement of one’s job values”<sup>2(p8)</sup>. Job satisfaction is strongly correlated with workers’ mental health outcomes, including depression and anxiety, and modestly correlated with physical health.<sup>1</sup> Prolonged poor job satisfaction in early to mid-adulthood predicts worse mental health outcomes later in life.<sup>3</sup> Further, job satisfaction is positively associated with employee retention<sup>4</sup> and job performance and negatively associated with absenteeism and turnover,<sup>5</sup> making it an outcome of interest to employers. One factor that can decrease job satisfaction is a conflict between one’s work and family demands.<sup>6–8</sup> Work-family conflicts have been linked to job satisfaction theory on the basis that, for many workers, being able to meet both family and work obligations is a job value, and being unable to do so lowers job satisfaction.<sup>9</sup>

### 1.2 | Breastfeeding behaviors and the role of the workplace

For working mothers with young children, particularly the 57% of mothers who are working after 6 months postpartum,<sup>10</sup> breastfeeding can contribute to the experience of work-family conflict and, we argue, job satisfaction. Breastfeeding is of interest to public health because it is associated with improved maternal and infant health outcomes, including decreased rates of various infections among infants and reduced risk of obesity for children and mothers.<sup>11,12</sup> The American Academy of Pediatrics recommends exclusive breastfeeding for 6 months and continued breastfeeding for at least 12 months.<sup>13</sup> While 72% of mothers initiate breastfeeding at birth,<sup>14</sup> breastfeeding rates decrease rapidly following birth, with only 38% of mothers breastfeeding at all at 6 months, and only 16% at 12 months, with worse outcomes among African American, US-born, and lower-income mothers.<sup>14</sup>

Breastfeeding while working often requires a laborious process of expressing breast milk multiple times during the workday, then storing it and bringing it home. This process can lead to work-family conflict among breastfeeding, working mothers, particularly those who lack appropriate accommodations and support at work.<sup>15</sup> Breastfeeding accommodations at work, like an appropriate space and break time to express (pump) milk, are essential in order for many workers to continue breastfeeding.<sup>16</sup> In 2010, the Affordable Care Act (ACA) established mandated break time and a private, nonbathroom space for breastfeeding mothers to express milk during the first year of a child’s life for most employers,<sup>17,18</sup> augmenting numerous state laws already in existence.<sup>19</sup> However, even after passage of the ACA, 40% of working mothers in the United States still lacked access to adequate break time and space for breastfeeding.<sup>20</sup> Women working in service occupations are less likely to have access to such accommodations than women in professional and management occupations.<sup>21</sup>

Empirical research about how breastfeeding experiences relate to job satisfaction would be relevant to health policymakers interested in the effects of breastfeeding accommodations like those mandated by the ACA, and also for organizational leaders concerned with the productivity, wellbeing and retention of employees. Because job satisfaction relates to employee retention and turnover,<sup>4,5</sup> including among workers who are new parents,<sup>22</sup> breastfeeding experiences at work could affect women's decisions to stay in or drop out of the workforce while their children are young. Previous studies have shown that breastfeeding-related experiences at work can impact attitudes and psychological wellbeing outcomes, such general perceptions of support from their organization, stress, burnout, and depression.<sup>23,24</sup> However, with respect to job satisfaction, only two cross-sectional studies published in peer-reviewed journals have explored whether workplace breastfeeding support relates to job satisfaction among women in the United States.<sup>25,26</sup> Both studies observed a positive relationship between perceptions of breastfeeding support at work and women's job satisfaction. Neither study assessed specific experiences with workplace breastfeeding accommodations, like break time or space to pump milk. Moreover, longitudinal analyses that measure workplace breastfeeding support before job satisfaction assessment would control for temporality and for individual baseline job satisfaction, resulting in a better estimate of how breastfeeding experiences affect job satisfaction over time and addressing the call for more longitudinal research of job satisfaction and approaches to improving it.<sup>1</sup>

### 1.3 | This study

We wanted to understand how women's experiences with breastfeeding support (or lack thereof) at work during the first few months postpartum could affect concurrent and later job satisfaction. Further, because the ACA and other policies specifically address adequate break time and space to express milk, we wanted to know if problems with those accommodations, in particular, were related to job satisfaction in the immediate and the long term.

To address these questions, we utilized data from the Infant Feeding Practices Study II, 2005-2007 (IFPS II).<sup>27</sup> We first examined a cross-sectional association between work-related breastfeeding problems, including break time and space to pump, and job satisfaction at 3 months postpartum, controlling for potential confounders. The 3-month questionnaire was the first instance in the IFPS II when both workplace breastfeeding experiences and job satisfaction were assessed. Moreover, 3 months represents an important point of time given that 44% of mothers are back at work by then,<sup>10</sup> and those breastfeeding are halfway through meeting the AAP's 6-month exclusive breastfeeding duration target. Then, we examined longitudinal associations between work-related breastfeeding problems at 3 months and low job satisfaction at 9 and 12 months postpartum in a smaller set of women.

## 2 | MATERIALS AND METHODS

### 2.1 | Data set

The IFPS II is a longitudinal mail survey that was conducted by the Centers for Disease Control and Prevention and the Food and Drug Administration between 2005 and 2007. Respondents were recruited via a nation-wide consumer panel of 500 000 households, and roughly 2000 new mothers participated in the surveys throughout the first year postpartum.<sup>27</sup>

The survey assessed sociodemographic characteristics prenatally, and it assessed job satisfaction, work-related problems with breastfeeding, and other breastfeeding intentions, beliefs and experiences at 3, 6, 9, and 12 months postpartum. A battery of other nutrition and clinical health data were assessed at other intervals.<sup>27</sup>

## 2.2 | Variables

**2.2.1 | Job satisfaction**—Job satisfaction was assessed using a single item asking, “How much satisfaction do you get from your paid work?” with responses on 5-point scale ranging from 1 representing “none” to 5 representing “very much.” This item is similar to other validated job satisfaction items.<sup>28</sup> We used low job satisfaction, operationalized as a score of 1 or 2 on the 5-point scale and collected at 9 and 12 months postpartum as our dependent variables.

## 2.3 | Work-related breastfeeding problems

Six yes/no dichotomous items assessed whether the respondent experienced specific work-related problems with breastfeeding. Three additional IFPS II items about other problems with breastfeeding were excluded because the items emphasized worry or embarrassment. These constructs are related to psychological distress and may introduce bias if used in models predicting job satisfaction. Moreover, by limiting the analysis to external, workplace constructs, our study findings can better inform workplace policy changes. The topics of each item are shown in Table 1. The six items were administered at 3 and 6 months postpartum for  $n = 278$  respondents who were breastfeeding and working at those time points. While we only used the 3-month assessment in our analyses, we examined test-retest reliability between 3 and 6 months to confirm measurement validity. We used the simple agreement percentage, which is the percentage of all responses that were the same at both times, and the  $\kappa$  coefficient. Agreement percentages (and  $\kappa$  coefficients) for the six items were: item 1 - 96.8% (0.45), item 2 - 97.1% (0.0), item 3 - 84.5% (0.63), item 4 - 87.4% (0.53), item 5 - 95.0% (0.44), and item 6 - 92.1%, (0.38).

We coded our independent variable, breastfeeding problems at 3 months postpartum, two ways. First, we categorized the total number of problems into (a) no problems, (b) 1 to 2 problems, and (c) 3 to 6 problems. Second, we focused our analysis on responses to the items about space and time: “It was hard for me to arrange break time for breastfeeding or pumping milk,” and “It was hard for me to find a place to breastfeed or pump milk.” We categorized respondents as follows: (a) having experienced problems with both break time and space to pump/nurse, (b) problems with just one of them, (c) some other problem(s), or (d) no problems at all.

**2.3.1 | Covariates**—We included additional covariates in our multivariate regression models: income (<\$25 000, \$25 000-\$74,999, and \$75 000), mother’s age in years, race and ethnicity (White, Black, Hispanic, Asian/Pacific Islander, Other, with some categories collapsed for the longitudinal models), number of hours worked per week (<20 and  $\geq 20$ ), work setting (dichotomized as either a nonresidential building such as an office, store, restaurant, school or hospital, or another setting such as a private residence, vehicle, or outdoors), and US geographical location (Northeast, South, Midwest, or West).

Breastfeeding duration was assessed based on whether or not a respondent reported continuing to breastfeed at 12 months postpartum. Breastfeeding duration was reported for descriptive purposes but was not included in the multivariate models because it is a potential mediator variable between workplace breastfeeding experience and job satisfaction and would require a separate mediation analysis; moreover, 12-month follow-up data were not available for many in the cross-sectional sample. Occupation was collapsed into (a) executive, professional, or managerial versus (b) service, sales, administrative support, technician, or other nonmanagerial/nonexecutive occupation. Occupation was reported for descriptive purposes, including in a Table S1 showing age, race/ethnicity, and work-related breastfeeding problems by occupation for a subsample, but was excluded from the multivariate models because of low response rate.

## 2.4 | Analysis

**2.4.1 | Inclusion criteria**—We included in our analyses respondents who were breastfeeding and working for pay at 3 months postpartum. The prenatal sample in the IFPS II included 4902 women, of whom 2388 responded to the 3-month postpartum survey. Of those, 956 reported working at some point in the past 4 weeks. Among those, 571 were breastfeeding. We excluded 83 respondents because of missing data (in 61 cases, they lacked responses about work-related breastfeeding problems), leaving a cross-sectional sample of  $n = 488$  working mothers.

For inclusion into the longitudinal analysis, respondents had to complete the 9- and 12-months postpartum questionnaires, report working for pay, and respond to the job satisfaction item at both time points.

Of the  $n = 488$  women included in the cross-sectional analysis, we excluded from longitudinal analysis 155 respondents due to nonresponse on either the 9- and/or 12-month questionnaire. We excluded another 68 who had no job satisfaction data (63 of those women reported not working at either or both time points, two did not respond about their work status, and another three were working but did not answer the job satisfaction item at one of the time points). This left a longitudinal analytic sample of  $n = 265$  working mothers.

Table 1 shows descriptive statistics for the independent and dependent variables, breastfeeding duration, sociodemographic variables, work characteristics, and geographic region. All of the 95% confidence intervals for descriptive statistics of the cross-sectional and longitudinal samples overlap, suggesting that the characteristics of the two groups do not significantly differ. We conducted  $\chi^2$  tests (categorical variables) and a  $t$ -test (age) to compare characteristics of the  $n = 265$  respondents included in the longitudinal sample and the  $n = 223$  who were excluded. Respondents included in the longitudinal sample were significantly more likely to work in a nonresidential building versus other setting and to have income in the highest tertile, they were slightly older, and they were less likely have low job satisfaction at 3 months postpartum or to identify as Black or Hispanic compared with respondents excluded from the longitudinal analysis.

We calculated the frequency of work-related breastfeeding problems, along with age and race/ethnicity, by occupation for respondents from the six most frequently reported

occupation categories in the cross-sectional sample: professional specialty, executive and managerial, administrative support, sales, technician, and service workers.

We used logistic regression to assess the relationship between work-related breastfeeding problems and respondents' job satisfaction. In Model 1, we predicted the odds of low job satisfaction at 3 months based on the number of problems reported with breastfeeding at 3 months. In Model 2, we predicted the odds of low job satisfaction at 3 months based on problems reported with break time or space to pump/breastfeed, also at 3 months. Then, using the longitudinal sample of  $n = 265$  women, we assessed whether work-related problems with breastfeeding at 3 months, operationalized both by number of problems and also focusing on break time and space problems, were associated with low job satisfaction at 9 months (Tables S1–S4) and 12 months postpartum. We have presented three nested versions of Models 1 and 2 to predict low job satisfaction: version (a) using work-related breastfeeding problems at 3 months as the only independent variable, version (b) controlling for 3-month baseline job satisfaction, an approach that prior studies have used to examine the effect over time of work-family conflict on job satisfaction,<sup>8</sup> and version (c) which includes other covariates along with 3 month job satisfaction.

As a sensitivity check to address confounding by existing poor job satisfaction, we created logistic regression models that excluded respondents who already had low job satisfaction at 3 months to predict the odds of incident low job satisfaction at 12 months based on work-related breastfeeding problems. Additional sensitivity analyses included creating cross-sectional and longitudinal models that treated job satisfaction as a continuous rather than dichotomous variable to assess whether the results reported here could be an artifact of how that variable was dichotomized, and models stratified by household income, hours worked per week, and work setting to assess whether the relationship between breastfeeding support and job satisfaction could be different for any of those subgroups.

All the logistic regression models controlled for respondents' income, age, race/ethnicity, part-time versus full-time status, work setting, and geographic region. Analyses were conducted in Stata SE (version 15, StataCorp LLC, College Station TX).

This study was reviewed by the University of California, Irvin Institutional Review Board and determined to be exempt.

## 3 | RESULTS

### 3.1 | Descriptive statistics

The descriptive statistics (Table 1) show that 12.9% of women in the cross-sectional sample had low job satisfaction according to our criteria, and 38.5% reported at least one work-related breastfeeding problem. The most frequently reported problems were challenges with arranging break time (30.5%) and with finding a place to pump or breastfeed (19.5%). Fewer than half (43.3%) continued breastfeeding until 12 months. The majority of women in the sample worked more than 20 hours per week (60.7%), in a nonresidential building setting (68.0%), and in an executive, professional, or managerial occupation (57.5%). Respondents were predominately white (86.1%), with income between \$25 000 and \$75 000 (64.6%)



and the average age was about 39.7 years. The largest proportion of respondents lived in the Midwest (33.6%).

Compared with working and breastfeeding mothers from the other four occupation categories, technicians, and administrative support persons were the most likely to experience work-related breastfeeding problems at 3 months postpartum, with 43.7% and 41.1% reporting at least one problem, respectively (Table S1). Women in executive and managerial positions were the least likely to experience problems, with 34.6% reporting one or more problems. Challenges with arranging break time to pump or nurse followed by challenges finding a place to pump or nurse were the most frequently reported problems for every occupation group.

### 3.2 | Cross-sectional analysis

Model 1 in Table 2 predicted the odds of low job satisfaction at 3 months based on number of work-related problems also at 3 months. In this model, reporting three to six problems was significantly associated with 4.76 times the odds of low job satisfaction compared with reporting no problems. The odds of low satisfaction for those reporting one or two problems compared with reporting no problems was not statistically significant.

Model 2 isolates problems with break time and with space to pump/breastfeed. Women who reported problems with both arranging break time and arranging a space to pump or breastfeed had 2.72 times the odds of low job satisfaction when compared with women who did not report any workplace breastfeeding problems, and this difference was statistically significant. The odds ratio (OR) associated with experiencing only one of the two problems was not statistically significant, and neither was the OR for reporting only other problems.

In both cross-sectional models, age was significantly associated with decreased odds of low job satisfaction. Black women had significantly higher odds of low job satisfaction when compared with white respondents, and women working more than 20 hours per week had higher odds of low job satisfaction than those working less than 20 hours per week.

### 3.3 | Longitudinal analysis

The longitudinal logistic regression models in Table 3 predicted odds of low job satisfaction at 12 months postpartum based on the number of work-related breastfeeding problems reported for a sample of  $n = 265$  women. In all three iterations of the model, women experiencing three to six workplace-related breastfeeding problems at 3 months postpartum had significantly higher odds of low job satisfaction at 12 months compared with women experiencing no problems, with ORs ranging from 4.38 to 6.89. The ORs associated with reporting one to two problems were not statistically significant in any of the versions of the model. The OR estimate for baseline job satisfaction was statistically significant both times that it was included, which was expected.

Table 4 shows three nested versions of logistic regression Model 2, which focused on whether problems with break time and space to pump/nurse at 3 months predicted low job satisfaction at 12 months. In two of the three iterations shown, Model 2a, which does not include a baseline control or other covariates, and Model 2c, the fully adjusted model,



women who experienced problems with both break time and space had significantly higher odds of low job satisfaction than those who had experienced no problems; the ORs ranged from to 4.08. Experiencing problems with only break time or space were not significantly associated with low job satisfaction at 12 months, and neither was experiencing some other breastfeeding problem. As expected, the OR estimate for baseline job satisfaction was statistically significant in both models in which it was included. No other variables in the model were significant.

### 3.4 | Sensitivity analyses

For the longitudinal models predicting low job satisfaction at 12 months, we conducted a sensitivity test to assess whether controlling for prenatal rather than 3-month job satisfaction would change the results. The results were consistent with what we observed in the model using the 3-month job satisfaction control variable (<0.6 difference in the magnitude of the ORs and a comparable level of statistical significance; results available upon request).

Models predicting the odds of low job satisfaction at 9 months postpartum, shown in Tables S2 and S3, showed results similar to the 12-month models. Specifically, in Model 1 (Table S2), experiencing three to six work-related breastfeeding problems at 3 months was associated with significantly higher odds of low job satisfaction at 9 months in all three iterations of the model compared with experiencing no problems, with ORs ranging from 4.44 to 6.89. The ORs for experiencing one to two problems were not statistically significant.

Table S3 shows that experiencing problems with both break time and space to pump/nurse at 3 months, compared with not experiencing any problems, was a statistically significant predictor of low job satisfaction at 9 months in only one iteration, Model 2a, which did not control for baseline job satisfaction or other covariates. In the other two iterations, the ORs for experiencing both break time and space problems were greater than 1, but the relationships did not reach statistical significance. Similarly, the OR for experiencing only one of the two problems (break time or space) compared to experiencing no problems was not statistically significant.

Table S4 shows the results of fully adjusted longitudinal models that predicted the odds of incident low job satisfaction at 12 months postpartum by excluding those in the sample who already had low job satisfaction at 3 months. In Model 1, experiencing three to six work-related breastfeeding problems at 3 months was associated with 11.65 times the odds of developing low job satisfaction at 12 months compared to experiencing no problems, and this relationship was statistically significant. The OR associated with experiencing one to two problems compared with zero problems was not statistically significant. In Model 2, experiencing problems with both break time and space to pump/nurse was associated with 7.02 times the odds of developing low job satisfaction at 12 months compared with experiencing no problems, and this was statistically significant. The ORs for the other categories of breastfeeding problems in Model 2 were not statistically significant.

The cross-sectional and longitudinal models that used a continuous job satisfaction variable produced results that were generally consistent with what we found when we used

the dichotomous variable. Women reporting more breastfeeding problems had lower job satisfaction than those without problems, and they experienced a larger decrease in job satisfaction over time, on average and holding all other variables equal. However, the relationships were not statistically significant in all instances. Results are available upon request.

The models stratified by household income, hours worked per week and work setting also produced results that were generally consistent with the main models reported here. The relationship between workplace breastfeeding problems and job satisfaction appeared stronger for women in families earning less than \$50 000 per year than for those earning more, and for women working at least 20 hours a week compared with those working less. Results are available upon request.

## 4 | DISCUSSION

This study aimed to test whether there is a relationship between experiences with breastfeeding at work and job satisfaction among working mothers, using both a cross-sectional and a longitudinal approach. We found a consistent relationship between work-related problems with breastfeeding and concurrent low job satisfaction among working women, in particular for women who reported three or more problems. Moreover, difficulty arranging break time or a space to pump or breastfeed—the two problems meant to be addressed by policies like the ACA’s Break Time for Nursing Mothers Law<sup>17</sup>—were the most frequent problems reported in this sample, which was collected before the ACA’s passage. In most of our models, the combined presence of break time and space problems was associated with higher odds of low job satisfaction compared to not experiencing problems.

This is, to our knowledge, the first published study to longitudinally examine the relationship between work-related problems with breastfeeding and job satisfaction among working mothers. The overall number of work-related breastfeeding problems at 3 months postpartum, and time and space problems in particular, were associated with low job satisfaction at 9 and 12 months, including in models that controlled for baseline job satisfaction and models that predicted incident low job satisfaction by excluding those with low job satisfaction at baseline. This suggests that after taking into account an individual’s tendency to have low job satisfaction at baseline, experiencing problems with breastfeeding is associated with worse satisfaction outcomes later down the line.

It is notable that we observed an association between breastfeeding problems at work at 3 months postpartum and job satisfaction not only across multiple iterations of these models but also for two distinct follow-up periods, 9 and 12 months. Other research about work-family conflict used a 1 year follow-up period to capture changes in job satisfaction,<sup>8</sup> potentially because job satisfaction is a relatively stable and slow-changing construct, and for this reason we have emphasized the 12-month results here.

#### 4.1 | Limitations

There are some limitations to this study. First, women with middle and higher incomes, professional or managerial positions, and White women were over-represented in the sample.<sup>27</sup> Also, the data were collected over 10 years ago, which means that the proportion of women who now experience problems with space and time is different and probably smaller because of passage of the ACA's workplace lactation accommodation law in 2010.<sup>17,29</sup> While we attempted to control adequately for potential confounders, it is possible that other work-family policies like flexible scheduling or paid maternity leave could confound the relationship between breastfeeding support at work and job satisfaction. Workers' disposition could also function as a confounder, given that personality traits like negative affect are associated with experiences of work-family conflict.<sup>30</sup> We have tried to reduce the influence of this potential confounder by removing from our measure of breastfeeding problems the three items about embarrassment, worrying about keeping one's job, and worrying about continuing to breastfeed, which may be more related to neuroticism and negative affect than the other breastfeeding problems items.

Respondent attrition between 3 and 12 months postpartum could have left out a selected group of women, including those who stopped working during that period. If some of those women left their jobs because they had trouble continuing to breastfeed, this could have created a bias toward the null in our results. Moreover, based on our comparison between longitudinal study participants and nonparticipants, frequency of breastfeeding problems was similar for the individuals included in the longitudinal sample and those excluded, but the groups differed in terms of the frequency of low job satisfaction, as well as some sociodemographic and work characteristics. The small sample size likely reduced our statistical power, and this is evident in the wide confidence intervals for some coefficient estimates in the longitudinal models shown in Tables 3,4.

There are some limitations to the job satisfaction measure used in the IFPS II. Most prior research on this topic has used multi-item measures for job satisfaction.<sup>8,25,31,32</sup> However, some studies have used a single-item measure,<sup>3,26,33,34</sup> and it has been suggested that single, global measures of job satisfaction may work better to capture changes over time.<sup>28</sup> One meta-analysis found that single-item job satisfaction measures correlated acceptably with multi-item measures (mean correlation, corrected for reliability, of 0.67).<sup>35</sup> Single-item measures may underestimate low satisfaction,<sup>36</sup> which would create a bias toward the null in a study such as this. We believe our single item is a valid, if conservative, measure of job satisfaction. Further, because we only had a single, 1- to 5-point measure, we dichotomized the scores and conducted logistical regression rather than treating it as an ordinal or ratio variable. This may have further reduced our power to detect statistically significant relationships in the models.

#### 4.2 | Strengths

This is the first study, to our knowledge, that used a national US data set representing a variety of occupation types to assess the relationship between workplace breastfeeding experiences and job satisfaction. Moreover, we were able to explore how breastfeeding experiences related longitudinally to low job satisfaction, controlling for baseline job

satisfaction, which is a stronger study design and avoids the potential temporal ambiguity that limits the cross-sectional approaches used in prior studies.<sup>25,26</sup> That we observed significant longitudinal relationships even after controlling for baseline job satisfaction suggests that these models are not simply capturing the difference between workplaces that are better or worse on the whole. Also, because we used as the independent variable reports of recent negative experiences with breastfeeding among working mothers rather than general perceptions of workplace support for breastfeeding, we could isolate the effects of specific types of experiences, like problems with break time and space to pump or nurse, on job satisfaction.

### 4.3 | Public health implications

These findings fill a gap in the literature about how problems with breastfeeding relate to job satisfaction among a sample of women from across the United States. While many studies have shown that workplace breastfeeding accommodations are positively associated with breastfeeding duration,<sup>16,20,37</sup> far fewer studies have considered workplace breastfeeding accommodations from the perspective of work-family conflict and examined how it affects mothers' psychosocial outcomes. By demonstrating that work-related problems with breastfeeding are positively associated with low job satisfaction, we are providing further evidence in favor of providing lactation accommodations for workers. This aligns with previous research showing that breastfeeding experiences are related to other job attitudes and psychological outcomes among working mothers.<sup>23,24</sup> The outcome of job satisfaction aligns with the thrust to assess positive psychological outcomes in the workplace, in addition to more commonly studied negative outcomes like stress and burnout.<sup>38</sup>

Moreover, we were able to single out the effects of the two problems meant to be addressed by the ACA's workplace lactation accommodation law: break time as well as a space to pump. The law mandated access to break time whenever a nursing mother needs it, and a private space that is not a bathroom.<sup>17</sup> This amendment to the Fair Labor Standards Act has been in place since 2010, but research shows that these provisions still have not been implemented for many working mothers.<sup>20</sup> Recent attempts to overturn the ACA could put the national workplace lactation accommodation standard at risk, although thus far the law has avoided threats of being overturned.<sup>39</sup> While we are unable to draw definitive causal conclusions, our findings support the notion that if the breastfeeding break time and space provisions of the ACA were fully implemented, low job satisfaction could be reduced among working, breastfeeding women.

### 4.4 | Areas for future research

We provided some evidence that breastfeeding problems at work vary by occupation type, aligning with prior research.<sup>15,21</sup> However, because of the limitations of the data set, we could only examine this relationship for a small number of occupations and a small sample of working women. Future studies should explore in more depth how experiences with breastfeeding vary by occupation type and other work characteristics.

Moreover, our study focused on providing strong, policy-relevant evidence for a relationship between a set of work-related breastfeeding problems at the 3-month stage and job

satisfaction, but we did not focus on mediators or pathways in this relationship, such as breastfeeding behavior. For example, we did not take into account breastfeeding duration and whether problems at work could have led to cessation of breastfeeding, which could decrease job satisfaction. In the future, we plan to explore why women who experience breastfeeding problems may develop worse job satisfaction. Also, due to intercorrelation among reported breastfeeding problems and the limitations of our sample, we were unable to determine which individual problem was most strongly associated with changes in job satisfaction. This is another important area to explore.

Last, further research should focus on breastfeeding experiences among groups that are not well-represented in this sample, including women of color, and low-wage workers, who tend to face more barriers to breastfeeding and experience more adverse working conditions.<sup>20</sup> Studies should also take into account other family-friendly policies like paid leave and flexible time<sup>7</sup> for a comprehensive understanding of how policies that support breastfeeding may also impact working mothers' job satisfaction.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Descriptive statistics for cross-sectional and longitudinal samples of working mothers who breastfed until at least 3 mo: United States, 2005-2006

**TABLE 1**

	3-mo postpartum cross-sectional sample (n = 488) % (95% CI)	12-mo postpartum longitudinal sample (n = 265) % (95% CI)
Low job satisfaction at 3 mo	12.9 (10.06-16.21)	9.8* (6.51-14.04)
<i>Number of work-related breastfeeding problems reported at 3 mo</i>		
0 problems	61.5 (57.00-65.81)	58.5 (52.30-64.49)
1-2 problems	30.5 (26.47-34.83)	33.2 (27.56-39.23)
3-6 problems	8.0 (5.74-10.76)	8.3 (5.28-12.30)
<i>Frequency of specific work-related breastfeeding problems reported at 3 mo</i>		
Coworker made negative comments about breastfeeding	4.3 (2.68-6.50)	3.4 (1.56-6.35)
Supervisor made negative comments breastfeeding	1.2 (0.45-2.66)	0.8 (0.09-2.70)
It was hard to arrange break time for breastfeeding/pumping milk	30.5 (26.47-34.83)	33.2 (27.56-39.23)
It was hard to find a place to breastfeed/pump milk	19.5 (16.05-23.26)	20.8 (16.03-26.14)
It was hard to arrange a place to store pumped breast milk	5.3 (3.68-7.95)	4.5 (2.36-7.78)
It was hard to carry the equipment to pump milk at work	9.8 (7.34-12.83)	10.9 (7.45-15.34)
<i>Breastfeeding duration<sup>a</sup></i>		
Continuing to breastfeed at 12 mo	43.3 (37.64-48.94)	44.9 (38.82-51.11)
Age, (mean, SD), y	29.7 (29.25-30.17)	30.8** (30.17-31.34)
<i>Household income, annual</i>		
<\$25 000	12.1 (9.33-15.32)	9.4 (6.20-13.61)
\$25 000-\$74 999	64.6 (60.12-68.80)	62.6 (56.51-68.48)
\$75 000	23.4 (19.68-27.37)	27.9* (22.61-33.74)
<i>Race/ethnicity</i>		
White	86.1 (82.67-89.01)	88.3 (83.81-91.91)
Hispanic	4.7 (3.01-6.99)	3.0 (1.31-5.86)
Black	4.3 (2.68-6.50)	2.3* (0.84-4.86)
Asian/Pacific Islander	3.1 (1.73-5.02)	4.2 (2.09-7.31)

	3-mo postpartum cross-sectional sample (n = 488) % (95% CI)	12-mo postpartum longitudinal sample (n = 265) % (95% CI)
Other	1.8 (0.85-3.47)	2.3 (0.84-4.86)
<i>Region</i>		
Northeast	17.0 (13.78-20.64)	16.6 (12.33-21.64)
Midwest	33.6 (29.42-37.99)	33.6 (27.92-39.61)
South	28.5 (24.52-32.71)	28.3 (22.96-34.14)
West	20.9 (17.38-24.78)	21.5 (16.71-26.95)
<i>Hours worked per week</i>		
<20 h	39.3 (34.98-43.83)	36.2 (30.43-42.33)
20 h	60.7 (56.17-65.02)	63.8 (57.67-69.57)
<i>Work setting</i>		
Nonresidential building (eg, office, store, or restaurant)	68.0 (63.69-72.15)	71.7* (65.86-77.04)
Residence, vehicle, outdoors, or other location	32.0 (27.85-36.31)	28.3 (22.96-34.14)
<i>Occupation<sup>b</sup></i>		
Executive, professional, or managerial occupation	57.5 (51.79-62.99)	59.9 (52.59-66.89)
Service, sales, administrative support, technician, or other nonmanagerial/nonexecutive occupation	42.5 (37.01-48.21)	40.1 (33.11-47.41)

Abbreviations: CI, confidence interval; SD, standard deviation.

Note: For all variables other than age, which is continuous, CIs are exact binomial confidence intervals, also referred to as Clopper-Pearson intervals. For age, the CI is based on a normal distribution.

<sup>a</sup>Continued breastfeeding until 12 mo is only available for respondents who completed the 12-mo questionnaire, so this information was not available for everyone in the cross-sectional sample. Sample sizes for this item were n = 310 for the cross-sectional sample and n = 265 (entire sample) for the longitudinal sample.

<sup>b</sup>Occupation was assessed on a separate questionnaire that was completed by fewer respondents. Sample sizes for this item were n = 315 for the cross-sectional sample and n = 192 for the longitudinal sample.

\* P < 0.05.

\*\* P < 0.001 for  $\chi^2$  test (categorical variable) or two-sided t-test (continuous variable) comparing the n = 236 respondents included in longitudinal sample and the n = 223 who were excluded.

TABLE 2

Cross-sectional models predicting odds of low job satisfaction at 3-mo postpartum based on work-related problems with breastfeeding among working mothers: United States, 2005-2007

	Model 1: number of problems OR (95% CI)	Model 2: break time and space problems OR (95% CI)
<i>Number of breastfeeding problems at 3 mo (reference: no problems)</i>		
1-2 problems	1.02 (0.52-2.03)	
3-6 problems	4.76 ** (2.03-11.18)	
<i>Break time/space problems at 3 mo (reference: no problems)</i>		
Break time or space problem		1.06 (0.49-2.31)
Break time and space problems		2.72 * (1.31-5.63)
Some other problems		0.75 (0.15-3.89)
Age, y	0.93 * (0.88-0.99)	0.93 * (0.87-0.99)
<i>Household income (reference &lt; \$25 000)</i>		
\$25 000-\$74 999	0.99 (0.43-2.26)	1.06 (0.46-2.44)
\$75 000	1.06 (0.37-3.04)	1.15 (0.41-3.28)
<i>Race/ethnicity (reference: white)</i>		
Black	4.52 * (1.58-12.99)	5.37 * (1.89-15.29)
Hispanic	0.18 (0.02-1.50)	0.24 (0.03-1.90)
Asian/Pacific Islander	1.19 (0.24-5.84)	1.05 (0.21-5.34)
Other	1.61 (0.30-8.53)	1.59 (0.30-8.40)
<i>Region (reference: Northeast)</i>		
Midwest	1.14 (0.46-2.84)	1.12 (0.45-2.76)
South	1.23 (0.48-3.13)	1.32 (0.52-3.34)
West	1.92 (0.73-5.08)	1.87 (0.71-4.91)
<i>Hours worked per week (reference: &lt; 20 h)</i>		
20 h	1.97 * (1.03-3.79)	1.96 * (1.03-3.74)
<i>Work setting (reference: nonresidential building)</i>		
Residence, vehicle, outdoors, or other location	1.53 (0.77-3.03)	1.50 (0.76-2.97)

Abbreviations: CI, confidence interval; OR, odds ratio.

Note: Respondents  $n = 488$ .

\*  
 $P < 0.05$ .

\*\*  
 $P < 0.001$ .

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Longitudinal models predicting odds of low job satisfaction at 12-mo postpartum based on number of work-related breastfeeding problems at 3-mo among working mothers: United States, 2005-2007

**TABLE 3**

	Model 1a OR (95% CI)	Model 1b OR (95% CI)	Model 1c OR (95% CI)
<i>Number of breastfeeding problems at 3 mo (reference: no problems)</i>			
1-2 problems	1.59 (0.56-4.54)	1.41 (0.46-4.36)	1.75 (0.48-6.36)
3-6 problems	6.89** (2.12-22.37)	4.38* (1.13-16.88)	6.88* (1.33-35.58)
<i>Job satisfaction at 3 mo (reference: moderate or high)</i>			
Low job satisfaction		14.10** (5.02-39.61)	15.14** (4.50-50.88)
Age, y			1.06 (0.94-1.18)
<i>Household income (reference: &lt; \$25 000)</i>			
\$25 000-\$74 999			1.76 (0.23-13.17)
\$75 000			0.35 (0.03-3.69)
<i>Race/ethnicity (reference: White)</i>			
Black			2.74 (0.24-31.49)
Hispanic, Asian/Pacific Islander, or other			1.18 (0.21-6.70)
<i>Region (reference: Northeast)</i>			
Midwest			0.96 (0.20-4.57)
South			0.71 (0.14-3.67)
West			0.80 (0.00-0.13)
<i>Hours worked per week (reference: &lt; 20 h)</i>			
20 h			3.78 (0.91-15.65)
<i>Work setting (reference: nonresidential building)</i>			
Residence, vehicle, outdoors, or other location			2.60 (0.72-9.38)

Abbreviations: CI, confidence interval; OR, odds ratio.

Note: Respondents *n* = 265.

\* *P* < 0.05.

\*\* *P* < 0.001.

Longitudinal models predicting odds of low job satisfaction at 12-mo postpartum based on break time and space problems at 3-mo among working mothers: United States, 2005-2007

**TABLE 4**

	<b>Model 2a OR (95% CI)</b>	<b>Model 2b OR (95% CI)</b>	<b>Model 2c OR (95% CI)</b>
<i>Break time/space problems at 3 mo (reference: no problems)</i>			
Break time or space problem	1.44 (0.42-4.99)	1.20 (0.31-4.62)	1.28 (0.26-6.23)
Break time and space problems	4.08* (1.44-11.62)	2.78 (0.86-9.03)	4.03* (1.03-15.67)
Some other problems	1.84 (0.21-16.18)	3.18 (0.34-29.35)	2.77 (0.23-32.84)
<i>Job satisfaction at 3 mo (reference: moderate or high satisfaction)</i>			
Low job satisfaction		15.48** (5.43-44.10)	15.97** (4.75-43.65)
Age, y			1.04 (0.93-1.16)
<i>Household income (reference: &lt; \$25 000)</i>			
\$25 000-\$74 999			1.53 (0.22-10.66)
\$75 000			0.39 (0.04-3.71)
<i>Race/ethnicity (reference: White)</i>			
Black			4.04 (0.37-44.06)
Hispanic, Asian/Pacific Islander, or Other			1.27 (0.22-7.30)
<i>Region (reference: Northeast)</i>			
Midwest			0.71 (0.15-3.42)
South			0.59 (0.11-3.01)
West			0.68 (0.11-5.35)
<i>Hours worked per week (reference: &lt; 20 h)</i>			
20 h			3.90 (0.95-16.05)
<i>Work setting (reference: nonresidential building)</i>			
Residence, vehicle, outdoors, or other location			2.59 (0.72-9.33)

Abbreviations: CI, confidence interval; OR, odds ratio.

Note: Respondents *n* = 265.

\* *P* < 0.05.

\*\* *P* < 0.001.