Giving Birth and Returning to Work: The Impact of Work–Family Conflict on Women's Health After Childbirth

MIRA M. GRICE, PhD, DENISE FEDA, MS, PATRICIA MCGOVERN, PhD,
BRUCE H. ALEXANDER, PhD, DAVID MCCAFFREY, BA, AND LAURIE UKESTAD, MS

PURPOSE: Since 1970, women of childbearing age have increasingly participated in the workforce. However, literature on work–family conflict has not specifically addressed the health of postpartum women. This study examined the relationship between work–family conflict and mental and physical health of employed mothers 11 weeks after childbirth.
METHODS: Employed women, 18 years and older, were recruited while in the hospital for childbirth ($N = 817$; 71% response rate). Mental and physical health at 11 weeks postpartum was measured using SF-12 version 2. General linear models estimated the associations between the independent variables and health. A priori causal models and directed acyclic graphs guided selection of confounding variables.
RESULTS: Analyses revealed that high levels of work interference with family were associated with significantly lower mental health scores. Medium and high levels of family interference with work revealed a dose-response relationship resulting in significantly worse mental health scores. Coworker support was strongly and positively associated with better physical health.
CONCLUSIONS: Work–family conflict was negatively associated with mental health but not significantly associated with physical health. Availability of social support may relieve the burden women can experience when balancing work roles and family obligations.
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INTRODUCTION

Over the past several decades labor force demographics have changed significantly as women entered the workforce. In 1970 43% of women 16 years or older were in the labor force compared with 60% in 2002 (1). In 2003 an estimated 53.7% of women with infants participated in the labor force (2). The increasing number of employed women of childbearing age highlights the emerging necessity to understand the health-related consequences that result from merging employment with family life, especially for postpartum women.

In previous studies, work–family conflict has been defined as conflict resulting from balancing both work and family roles (3–10). This definition may be best understood as a specific type of interrole conflict, in which participation in one role is incompatible with participation in another role (11). Greenhaus and Beutell (12) established that incompatibility between the work and family domains may originate from time-, strain-, or behavior-based conflict. Time-based conflict occurs when role pressures stemming from involvement in either domain compete for the individual's time. For example, the number of hours worked in a job or an inflexible work schedule may compete for a mother's time with her young children at home. Low levels of social support, whether at work (e.g., from supervisors and coworkers) or at home (e.g., from spouse) illustrate types of strain-based conflict, in which strain emanating from one role affects the individual's performance in another role. Behavior-based conflict arises from exhibiting behavior that may be appropriate in one role but unacceptable in another role. For example, unemotional behavior may be acceptable at work but not acceptable in parenting (12).

Measures developed by Frone and colleagues (13) were used to assess the two directions of work–family conflict; work interference with family (WIF) and family interference with work (FIW). Previous research has suggested that balancing work and family roles may lead to adverse outcomes for the family and the employer (5, 14, 15). Negative outcomes that have been associated with work–family conflict are job dissatisfaction, marital dissatisfaction,

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psychologic distress, decreased life satisfaction, increased physical symptomology, and elevated levels of alcohol use (5, 6, 10).

To date, few studies have examined work–family conflict in women in the year after childbirth (hereafter referred to as the postpartum period) (16, 17). This population should be studied because the postpartum period involves many physical and emotional changes that are unique during a woman's life cycle. These changes, in addition to employment, may result in outcomes not observed in other populations. The purpose of this study was to evaluate how both types of work–family conflict impact the mental and physical health of employed women 11 weeks after childbirth.

METHODS

This research effort used secondary data from a study investigating women's postpartum health (18). Using a prospective cohort study design, we selected three community hospitals from the Minneapolis-St. Paul, Minnesota, metropolitan area. Participants were recruited between April 9, 2001 and November 19, 2001 while they were in the hospital for childbirth. Among 2736 women giving birth at study hospitals during the enrollment period, 1157 were eligible to participate. Of those eligible, 817 enrolled in the study (response rate, 71%). Of the 1579 excluded, 581 (37%) were ineligible because of sample selection or health characteristics (e.g., lived outside of the metropolitan area, baby had serious neonatal complications) and 998 (63%) were ineligible because of employment-related criteria (e.g., not employed at the time of the baby's birth, not planning to return to work). The primary reasons for nonparticipation were concerns regarding time commitment and lack of interest. A detailed description of ineligibility can be found in the online appendix.

Eligible women were asked to consent to telephone interviews of approximately 45 minutes each, 6 and 12 weeks after childbirth. The target population included all women, 18 years and older, who resided in the seven-county metropolitan Minneapolis and St. Paul area in Minnesota, had a live birth of a singleton infant with no serious complications, and worked for at least 3 continuous months (at least 20 hours per week) in the year before childbirth. In addition, the women had to intend on returning to work after childbirth. Given that the survey was conducted in English, all participants were required to be English speaking.

After approvals were given by the involved hospitals and the University's Institutional Review Board for Protection of Human Subjects in Research, perinatal nurses were employed to enroll new mothers in the study. Nurses reviewed the hospital's birth log daily to identify all women delivering during the study period.

Subsequently, each woman's medical chart was reviewed for preliminary sample selection criteria (e.g., maternal age, county of residence, and infant health status). If initial criteria were met, nurses then interviewed the woman for additional study selection criteria (e.g., employment), reviewed the study protocol and consent forms, and invited eligible women to enroll in the study. Demographic and baseline infant and maternal health information was collected from hospital records. In-person interviews were used to gather personal, family, and employment information from the new mothers in the hospital.

Telephone interviews were conducted using a 4-week window (i.e., 4 to 8 weeks for the 6-week interview; 10 to 14 weeks for the 12-week interview), which resulted in average interviews occurring at 5 weeks (mean = 4.8 weeks; standard deviation [SD] = 1 week) and 11 weeks (mean = 11.3 weeks; SD = 1.3 weeks). At each interview, data on women's mental and physical health and the covariates were collected. Women who were unable to complete the full interview at any time point were invited to complete a mini-interview, which collected basic information on health status and employment.

In this study, health outcomes at 11 weeks postpartum were measured using the Short Form (SF)-12 version 2 Physical and Mental Component Summary Scales (PCS and MCS, respectively). The SF-12 is internationally recognized as a valid and reliable tool used to evaluate overall mental and physical health in populations (19). The availability of age- and gender-based U.S. population norms facilitates interpretation and comparison of results (20). The PCS and MCS scores range from 0 to 100 with a higher score being associated with better health. A two-point change in score is considered to be a small but clinically meaningful effect. For example, physical symptoms associated with similar changes in score are mild asthma (21) or allergic rhinitis (22).

The work–family conflict items were taken from Frone and colleagues (6). The variable *WIF* was defined as the encroachment of work roles, obligations, and expectations on family roles and obligations (e.g., needing to work late). The WIF variable was assessed by two questions: "How often does your job or career interfere with your responsibilities at home (e.g., childcare, cooking, cleaning)?" and "How

often does your job or career keep you from spending the amount of time you would like with your family?" Responses for each WIF item ranged from 1 (rarely or never) to 5 (most or all of the time) and were added to produce a total score ranging from 2 to 10 (6). Frone and colleagues (13) discuss the reliability and validity of combining the items specific to each type of work–family conflict. For this data set, calculated Cronbach's coefficient αs were 0.82 (WIF) and 0.71 (FIW). These values support the assumption that the two items used to construct the measures of WIF and FIW may be combined to form one construct, thereby increasing measurement reliability. In an effort to avoid the linearity assumption and to examine the group "most at risk" of experiencing conflict, we further consolidated the total score to categories of low (total scores of 2 and 3), medium (total scores of 4–6), and high (total scores of 7–10).

The variable *FIW* was defined as the encroachment of family roles and obligations on work duties (e.g., leaving work early to pick up a sick child from day care). The FIW variable, assessed by two questions in the interview, read as follows: "How often does your home life interfere with your responsibilities at work (e.g., getting to work on time or accomplishing daily tasks, working overtime)?" and "How often does your home life keep you from spending the amount of time you would like to spend on job or career-related activities?" Again, responses ranged from 1 (rarely or never) to 5 (most or all of the time) and were added to produce a total score ranging from 2 to 10 (6). For reasons stated previously, the total score was consolidated into low (total scores of 2 and 3), medium (total scores of 4–6), and high (total scores of 7–10) categories.

General linear models were constructed to estimate the associations between the independent variables (WIF and FIW) and mental and physical health outcomes. A priori causal models and directed acyclic graphs (DAGs) guided selection of potentially confounding variables. This method is described by Greenland and colleagues (23) and illustrated by Hernán and colleagues (24). For multivariate analyses, multilevel variables were coded as categoric. Missing items were combined with refused/don't know responses and coded as a separate level to allow for inclusion in the analysis. Race was categorized as white, black, and other. Education was described as having completed a college degree or not.

All dependent and independent variables were collected at both time periods (5 and 11 weeks). In keeping with economic theory for measuring satisfaction or preference, certain variables were included in the model using a one time period lag (i.e., variables from the 5-week interview) (25). Specifically, the variables assessing role preference (or the importance of working in addition to being a mother), supervisor support, coworker support, job satisfaction, and leave status were lagged one time period to prevent cross

correlation with the outcome. The variables assessing mental health, physical health, WIF, FIW, ability to take time off, ability to take work home, and marital status were taken from the 11-week interviews. The remaining variables, including age, race, education, type of delivery, and number of children in the home, were measured at enrollment. A detailed description of all dependent and independent variables included in the analyses is available in the online appendix.

RESULTS

A total of 661 (80.9%) women completed the full interview at 11 weeks, 70 (8.6%) completed the mini-interview, and 86 (10.5%) were not available for either interview. Table 1 lists the comparison of the demographic information from the two groups. Women who completed the mini-interview were slightly younger (median age = 27 years) than those who responded to the full interview (mean age = 30 years; $t = 3.34$, $p = 0.0009$). Those completing the mini-interview were also more likely to have lower average income ($t = 2.28$; $p = 0.02$), three or more children ($\chi^2 = 13.19$; $p = 0.004$), less education ($\chi^2 = 40.51$; $p < 0.0001$), and had an unplanned pregnancy (46% vs. 34%; $\chi^2 = 8.01$; $p = 0.005$); they were less likely to report mixed feelings regarding role preference ($\chi^2 = 9.76$, $p = 0.04$). The remaining variables were either not significantly different (supervisor support, job satisfaction, and satisfaction with work–family balance) or had too few numbers to compute a valid χ^2 (leave status, race, and coworker support).

When compared with mothers of similar age nationwide, the women in this study population were less likely to be married (77%) than mothers in the entire United States (83%) and were less likely to have given birth by cesarean section (17% vs. 24%, respectively). Minnesota mothers were more also more likely to have high school degrees compared with new mothers nationwide. This study population had fewer black mothers (9% vs. 15%) and more Asian mothers (11% vs. 5%) compared with national data, but it consisted of a similar proportion of white and native American mothers (78% and 1%, respectively).

Overall physical and mental health scores generally appeared to be above average across age groups when compared with U.S. female, age-adjusted population scores (Table 2). This finding has been reported in previous studies (16, 17) and is not surprising considering that the study participants were employed and had sufficient well-being to give birth to healthy infants. Leave status was measured at 5 weeks postpartum to ensure that participants had been working for a minimum of 6 weeks after childbirth by the 11-week interview. Given this condition, Table 3 shows the comparison of women on leave at 5 weeks (n = 601)

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TABLE 1. Participant characteristics at 11 weeks by interview type

Continuous variables	Full interview ($n = 661$)	Mini- or missed interview ($n = 156$)	Value of t test or χ^2 (p)
Age*			3.34 (0.0009)
Mean	30	27	
Minimum	18	18	
Maximum	45	44	
Household income*			2.28 (0.02)
Mean	$72,676	$64,529	
Minimum	$1900	$3000	
Maximum	$300,000	$250,000	
Categoric variables	Full survey, n (%)	Mini-survey, n (%)	Value of t test or χ^2 (p)
Number of children*			13.19 (0.004)
1	301 (45.5)	69 (44.2)	
2	236 (35.7)	39 (25.0)	
3	84 (12.7)	31 (19.9)	
4–6	40 (6.1)	17 (10.9)	
On leave[†]			NA[§]
No	327 (49.5)	—[‡]	
Yes	334 (50.5)	34 (21.8)	
Unemployed/missing	—[‡]	122 (78.2)	
Race*			NA[§]
White	568 (85.9)	113 (72.4)	
Black	48 (7.3)	21 (13.5)	
Asian	26 (3.9)	11 (7.1)	
American Indian	3 (0.5)	3 (1.9)	
Pacific Islander	2 (0.3)	—[‡]	
Other	12 (1.8)	7 (4.5)	
Refused	2 (0.3)	1 (0.6)	
Education*			40.51 (<0.0001)
Elementary	—[‡]	—[‡]	
Junior high	13 (1.9)	11 (7.1)	
High school	124 (18.8)	48 (30.8)	
Junior college	206 (31.2)	61 (39.1)	
College graduate	239 (36.2)	28 (17.9)	
Graduate school	79 (11.9)	8 (5.1)	
Planned pregnancy*			8.01 (0.005)
No	225 (34.0)	72 (46.1)	
Yes	436 (66.0)	84 (53.9)	
Role preference[†]			9.76 (0.04)
Not important at all	28 (4.2)	9 (5.8)	
Not very important	49 (7.4)	2 (1.3)	
Mixed feelings	210 (31.8)	19 (12.2)	
Somewhat important	160 (24.2)	19 (12.2)	
Very important	191 (28.9)	29 (18.6)	
Missing	23 (3.5)	78 (50.0)	
Supervisor support[†]			3.69 (0.30)
Strongly disagree	21 (3.2)	3 (1.9)	
Somewhat disagree	39 (5.9)	9 (5.8)	
Somewhat agree	98 (14.8)	13 (8.3)	
Strongly agree	480 (72.6)	53 (34.0)	
Missing	23 (3.5)	78 (50.0)	
Coworker support[†]			NA[§]
Strongly disagree	3 (0.5)	2 (1.3)	
Somewhat disagree	6 (0.9)	2 (1.3)	
Somewhat agree	61 (9.2)	10 (6.4)	
Strongly agree	568 (85.9)	64 (41.0)	
Missing	23 (3.5)	78 (50.0)	

(*Continued*)

TABLE 1. Continued

Continuous variables	Full interview ($n = 661$)	Mini- or missed interview ($n = 156$)	Value of t test or χ^2 (p)
Job satisfaction[†]			2.34 (0.51)
Very dissatisfied	22 (3.3)	5 (3.2)	
Somewhat dissatisfied	62 (9.4)	7 (4.5)	
Somewhat satisfied	248 (37.5)	33 (21.2)	
Very satisfied	306 (46.3)	33 (21.2)	
Missing	23 (3.5)	78 (50.0)	
Satisfied with work–family balance[†]			
Very dissatisfied	12 (1.8)	3 (1.9)	1.32 (0.25)
Somewhat dissatisfied	55 (8.3)	7 (4.5)	
Somewhat satisfied	142 (21.5)	22 (14.1)	
Very satisfied	383 (57.9)	39 (25.0)	
Refused/missing	69 (10.4)	60 (38.5)	

*Data measured at enrollment.
[†]Data measured at 5 weeks postchildbirth.
[‡]Dashes indicate zero value.
[§]NA indicates that the t-test may not be valid due to small cell counts.

and women who returned to work (n = 47) and their responses to WIF and FIW. The majority of respondents on leave did not experience WIF (62.2%) and FIW (74.2%). In comparison, a higher percentage of the women who returned to work at 5 weeks reported that they experienced some level of WIF (58.9%) and FIW (53.2%).

Table 4 presents the results for the associations between WIF and FIW and mental and physical health. When the relationship between WIF and mental health was examined, those who reported a high level of WIF had on average mental health scores that were approximately three points lower than women who reported low levels of WIF (standard error [SE], 0.93; $p = 0.0002$). Examination of the association between FIW and mental health revealed a possible dose-response relationship. Participants reporting medium and high levels of FIW had on average 2.6 (SE = 0.68; $p = 0.0002$) and 6.4 (SE = 1.64; $p = 0.0001$) points lower mental health scores, respectively, when compared with women who reported low FIW. The associations between WIF or FIW and physical health were unremarkable.

Results for other covariates included in the model assessing the relationship between WIF or FIW and mental health are shown in Table 5. Participants who reported being satisfied with work–family balance had an average mental health score that was two points higher than women who were dissatisfied (SE = 0.96; $p = 0.02$). This finding was consistent in both the WIF and FIW models. Leave status at 5 weeks was only significant in the WIF model, with mental health scores being on average two points higher for women still on leave when compared with those who had returned to work (SE = 1.17; $p = 0.05$). The WIF model resulted in single women scoring on average 2.5 points lower on the MCS

TABLE 2. Average mental and physical health scores of study participants by age group compared with general U.S. population norms*

Variable	n (%)	Mental health (MCS)	Population norm[†] (MCS)	Physical health (PCS)	Population norm[‡] (PCS)
Age group, years					
18–24	114 (17.2)	49.2	44.3	55.1	53.0
25–34	416 (62.9)	50.3	47.2	56.0	52.7
35–44	129 (19.5)	51.4	47.6	55.4	51.3
≥45	2 (0.3)	47.2	49.6	59.5	48.2

*The average Mental Component Summary (MCS) and Physical Component Summary (PCS) scales were measured using the Short Form-12 version 2 (SF-12). Population norms were obtained from How to Score Version 2 of the SF-12 Health Survey (32).
[†]General U.S. population mental health score.
[‡]General U.S. population physical health score.

when compared with women who were married (SE = 1.12; $p = 0.03$). The model analyzing the effect of FIW on mental health yielded similar findings, with single women scoring approximately two points lower on the MCS (SE = 1.15; $p = 0.04$).

Although there was no significant association found between WIF or FIW and physical health, the results for the covariates included in the model examining the association between WIF or FIW and physical health are presented in Table 6. In the WIF model, women who reported having "mixed feelings" regarding the importance of working in addition to being a mother had physical health scores approximately two points lower than their counterparts who answered that working at a job in addition to being a mother was "not very important at all" (SE = 1.07; $p = 0.04$). Mothers who indicated they "somewhat agreed" or "strongly agreed" that they had coworker support scored eight and nine points higher, respectively, on the physical health score (SE = 3.19; $p = 0.01$ and SE = 3.17; $p = 0.004$, respectively).

Although there appears to be no statistically significant association between FIW and physical health, other significant associations were detected. Mothers who "somewhat agreed" that they had coworker support scored approximately seven points higher on their PCS scores than mothers who "strongly disagreed" (SE = 3.20; $p = 0.02$). Those who "strongly agreed" that they had support from coworkers scored on average 8.5 points higher than mothers who "strongly disagreed" (SE = 3.18; $p = 0.007$).

DISCUSSION

Overall, the results obtained in this study confirm what previous research found—WIF and FIW are negatively associated with mental health outcomes (6–8). Although

TABLE 3. Study population characteristics by women's leave status at 5 weeks postpartum

Variable	On leave, n (%)	Working, n (%)	Unemployed/ missing, n (%)
	601 (100)	47 (100)	13 (100)
WIF*			
No	374 (62.2)	18 (38.3)	7 (53.9)
Low	149 (24.8)	26 (55.3)	4 (30.8)
High	78 (13.0)	3 (3.6)	2 (15.4)
FIW*			
No	446 (74.2)	22 (46.8)	7 (53.9)
Low	139 (23.1)	21 (44.7)	5 (38.5)
High	16 (2.7)	4 (8.5)	1 (7.7)
Marital status*			
Married	459 (76.4)	25 (53.2)	10 (76.9)
Living with partner	79 (13.1)	10 (21.3)	2 (15.4)
Single	63 (10.5)	12 (25.5)	1 (1.3)
No. of children[†]			
1	278 (46.3)	18 (38.3)	5 (38.5)
2	217 (36.1)	13 (27.7)	6 (46.2)
3	76 (12.7)	8 (17.0)	—[‡]
4–6	30 (5.0)	8 (17.0)	2 (15.4)
Able to take time off*,§			
Hard	171 (28.5)	15 (31.9)	7 (53.9)
Not hard	430 (71.5)	32 (68.1)	6 (46.1)
Able to change hours*			
Very hard	123 (20.5)	8 (17)	3 (23.1)
Somewhat hard	122 (20.3)	15 (31.9)	5 (38.5)
Not too hard	146 (24.3)	5 (10.6)	1 (7.7)
Not hard at all	210 (34.9)	19 (40.4)	4 (30.8)
Able to take work home*			
Very hard	209 (34.8)	21 (44.7)	4 (30.8)
Somewhat hard	73 (12.2)	1 (2.1)	2 (15.4)
Not too hard	66 (11)	3 (6.4)	—[‡]
Not hard at all	253 (42.1)	22 (46.8)	7 (53.9)
Delivery type[†]			
Vaginal	494 (82.2)	43 (91.5)	12 (92.3)
Cesarean	107 (17.8)	4 (8.5)	1 (7.7)
Job satisfaction[‖]			
Very dissatisfied	20 (3.3)	2 (4.5)	—[‡]
Somewhat dissatisfied	58 (9.7)	4 (8.5)	—[‡]
Somewhat dissatisfied	231 (38.4)	17 (36.2)	—[‡]
Very satisfied	282 (46.9)	24 (51.1)	—[‡]
Missing	10 (1.7)	—[‡]	13 (100)
Satisfied with work–family balance§,‖			
Dissatisfied	57 (9.5)	10 (21.3)	—[‡]
Satisfied	488 (81.2)	37 (78.7)	—[‡]
Missing	56 (9.3)	—[‡]	13 (100)

*Variables measured at 11 weeks postchildbirth.
[†]Variables measured at enrollment.
[‡]Dashes indicate zero value.
§The variables "ability to take time off" and "satisfaction with work–family balance" were collapsed into two categories, "hard vs. not hard" and "dissatisfied vs. satisfied" due to small numbers.
[‖]Variables measured at 5 weeks postchildbirth.

average mental health outcomes were lower for women who reported high levels of WIF and for those reporting moderate levels of FIW, the significantly lower mental health scores of women reporting high levels of FIW were

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TABLE 4. WIF and FIW and their effects on mental and physical health

Variable	Estimate	SE	CI	p
Mental health				
WIF*				
Low	Ref.			
Medium	−0.85	0.72	−2.23, 0.54	0.25
High	−3.44	0.93	−5.21, −1.66	0.0002
FIW†				
Low	Ref.			
Medium	−2.58	0.68	−3.87, −1.29	0.0002
High	−6.38	1.64	−9.50, −3.26	0.0001
Physical health				
WIF*				
Low	Ref.			
Medium	0.42	0.52	−0.58, 1.41	0.43
High	−1.00	0.67	−2.27, 0.27	0.13
FIW†				
Low	Ref.			
Medium	−0.74	0.49	−1.67, 0.19	0.13
High	0.90	1.19	−1.36, 3.16	0.45

CI = Wald 95% confidence intervals; FIW = family interference with work; Ref. = referent group; SE = standard error; WIF = work interference with family.
*Adjusted for total hours worked, type of delivery (vaginal vs. cesarean section), satisfaction with work balance, leave status, role preference, job satisfaction, supervisor support, coworker support, marital status, ability to take time off, ability to change hours, ability to take work home, household income, education, race, and age.
†Adjusted for planned vs. unplanned pregnancy, delivery type, satisfaction with work balance, leave status, role preference, job satisfaction, supervisor support, coworker support, marital status, ability to take time off, ability to change hours, ability to take work home, household income, education, race, age, and number of children.

striking. The difference in magnitude of the associations between the two types of conflict and mothers' mental health may be related to mothers' role in tending to the unique needs of newborn infants, who are totally dependent on others for care. Although stressful, work spilling over into the home may not interfere with the mother's ability to care for her new baby. However, for mothers working away from the home, the inability to immediately attend to their babies may generate feelings of anxiety or guilt, ultimately affecting their general mental health (14).

In contrast to other studies is the lack of a significant association between work–family conflict and physical health (6, 7). Previous research examined the effect of work–family conflict on the physical health of women, in most cases, several years after childbirth. Given that this analysis used data collected at 5 and 11 weeks after childbirth, the potential importance of a time trend should be considered. Longitudinal analysis of this sample (e.g., at 6, 12, and 18 months after childbirth) may yet reveal the effects of WIF and FIW on physical health.

Single women also had an average mental health score that was approximately three points lower than women who were married. This finding is consistent with literature that demonstrates the beneficial effects of marriage, including emotional support and financial and tangible resources

TABLE 5. Covariates of interest included in the models measuring the effects of WIF and FIW on mental health

Variable	Estimate	SE	CI	p
WIF model				
Satisfied with work balance*				
Dissatisfied	Ref.			
Satisfied	2.28	0.96	0.40, 4.15	0.02
Missing/unsure	1.82	1.46	−0.95, 4.59	0.21
Leave status*				
Working	Ref.			
On leave	2.26	1.17	0.04, 4.49	0.05
Missing/unemployed	2.23	3.27	−3.99, 8.44	0.50
Supervisor support*				
Strongly disagree	Ref.			
Somewhat disagree	−0.14	2.04	−4.02, 3.75	0.95
Somewhat agree	−1.22	1.85	−4.74, 2.31	0.51
Strongly agree	−0.98	1.78	−4.36, 2.40	0.58
Missing	−3.60	5.29	−13.67, 6.46	0.50
Coworker support*				
Strongly disagree	Ref.			
Somewhat disagree	−4.50	5.31	−14.60, 5.59	0.40
Somewhat agree	−2.20	4.46	−10.67, 6.27	0.62
Strongly agree	−1.68	4.43	−10.11, 6.75	0.70
Marital status†				
Married	Ref.			
Living with partner	−0.07	0.97	−1.91, 1.77	0.94
Single	−2.50	1.12	−4.62, −0.38	0.03
FIW model				
Satisfied with work–family balance*				
Dissatisfied	Ref.			
Satisfied	2.21	0.97	0.38, 4.05	0.02
Missing/unsure	1.16	1.46	−1.06, 3.92	0.43
Supervisor support*				
Strongly disagree	Ref.			
Somewhat disagree	0.98	2.04	−2.88, 4.84	0.63
Somewhat agree	−0.92	1.84	−4.42, 2.58	0.62
Strongly agree	−0.28	1.76	−3.62, 3.07	0.88
Missing	−1.15	5.24	−11.10, 8.79	0.83
Coworker support*				
Strongly disagree	Ref.			
Somewhat disagree	−4.24	5.26	−14.21, 5.73	0.42
Somewhat agree	−2.39	4.42	−10.78, 6.00	0.59
Strongly agree	−1.50	4.39	−9.82, 6.82	0.73
Marital status†				
Married	Ref.			
Living with partner	−0.29	1.01	−2.20, 1.62	0.78
Single	−2.25	1.15	−4.44, -0.07	0.05

CI = Wald 95% confidence intervals; FIW = family interference with work; Ref. = referent group; SE = standard error; WIF = work interference with family.
*Data measured at 5 weeks.
†Data measured at 11 weeks.

(26–28). If women have relatives or friends to whom they can turn in times of need, the burden of familial obligations can be shared, resulting in decreased anxiety or guilt and improved mental health.

Upon examination of the association between WIF and physical health, the importance of coworker support became apparent. Women who responded that they "somewhat agreed" or "strongly agreed" with the availability of

TABLE 6. Covariates of interest included in the models measuring the effects of WIF and FIW on physical health

Variable	Estimate	SE	CI	p
WIF model				
Role preference*				
Not important at all	Ref.			
Not very important	−1.68	1.25	−4.05, 0.69	0.18
Mixed feelings	−2.24	1.07	−4.27, -0.21	0.04
Somewhat important	−1.89	1.09	−3.97, 0.19	0.08
Very important	−1.43	1.09	−3.51, 0.65	0.19
Supervisor support*				
Strongly disagree	Ref.			
Somewhat disagree	−0.77	1.46	−3.55, 2.01	0.60
Somewhat agree	−1.14	1.33	−3.66, 1.38	0.39
Strongly agree	−0.94	1.27	−3.36, 1.48	0.46
Missing	1.37	3.79	−5.83, 8.58	0.72
Coworker support*				
Strongly disagree	Ref.			
Somewhat disagree	1.52	3.80	−5.71, 8.75	0.69
Somewhat agree	8.12	3.19	2.05, 14.18	0.01
Strongly agree	9.22	3.17	3.18, 15.25	0.004
FIW model				
Role preference*				
Not important at all	Ref.			
Not very important	−1.64	1.26	−4.03, 0.75	0.19
Mixed feelings	−2.04	1.08	−4.09, 0.01	0.06
Somewhat important	−1.66	1.11	−3.77, 0.45	0.14
Very important	−1.18	1.10	−3.26, 0.90	0.28
Supervisor support*				
Strongly disagree	Ref.			
Somewhat disagree	−0.54	1.47	−3.33, 2.25	0.71
Somewhat agree	−0.96	1.33	−3.49, 1.57	0.47
Strongly agree	−0.68	1.28	−3.10, 1.74	0.59
Missing	1.11	3.79	−6.08, 8.31	0.77
Co-worker support*				
Strongly disagree	Ref.			
Somewhat disagree	1.28	3.80	−5.93, 8.49	0.74
Somewhat agree	7.31	3.20	1.24, 13.38	0.02
Strongly agree	8.55	3.18	2.53, 14.58	0.007

CI = Wald 95% confidence intervals; FIW = family interference with work; Ref. = referent group; SE = standard error; WIF = work interference with family. *Data measured at 5 weeks.

coworker support had on average physical health scores 9 and 10 points higher than women who strongly disagreed with the statement. This increase in physical health score is large and supports the idea that work-related factors, including relationships, can be extremely beneficial to health (15, 29–31). Access to coworkers readily available to share workplace burdens can help offset potential conflicts that can arise between work and family roles, thereby increasing overall physical health.

It is also important to note that mothers who had ambiguous or "mixed feelings" about the importance of dual roles at home and at work had lower physical health scores compared with mothers who felt that combining both roles were either very important or not very important. It may be that mothers with clear role expectations, regardless of which

roles they valued, may experience greater well-being than mothers who are conflicted about the importance of both being a mother and a worker.

On average, women's leave status at 5 weeks postpartum was associated with better mental health at 11 weeks postpartum, suggesting the value of time away from work for rest and recovery from childbirth. However, 78 women who reported being on leave at 5 weeks also reported high levels of WIF. This finding may be explained by considering those women who agreed to participate in limited work-related duties (e.g., answering e-mail, responding to emergencies) while on childbirth-related leave. Approximately 10% of the women reported participating in work-related activities even though they had not technically returned to work. Additionally, work–family conflict may have been experienced by women who returned to work between their 5- and 11-week interviews—a total of 181 women.

The findings in this study extend our understanding of work–family balance and health by specifically studying the phenomena in postpartum women—a largely unstudied population thus far. Moreover, these findings contribute new information concerning risk and protective factors for women's postpartum health.

Limitations

A possible limitation in this study is that the results may not be generalizable to populations located outside of the Minneapolis/St. Paul metropolitan area. However, the findings in this population were generally supported by previous research of women overall, showing an association between work–family conflict and health and suggesting that the results can most likely be generalized to women of similar demographic and financial characteristics. Another potential limitation was the time frame assessing supervisor and co-worker support. Questions in this survey specifically asked the participant to recall the level of support received during pregnancy. Given that support may change once a woman returns to work, future researchers may want to employ a recall period reflecting support since childbirth. Additionally, at the time this study was designed and implemented, Frone's measures of work–family conflict were the most reliable to be found in the literature. A more robust measure should be designed and validated in future studies.

An integral component of the design of the original study, from which these data were obtained, was the collection of data at multiple times postpartum. However, this analysis used a cross-sectional measurement of selected variables at 11 weeks. Longitudinal analyses are needed, using the data collected at multiple times in the year after childbirth, to examine whether or not reported levels of WIF and FIW, in addition to mental and physical health scores, fluctuate across time.

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