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The Effect of Paid Leave on Maternal Mental Health

Bidisha Mandal[1]

Abstract

Objectives I examined the relationship between paid maternity leave and maternal mental health among women returning to work within 12 weeks of childbirth, after 12 weeks, and those returning specifically to full-time work within 12 weeks of giving birth. *Methods* I used data from 3850 women who worked full-time before childbirth from the Early Childhood Longitudinal Study—Birth Cohort. I utilized propensity score matching techniques to address selection bias. Mental health was measured using the Center for Epidemiologic Studies Depression (CESD) scale, with high scores indicating greater depressive symptoms. *Results* Returning to work after giving birth provided psychological benefits to women who used to work full-time before childbirth. The average CESD score of women who returned to work was 0.15 standard deviation ($p < 0.01$) lower than the average CESD score of all women who worked full-time before giving birth. Shorter leave, on the other hand, was associated with adverse effects on mental health. The average CESD score of women who returned within 12 weeks of giving birth was 0.13 standard deviation higher ($p < 0.05$) than the average CESD score of all women who rejoined labor market within 9 months of giving birth. However, receipt of paid leave was associated with an improved mental health outcome. Among all women who returned to work within 12 weeks of childbirth, those women who received some paid leave had a 0.17 standard deviation ($p < 0.05$) lower CESD score than the average CESD score. The result was stronger for women who returned to full-time work within 12 weeks of giving birth, with a 0.32 standard deviation ($p < 0.01$) lower CESD score than the average CESD score. *Conclusions* The study revealed that the negative psychological effect of early return to work after giving birth was alleviated when women received paid leave.

Keywords Paid leave · Maternal mental health · Propensity score matching

Significance

What is Already Known on this Subject?

Maternity leave is critical in promoting bonding between mothers and newborns, and in improving health and behavioral outcomes, such as, breastfeeding initiation and duration, immunizations, and child behavior. However, few studies have analyzed the effect of paid maternity leave on maternal health, especially in the U.S., due to the lack of a universal paid leave policy.

What Does This Study Add?

The results of this study provide empirical support for the importance of paid leave following childbirth in terms of its impact on maternal mental health. I found that receiving paid leave alleviated the negative effect of early return to work after giving birth among women who worked full-time before giving birth. The estimated effect of paid leave was found to be stronger among women who returned to full-time work within 12 weeks of giving birth.

Introduction

There exists a vast literature on the positive relationship between maternity leave and the well-being of new mothers and their children. However, less is known about the effects of paid leave, especially in the U.S., due to the lack of a universal paid leave policy. If maternal employment provides

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essential financial means to households and psychological benefits to women who want to rejoin the labor market after childbirth, it is important to understand the extent to which paid maternity leave is related to women's wellbeing.

Unlike other developed countries, maternity leave coverage in the United States has been provided primarily through employer policies. The Family and Medical Leave Act (FMLA) of 1993 provides 12 weeks of leave, but it does not make any provision for paid leave. Moreover, the job protection provision of the FMLA does not encompass all working mothers. In addition to excluding certain federal employees, it is limited to those who work for an employer with 50 or more employees, and who have worked at least 1250 h for that employer in the prior year (Waldfogel 2001). Only 46–56% of privately employed women with children aged 18 months or younger were entitled to the FMLA leave benefit during the study timeframe (Cantor et al. 2001; Kamerman 2000). Thus, the FMLA has had a lesser impact on leave utilization than on leave coverage, since leave utilization likely depends on whether leave is paid, length of leave, and employees' advantages and preferences for starting a new job compared to returning to the pre-birth employer (Klerman and Leibowitz 1994). Research indicates that full-time postpartum employment has adverse effects on child's cognitive development and other health outcomes in the formative years (Andres et al. 2016; Baum 2003; Baydar and Brooks-Gunn 1991; Berger et al. 2005; Blau and Grossberg 1992; Brooks–Gunn et al. 2002; Mandal et al. 2014; Ogbuanu et al. 2011; Ruhm 2004; Waldfogel et al. 2002). Shorter maternity leave also has direct negative effects on the mother-infant relationship (Clark et al. 1997). Maternal wellbeing is critical to child health, and a large number of studies have shown that maternity leave is positively associated with women's postpartum health outcomes. However, the relationship between paid maternity leave and maternal health outcomes is not well understood.

A small number of states have augmented the FMLA that now provide paid family leave (National Conferences of State Legislatures. Employee Leave 2016). To date, assessments of these policies are limited (Aitken et al. 2015). Using repeated cross-sectional data from California, one study found that paid family leave was associated with an increase in breastfeeding rates (Huang and Yang 2015). The Pregnancy Discrimination Act of 1978 prohibits employment discrimination based on pregnancy or childbirth, and requires that employers treat pregnancy and childbirth like any other temporary disability (Calnen 2007; Stearns 2015). Consequently, states with Temporary Disability Insurance programs—California, Hawaii, New Jersey, New York, and Rhode Island, were required to start providing maternity leave benefits to pregnant workers (Stearns 2015). This mandate substantially increased access to antenatal and postnatal paid leave for working mothers, and reduced the share of

low birth-weight births and early term births (Stearns 2015). Two recent studies that used U.S. data to analyze the relationship between maternal health and maternity leave found mixed results. One study, using repeated cross-sectional data from California, found that paid leave had no effect on women's self-reported health status (Schroeder 2011). The other study found positive impacts of paid leave on women's health outcomes (Chatterji and Markowitz 2012).

In this study, I examined the effect of any leave and of paid leave on post-partum mental health of women returning to work, conditional on both shorter (within 12 weeks of giving birth) and longer (after 12 weeks) leave duration. The 12-week threshold is policy relevant as it aligns with the leave length allowed by the FMLA. Additionally, I analyzed the effect of paid leave among women returning to full-time work. I used a propensity score matching technique for statistical tests.

Methods

Data Source

I analyzed data from the first wave of the Early Childhood Longitudinal Survey—Birth Cohort (ECLS-B), a nationally representative sample of about 10,700 children born in the U.S. in 2001, with over-sampling of children from minority racial and ethnic groups, twins, and low birth weight children. The data were collected between October 2001 and December 2002, when the children were approximately 9 months old. Children diagnosed with Down's syndrome, Turner syndrome, and spina bifida were excluded from the sampling frame. I restricted the sample to women who worked full-time pre-birth, and were not self-employed, and to singleton births. Additionally, households where the resident respondent woman was not the biological mother were excluded. These exclusions resulted in a sample size of 4500 women. However, data on the dependent variable—mental health outcome, were only available from 3850 women. Descriptive statistics of all variables used in this study, using the sample of 3850 women, are presented in Table 1. I obtained restricted data for this study from the Institute for Education Sciences Data Security Office of the U.S. Department of Education, National Center for Education Statistics. As per their guidelines regarding publishing results using the restricted ECLS-B data, sample sizes have been rounded to the nearest fifty throughout the article text and tables.

Mental Health and Leave Variables

Mental health was measured using the Center for Epidemiologic Studies Depression (CESD) scale (Radloff 1977). The original CESD scale consists of twenty items. However,

Table 1 Descriptive statistics for variables of interest ($N = 3850$)[a]

Variable	Mean (SD) or frequency
CESD score	5.02 (5.52)
Returned to work by survey date	77.66%
Returned to work by 12 weeks	48.26%
Returned to full-time work by 12 weeks	32.23%
Received some or all paid leave	51.65%
Weeks of paid leave (if received leave)	7.31 (4.40)
Woman's age (years)	28.56 (5.98)
Woman's race-ethnicity	
White non-Hispanic	46.95%
Black non-Hispanic	17.01%
Asian non-Hispanic	13.30%
Hispanic	13.92%
Other	8.82%
Woman's education	
High school or less	39.73%
Some college	31.29%
College or higher	28.98%
Married	66.48%
Male child	50.92%
Number of other children	0.92 (1.07)
Family weekly income excluding woman's income ($)	694.62 (695.38)
If child stayed in NICU	17.27%

Figures in the last column are means and standard deviations (in parenthesis) in the case of continuous variables, and percentages of the sample in the case of dichotomous variables. Data are from the ECLS-B surveys

[a]Restricted ECLS-B data from the U.S. Department of Education, National Center for Education Statistics were used in this study. As per their guidelines regarding publications, sample size has been rounded to nearest 50 and sample size corresponding to each variable is suppressed

ECLS-B asked only twelve of these items in its surveys. Both full and shorter versions are common in studies that use large-scale survey data to measure distress and psychological well-being. In the ECLS-B survey, women were asked how often during the past week (i) they were bothered by things that usually do not bother them, (ii) had poor appetite, (iii) could not shake off the blues even with help from their families, (iv) had trouble keeping their mind on what they was doing, (v) felt depressed, (vi) felt that everything was an effort, (vii) felt fearful, (viii) experienced restless sleep, (ix) talked less than usual, (x) felt loneliness, (xi) felt sadness, and (xii) could not get 'going'. Each item was measured on a 0 to 3 scale with a value of 0 corresponding to 'rarely or never' (less than 1 day in the past week), 1 equivalent to 'some or little' (1–2 days in the past week), 2 equivalent to 'occasionally or moderate' (3–4 days in past week), and 3 equivalent to 'most or all' (5–7 days in past week). The final CESD score was calculated by adding all

twelve scores. Thus, a higher CESD score corresponds to worse mental health.

Female survey respondents were asked whether they took any maternity leave, while they were pregnant or right after giving birth. They also reported the number of weeks of leave, if they took any leave, and the number of weeks of leave for which they received at least some pay. By combining these data with their work status at the time of the survey, I calculated whether they had returned to work by the survey date, and whether they had returned to work within 12 weeks of giving birth. The average duration of maternity leave within the group of women who had returned to work by the survey date was 10 weeks. The average duration of leave among women who returned within 12 weeks was 4.8 weeks, while the average leave duration among women who returned after 12 weeks but by the survey date was 18.5 weeks. The average duration of paid leave was 7.3 weeks among those women who received paid leave. Among those women who received paid leave that returned within 12 weeks, the average duration of paid leave was 5.6 weeks.

Statistical Analysis

I estimated the effect of paid maternity leave on post-partum maternal CESD score using ordinary least squares (OLS) regression models and using propensity score matching (PSM) models to address selection bias (Rosenbaum and Rubin 1983, 1984, 1985). PSM models rely on finding a control group within the sample of interest that is as similar as possible to the treatment group, based on observed characteristics. Regressions using the matched groups can increase efficiency over OLS regressions (Rubin 1973, 1978; Rubin and Thomas 2000).

I estimated a propensity score for each respondent using logistic regression. It is the conditional probability of being in the treatment group given the covariates—age, race, education and marital status of the respondent woman, family income from previous year excluding respondent's own earnings, child's gender, number of other children, and whether child stayed in neonatal intensive care unit (NICU). For each individual in the treatment group I found a comparison member from the control group with the closest propensity score. I used the nearest-neighbor matching technique with common support and caliper width 0.001. Individuals that were not matched (due to lack of sufficient overlap in propensity scores) were excluded from subsequent analysis. I used matching with replacement and ensured covariate balance between treatment and control groups. The propensity score analysis was conducted using 'psmatch2' in STATA13. I conducted six tests using matched groups. The sub-sample for each hypothesis test along with the treatment and control

Table 2 Mean and standard deviation of maternal *CESD* score by return status and leave status

Definition of treatment and control groups within each sub-sample	Mean (SD)
1. All women	
Treatment All women who returned to work by survey date (N = 3000)[a]	4.86 (5.33)
Control All women who did not return to work by survey date (N = 850)[a]	5.59 (6.08)
All women who returned to work by survey date	
Treatment All women who returned to work in 12 weeks (N = 1850)[a]	5.34 (5.68)
Control All women who returned to work after 12 weeks (N = 1150)[a]	4.07 (4.62)
All women who returned to work by survey date	
Treatment All women who returned to work by survey date and received some paid leave (N = 1800)[a]	4.16 (4.62)
Control All women who returned to work by survey date and received no paid leave (N = 1200)[a]	5.91 (6.12)
All women who returned to work within 12 weeks of giving birth	
Treatment All women who returned to work in 12 weeks and received some paid leave (N = 950)[a]	4.49 (4.93)
Control All women who returned to work in 12 weeks and received no paid leave (N = 900)[a]	6.25 (6.26)
All women who returned to full-time work by survey date	
Treatment All women who returned to full-time work by survey date and received some paid leave (N = 1400)[a]	4.07 (4.67)
Control All women who returned to full-time work by survey date and received no paid leave (N = 600)[a]	5.77 (6.09)
All women who returned to full-time work within 12 weeks of giving birth	
Treatment All women who returned to full-time work in 12 weeks and received some paid leave (N = 800)[a]	4.39 (5.01)
Control All women who returned to full-time work in 12 weeks and received no paid leave (N = 450)[a]	6.03 (6.19)

Statistics were used in this study. As per their guidelines regarding publications, size of each sub-sample has been rounded to nearest 50

[a] Restricted ECLS-B data from the U.S. Department of Education, National Center for Education

groups within each sub-sample are outlined in Table 2. Corresponding average CESD score and standard deviation are included in the table.

Some studies generate a binary variable from the CESD score to indicate major depressive disorder (Roberts et al. 1991). On the full 20-item CESD scale, a cut-off point of 24 for females has been used to instrument for major depressive disorder (Roberts et al. 1991), while on a shorter 9-item CESD scale a cut-off point of 11 for females has been applied (Spriggs and Halpern 2008). I used a proportionately adjusted cut-off point of 14 for the ECLS-B women participants to create a dichotomous indicator of major depressive disorder. I used logistic regression models to examine the effect of maternity leave on this alternate measure of maternal mental health.

Results

In Table 3, I present results from the OLS, PSM, and logistic regression models. The dependent variable in the OLS and PSM models, maternal CESD score, was transformed into CESD z-scores. Thus, the estimated effects from these models may be interpreted in terms of the number of standard deviations away from the mean CESD score. Odds ratios (OR) from the logistic regressions of major depressive disorder are presented.

Effect of Leave

In estimating the effect of any maternity leave (paid or unpaid), the sub-sample included all women who worked full-time pre-birth (N = 3850). The treatment group included women who had returned to work by the time of the survey, while the control group consisted of women who had not returned to work by the survey date. I found that returning to work was associated with a 0.11 standard deviation ($p < 0.01$) lower CESD score than the mean in the OLS model. Using the PSM method, the CESD score of the women who returned to work was 0.15 standard deviations ($p < 0.01$) lower than the average CESD score of all women who worked full-time pre-birth. Recall that a lower CESD score indicates better mental health. In the logistic regression, there was no statistical difference in the likelihood of major depressive disorder between the treatment and control groups.

Next, I estimated the effect of early return to work on maternal mental health. The treatment group included all women who had returned to work within 12 weeks, and the control group included the women who returned to work after 12 weeks but were in the labor market by the survey date. I found that returning to work within 12 weeks of giving birth was associated with worse mental health (OLS 0.14, $p < 0.01$; PSM 0.13, $p < 0.05$). Additionally, early return to work was associated with a higher likelihood of major depressive disorder (OR 1.22, $p < 0.05$). In summary,

Table 3 Results from OLS, propensity score matching, and logistic regression models: effects of return to work and paid leave on maternal mental health

Sub-samples	N^a	Treatment	Control	CESD z-score		Binary CESD
				OLS	PSM	Logistic
Test 1: All women	3850	Returned to work by survey date	Had not returned to work by survey date	− 0.109 (0.038)***	− 0.148 (0.055)***	0.901 (0.083)
Test 2: All women who returned to work by survey date	3000	Returned to work in 12 weeks	Returned after 12 weeks	0.145 (0.038)***	0.131 (0.053)**	1.217 (0.117)**
Test 3: All women who returned to work by survey date	3000	Received at least some paid leave	Did not receive any paid leave	− 0.178 (0.039)***	− 0.123 (0.061)**	0.760 (0.073)***
Test 4: All women who returned to work in 12 weeks	1850	Received at least some paid leave	Did not receive any paid leave	− 0.139 (0.050)***	− 0.167 (0.074)**	0.637 (0.079)***
Test 5: All women who returned to full-time work by survey date	2000	Received at least some paid leave	Did not receive any paid leave	− 0.212 (0.050)***	− 0.181 (0.079)**	0.757 (0.089)**
Test 6: All women who returned to full-time work in 12 weeks	1250	Received at least some paid leave	Did not receive any paid leave	− 0.191 (0.061)***	− 0.321 (0.100)***	0.668 (0.096)***

Estimated effect on the CESD z-score from ordinary least squares (OLS) regressions and propensity score matching (PSM) regression models are shown in the fifth and sixth columns. Odds ratios from logistic regression models of major depressive disorder symptom are shown in the last column. Standard errors are shown in parenthesis

[a]Restricted ECLS-B data from the U.S. Department of Education, National Center for Education Statistics were used in this study. As per their guidelines regarding publications, size of each sub-sample has been rounded to nearest 50

***$p < 0.01$; **$p < 0.05$

I found that returning to work was beneficial to the mental health of women who used to work full-time before childbirth. However, returning to work within 12 weeks had a substantial negative impact.

Effect of Paid Leave

In the remaining tests, I examined the effect of paid leave. First, using the same sub-sample of 3000 women who had returned to work by the survey date, I defined the treatment group as women who received at least some paid leave, while the control group consisted of women who did not receive any paid leave. I found that receiving paid leave was associated with better mental health outcomes among women who had returned to work (OLS − 0.18, $p < 0.01$; PSM − 0.12, $p < 0.05$). This was also reflected in the analysis of the binary measure of mental health outcome (OR 0.76, $p < 0.01$) where there was a lower likelihood of major depressive disorder among women who received some paid leave. Importantly, I found improved mental health outcomes from receiving paid leave, even among those returning early (OLS − 0.14, $p < 0.01$; PSM − 0.17, $p < 0.05$). I also found a lower likelihood of major depressive disorder among women who returned early but received some paid leave (OR 0.64, $p < 0.01$).

Next, I analyzed the effect of paid leave among women returning to full-time work. Among women returning to full-time work by the survey date, I found that paid leave was associated with a 0.21 standard deviation ($p < 0.01$) lower CESD score than the mean CESD score among all women who had returned to full-time work by the survey date using OLS regression. Using the PSM method, the CESD score of women who received paid leave was 0.18 standard deviations ($p < 0.01$) lower than the average CESD score. The effect of paid leave was larger in the PSM model when the analysis was restricted to mothers returning within 12 weeks after childbirth to full-time work (PSM − 0.32, $p < 0.01$). The likelihood of major depressive disorder was also lower among women who received paid leave and returned to full-time post-partum work, irrespective of whether they returned within 12 weeks (OR 0.67, $p < 0.01$) or by the survey date (OR 0.76, $p < 0.05$).

In the final set of analyses, I examined the effect of duration of paid leave on maternal post-partum mental health using OLS regression models. The results are shown in Table 4. I considered three sub-samples—all women who had returned to work by the survey date, all women who had returned to work within 12 weeks after childbirth, and all women who had returned to full-time work within 12 weeks of giving birth. In all three sub-samples, I found that a longer duration of paid leave was associated with better

Table 4 Results from OLS regression models: effect of duration of paid leave on maternal *CESD* z-score

Variables	Women who returned to work by survey date	Women who returned to work in 12 weeks	Women who returned to full-time work in 12 weeks
Paid leave (weeks)	−0.017 (0.004)***	−0.021 (0.007)***	−0.018 (0.009)**
Woman's race-ethnicity			
White non-Hispanic	0.122 (0.047)**	0.119 (0.058)**	0.165 (0.073)**
Black non-Hispanic	0.130 (0.058)**	1.255 (0.421)***	0.348 (0.092)***
Asian non-Hispanic	0.156 (0.065)**	0.221 (0.074)	0.179 (0.101)*
Woman's age	−0.0003 (0.004)	−0.001 (0.005)	0.004 (0.006)
Woman's education			
High school or less	0.195 (0.055)***	0.216 (0.071)***	0.171 (0.083)**
Some college	0.147 (0.050)***	0.169 (0.066)**	0.175 (0.079)**
Married	−0.358 (0.045)***	−0.355 (0.055)***	−0.329 (0.067)***
Other family income (in'00 \$/week)	−0.004 (0.003)	−0.003 (0.004)	−0.008 (0.005)
Number of other children	0.014 (0.018)	−0.004 (0.022)	−0.020 (0.027)
Male child	0.056 (0.035)	0.074 (0.045)*	0.046 (0.055)
NICU stay	−0.001 (0.049)	−0.007 (0.066)	−0.072 (0.083)
Constant	0.089 (0.122)	0.034 (0.154)	−0.050 (0.189)
N[a]	3000	1850	1250

Estimated effect on the CESD z-score from ordinary least squares (OLS) regressions are shown. Standard errors are shown in parenthesis

[a]Restricted ECLS-B data from the U.S. Department of Education, National Center for Education Statistics were used in this study. As per their guidelines regarding publications, size of each sub-sample has been rounded to nearest 50

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

mental health among mothers returning to work after childbirth, and the estimated CESD score was approximately 0.02 standard deviations lower than the mean CESD score in each sub-sample.

Discussion

The aim of this study was to assess the relationship between paid maternity leave and post-partum maternal mental health in the U.S. Research has established that maternity leave is critical in promoting bonding between mothers and newborns, and in improving health and behavioral outcomes, such as, breastfeeding initiation and duration, immunizations, and child behavior. However, very few studies have analyzed the effect of paid leave on maternal health, especially in the U.S. The results of this study provide empirical support for the importance of paid leave following childbirth in terms of its impact on women's mental health. I showed that returning to work after childbirth provided psychological benefits to new mothers. However, a short leave (< 12 weeks) had an adverse effect. The primary contribution of this study are new findings showing that receiving paid leave and longer duration of paid leave alleviates the negative effect of early return to work after childbirth. Longer maternity leave (> 12 weeks) and paid leave were associated with better mental health

outcomes, especially among mothers returning to full-time work. Additionally, a longer duration of paid leave was strongly associated with better mental health outcomes, especially among mothers returning to work within 12 weeks of giving birth.

A weakness of the study is that it is not known whether women returned to their pre-birth employers or if they found new employers after separating from the labor market. It is likely that those returning within 12 weeks did so to their pre-birth employer having utilized the full extent of employment protection under the FMLA. While propensity score matching provides a simple alternative to linear regression to estimate treatment effects within well-defined subpopulations, any unobserved difference between treatment and control groups would continue to remain a possible source of bias. Thus, I carefully defined the sub-sample for each hypothesis test, and matched the control group within each sub-sample to a treatment group based on their covariate distributions in the absence of the outcome variable. The statistically significant relationship between paid leave and mental health of women returning to work within 12 weeks of giving birth, especially to full-time work, found in this study is strong evidence that policies that support paid family leave may be beneficial to maternal mental health.

Compliance with Ethical Standards

Conflict of interest There is no conflict of interest for any of the contributors.

Ethical Approval License to use the restricted ECLS-B data was approved by the Institute for Education Sciences Data Security Office of the U.S. Department of Education, National Center for Education Statistics. The research was conducted in accord with prevailing ethical principles.

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