Job Characteristics, Emotional Exhaustion, and Work–Family Conflict in Nurses

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Abstract

The purpose of this study is to identify whether emotional exhaustion, a component of burnout, mediates the relationship between job demands, job resources, and work–family conflict (WFC). A cross-sectional design was used with survey data. A total of 1,202 nurses in eastern Canada participated in this study. Data were collected via an online survey and analyzed using mediation analysis. The results indicated that job demands and emotional exhaustion predicted WFC. Moreover, emotional exhaustion partially mediated the relationship between job demands, supervisor support, and WFC. This model also showed that younger nurses had increased WFC. Our study indicates that there are several direct and indirect pathways leading to WFC. Moreover, workplace resources can reduce emotional exhaustion, which, in turn, may help maintain work–family balance in nurses. These findings contribute to the existing knowledge on the precursors and consequences of burnout symptoms.

Keywords

job-demands model, emotional exhaustion, work–family conflict, nurses

Work–family balance is considered one of the most pressing issues facing society and has become the focus of research and policy in many countries (Aycan, 2017). The cost of work–family disruption is high for both individuals and families (Skinner & Chapman, 2013). Failure to achieve a balance between these domains can lead to adverse effects on health (Gonnelli & Raffagnino, 2017) and contribute to the high cost of absenteeism in the workplace (Higgins et al., 2006). For nurses, maintaining the balance between work and family is challenging given frequent staffing shortages, shiftwork patterns, and pressing job demands in health care. Given the world-wide nursing shortage (World Health Organization, 2020), we need to ensure nurses' wellbeing and their ability to provide quality patient care. To this end, understanding the pathways leading to burnout and work–family conflict (WFC) will enable us to identify strategies to manage the competing demands of work and family.

Work–family Conflict, Burnout, and Job Demands

WFC occurs when an individual is unable to balance work with family demands, and, as a consequence, work will interfere with family life (Greenhaus & Beutell, 1985). Nurses are susceptible to work–life imbalance for many reasons, although stressful job demands, long and irregular work hours are the primary antecedents (Gonnelli & Raffagnino, 2017). WFC is a bi-directional concept, which involves both work interference with family (WFC) and family interference with work (FWC). In this study, we focus on WFC because this type of conflict is more prevalent than FWC among nurses (Grzywacz et al., 2006; Simon et al., 2004). Research on WFC has produced fairly consistent results over the last two decades. WFC is associated with many professional and personnel negative outcomes. With regard to professional outcomes, WFC is significantly related to turnover intentions (Chen et al., 2015), turnover (Yamaguchi et al., 2016), and job satisfaction (AlAzzam et al., 2017; Cortese et al., 2010). WFC is also associated with several negative health outcomes, such as depression (Barnett et al., 2019; Bergs et al., 2018; Lapierre & Allen, 2006; Zurlo et al., 2020), psychological strain (Amstad et al., 2011), and burnout (Allen et al., 2000; Amstad et al., 2011; Leineweber et al., 2014), in nurses and other occupational groups. Although earlier research has predominantly taken place in

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Western countries, recent evidence suggests that work–family imbalance is becoming an issue in developing countries as well (Asiedu et al., 2018).

WHO (2019) has labeled burnout as an occupational phenomenon that occurs when "workplace stress has not been successfully managed." Although there are different conceptualizations of burnout dimensions, emotional exhaustion and depersonalization are considered core dimensions (Demerouti et al., 2000). Health care workers are vulnerable to burnout symptoms, while nurses, in particular, are considered to have high levels of burnout because of their emotionally draining jobs and prolonged contact with patients (Demerouti et al., 2000). Supporting this assertion, Woo et al.'s (2020) recent meta-analysis and systematic review of burnout report that 11.23% of nurses worldwide have burnout symptoms. Moreover, intensive and critical care nurses were more likely to suffer from burnout symptoms than other specialties, while nurses in Southeast Asia and the Pacific had the highest prevalence of symptoms. Both individual (e.g., gender and age) and work-related (e.g., job characteristics and exposure to traumatic events) factors contribute to burnout (Adriaenssens et al., 2015; Gonnelli & Raffagnino, 2017; Raffenaud et al., 2020; Seidler et al., 2014).

The consequences of burnout are well documented (Gonnelli & Raffagnino, 2017; Khamisa et al., 2013; Salvagioni et al., 2017). There is a positive relationship between burnout and WFC (Allen et al., 2000; Amstad et al., 2011; Reichl et al., 2014). Moreover, Reichl et al.'s (2014) meta-analysis reveals that socio-demographic variables also play a role in moderating the relationship between burnout and work–family interactions. Women were more prone to emotional exhaustion than men, and younger people had an increased risk of suffering from emotional exhaustion. The authors suggest that there may be gender-specific responses to stress, with women tending to become emotionally exhausted while men become cynical. Regarding age, young people may be more vulnerable to burnout symptoms because of job stress, insufficient work experience, and a lack of resources. These findings suggest that young nurses may be more likely to suffer from emotional exhaustion than older nurses.

Previous studies show a significant relationship between job demands, burnout, and WFC (Demerouti et al., 2004; Innstrand et al., 2008; Lesener et al., 2019). There may be several reasons for this. First, individuals with burnout symptoms may view all other elements of their lives as being negative, such as their family life (Westman et al., 2004). Furthermore, stress may alter the recall of situations, leading individuals to focus on selective aspects of work–family interactions. Second, the principle of loss spirals can also be used to explain the relationships between these three variables (Demerouti et al., 2004). Initial resource loss, such as stressful job demands, renders people more vulnerable to a downward spiral of further losses in other domains, mainly because resources are interlinked in a "web-like" structure.

Moreover, each loss will result in further resource depletion for the individual. Thus, increased job demands can lead to burnout symptoms and have a spillover effect in other areas, such as family life.

Theoretical Framework

There is strong empirical evidence indicating that job demands are associated with poor health outcomes (Burns et al., 2016; Lesener et al., 2019; Theorell et al., 2015). Although there are competing theories explaining the relationship between these variables, the Job-Demands (JD-R) model is perhaps the most widely known and tested (Bakker & Demerouti, 2007; Bakker & Demerouti, 2017; Lesener et al., 2019; Schaufeli & Taris, 2014). According to the JD-R model, there are two main job characteristics, job demands and job resources. Both are critical for work-related well-being, regardless of work setting (Bakker & Demerouti, 2017). *Job demands* are those aspects that require physical and/or psychological effort, consequently involving certain costs, such as poor health outcomes, while *job resources* are those aspects that foster learning and development, benefit employees, and are associated with positive health outcomes (Bakker & Costa, 2014; Bakker & Demerouti, 2007). Job resources may be located at the organizational level, interpersonal level, or even the organization of work. Examples of job resources are managerial social support, workplace autonomy, and opportunities within the work setting for development. Moreover, excessive job demands that an individual does not recover from may, in the long-term, lead to overtaxing, resulting in burnout (Bakker et al., 2005; Schaufeli & Taris, 2014).

Certain job resources (e.g., support and decision-making authority) may act as a buffer and mitigate the harmful effects of job demands on emotional exhaustion (Tadić et al., 2015). Although there is an extensive body of research on the JD-R model, our study broadens the research on WFC in nurses by integrating emotional exhaustion as a mediating variable between job characteristics (job demands and resources) and WFC, while many previous studies use job resources as a moderator buffering job demands. We argue that demands which are greater than resources will cause further losses and further depletion of resources, negatively affecting the work–family dynamic. Exploring these relationships through mediation analysis will further elucidate the pathways contributing to negative outcomes in nurses.

Purpose

The aim of this study is to identify the pathways by which emotional exhaustion mediates the relationship between job demands, job resources, and WFC. Figure 1 illustrates the proposed model, based on the JD-R model. We propose the following hypotheses:
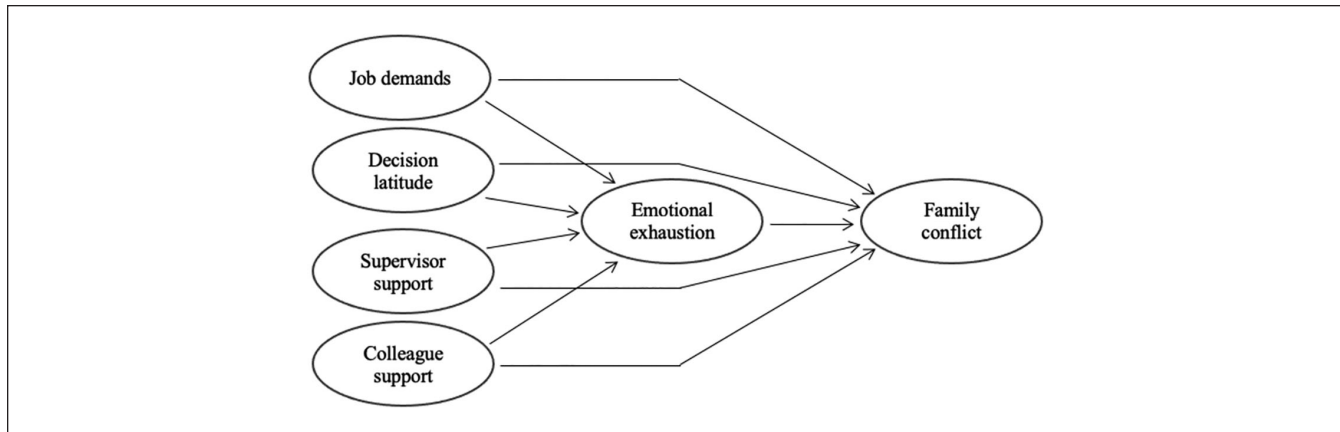
Figure 1. Proposed model with emotional exhaustion as a mediator.

H1: Emotional exhaustion will mediate the relationship between job demands and work–family conflict (job demands → emotional exhaustion → WFC).

H2a: Emotional exhaustion will mediate the relationship between job resources (decision latitude) and work–family conflict (decision latitude → emotional exhaustion → WFC).

H2b: Emotional exhaustion will mediate the relationship between job resources (supervisor support) and work–family conflict (supervisor support → emotional exhaustion → WFC).

H2c: Emotional exhaustion will mediate the relationship between job resources (colleague support) and work–family conflict (colleague support → emotional exhaustion → WFC).

Methods

Design and Sample

This study was conducted using a cross-sectional design. This paper is part of a larger study examining nurse wellbeing and health outcomes. A convenience sample of registered nurses was recruited through two provincial nursing regulatory bodies in eastern Canada. A total of 9,294 nurses were eligible to participate in the study. All practicing registered nurses were eligible to participate, while the following two exclusion criteria were used, teaching at a community college or university setting. In all, 1,202 surveys were returned, giving a return rate of 13%. The demographic characteristics of the study participants are similar to those of the entire population of nurses in the two provinces, New Brunswick and Newfoundland (Association of Registered Nurses of Newfoundland and Labrador, 2019; New Brunswick Nurses Association, 2019). The average age (45 years) and the fraction of women (94%) in the sample agree with those of the population. Whereas 65% of all nurses work full time, 70% of the nurses in the sample do. The sample size was guided by several authors (Kline, 2015; Tabachnick & Fidell, 2013).

According to Kline (2015), 20 participants for each estimated parameter in a model is considered a sufficient sample size. This would be the equivalent of 280 participants in our study, we, therefore, deemed the sample sufficient.

Data collection

Data were collected using a survey questionnaire. Invitations to participate in the study were sent out to all nurses via an email link through the assistance of the regulatory bodies. The link itself contained a brief cover letter explaining the nature of the study and connected participants to an online questionnaire. A reminder was sent two weeks later to potential participants after the initial survey link was sent. The entire questionnaire covered issues such as job characteristics, emotional exhaustion, WFC, safety issues as well as the following sociodemographic data: age, gender, occupational status (full time, part time), educational level, and years of experience.

Measures

Job characteristics. Job characteristics were measured using the Job Content Questionnaire (Karasek et al., 1998). The 26-item questionnaire has been widely used in health care research and has four distinct subscales measuring decision latitude (9 items), psychological job demands (9 items), supervisor support (4 items), and colleague support (4 items) on a 4-point Likert scale ranging from strongly disagree (1) to strongly agree (4). Higher scores indicate high decision-making autonomy, high level job demands, and strong social support. An example of an item for psychological job demands is "My job requires long periods of intense concentration." A sample item for supervisor support is "My supervisor pays attention to what I am saying" and for colleague support is "People I work with take a personal interest in me." The reliability coefficients were the following for the subscales: job demands (0.82), decision latitude (0.76), supervisor support (0.91), and colleague support (0.80).

Emotional exhaustion. Emotional exhaustion was measured with a subscale from the Oldenburg Burnout Inventory (Halbesleben & Demerouti, 2005). This entire questionnaire measures two dimensions of burnout: emotional exhaustion and disengagement. The emotional exhaustion subscale contains eight items and uses a four-item Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). A sample item includes "I always find new and interesting aspects in my work." Higher scores indicated greater emotional exhaustion. Cronbach's alpha for this scale was .80.

Work–family conflict. Work–home conflict was assessed using a subscale from Survey Work–Home Interference NijmeGen (SWING) (Geurts et al., 2005). Although work–family imbalance is considered a bi-directional concept, we used the subscale examining the effect that work had on family, given that WFC has generally a more negative impact on outcomes. A sample item is "How often does it happen that you are irritable at home because your work is demanding?" The items were scored on a five-point Likert scale of 1 (never) to 4 (always). Higher scores indicate higher levels of conflict. The reliability coefficient was .90 in this study.

Ethics committee approval was obtained from a university in eastern Canada prior to data collection. A cover letter included with the survey guaranteed the confidentiality of the participants. Consent was assumed when the participants completed the online questionnaire.

Data analysis

Data analysis consisted of several steps. Initial data analysis (descriptive statistics and reliability tests) was performed with SPSS version 24. Data were assessed for normality by evaluating skewness and kurtosis. Correlations between the main variables were also calculated. We also examined the relationships between the main variables and the demographic data. Once the initial analyses were completed, the data set was transferred to MPlus version 8 (Muthén & Muthén, 1998–2017) for mediation analysis. Full-information maximum likelihood (FIML) was used to estimate missing values in this study.

Prior to mediation analysis, we examined the distinctiveness of the study variables through confirmatory factor analysis. The following indices were used to evaluate model fit: the chi-square fit statistics, the root mean square error of approximation (RSMEA), the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the standard root mean square residual (SRMR) (Hu & Bentler, 1999). We compared the hypothesized 6-factor model (job demands, decision latitude, supervisor support, colleague support, emotional exhaustion, and WFC) with a 5-factor model combining supervisor support and colleague support, a 4-factor model, combining emotional exhaustion with WFC and a unidimensional model. Chi-square difference tests showed that the 6-factor model (χ^2 = 4,028, df = 763,

RMSEA = .060, CFI = .844, TLI = .833) fits our data significantly better than the 5-factor model [$\Delta\chi^2$ (df = 5) = 1,484.35, $p < .001$], the 4-factor model [$\Delta\chi^2$ (df = 11) = 3,787.63, $p < .001$] or the unidimensional model [$\Delta\chi^2$ (df = 17) = 96,971.38, $p < .001$].

Results of the preliminary analyses also showed that, among the socio-demographic variables, age was the only variable correlated with the main study variables. Because of this, age was included as a control variable in the mediation analyses, and the other socio-demographic variables were excluded. We estimated 95% confidence interval for all coefficients using 5,000 iterations of bootstrapping.

Results

The majority of nurses were female (95%, $n = 964$) and the average age of participants was 45 years ($SD = 11.02$). Over half (53%, $n = 531$) of the participants had 20 years of experience and over, while 70% had full-time status. A total of 59% ($n = 603$) had a bachelor's degree as education, while 35% had diploma level education. Twenty percent ($n = 120$) of the participants worked in medical-surgical units, while other nurses worked in specialty units, such as ICU settings (17%, $n = 100$) and maternal-child units (11%, $n = 67$). Interestingly, a large number of nurses chose not to answer this particular question (42%, $n = 428$) compared to other sociodemographic questions.

Table 1 presents the mean, standard deviation, reliability coefficient, and correlation of the main variables. All scales were internally consistent, with Cronbach's alpha ranging from .76 to .91. Nurses reported moderately high levels of psychological job demands, emotional exhaustion, and moderate levels of WFC. They also reported high levels of colleague support. Significant positive correlations were found between job demands and WFC ($r = .52, p = .000$), as well as job demands and emotional exhaustion ($r = .38, p = .000$), with the strongest being in relation to job demands and WFC. There was also a moderate positive correlation between emotional exhaustion and WFC ($r = .43, p = .000$).

Our hypothesized model presented very good fit indices ($\chi^2 = 3.91$ $p = .048$, $df = 1$, RMSEA = 0.053, CFI = 0.996, TLI = 0.953). This model explained 37% of the variance in WFC and 19% of the variance in emotional exhaustion. Figure 2 shows the coefficients for each direct path within the 6-factor model. Job demand is positively related to both emotional exhaustion ($\beta = .37, p = .000$) and WFC ($\beta = .45, p = .001$). *H1* stated that emotional exhaustion will mediate the relationship between job demands and WFC (job demands → exhaustion → WFC). The indirect effect of job demands on WFC through emotional exhaustion was positive and significant ($\beta = 0.10, p = .000$, 95% CI [.06, .14]), indicating partial mediation as the direct effect between job demands and WFC is also significant. Given this, *H1* is partially supported. Table 2 shows the parameter estimates of the indirect effects of the main study variables.

Table 1. Mean, Standard Deviation, Reliability Coefficient, and Correlation between Study Variables.

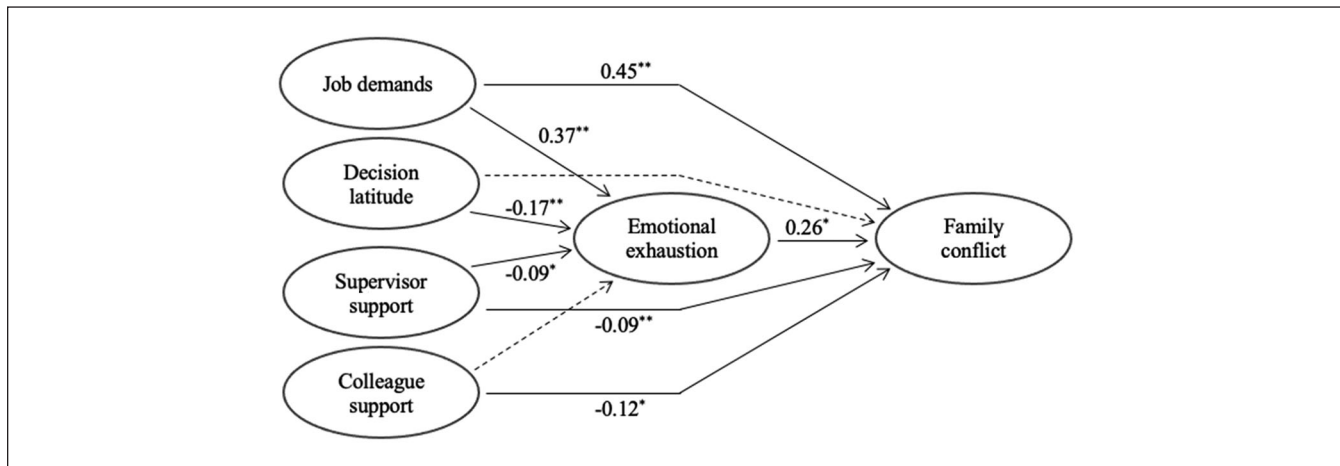|	M	SD	Age	JD	DL	SS	CS	EE	WFC
Age	44.69	11.02							
Job demands (JD)	3.01	.47	−.29*						
Decision latitude (DL)	3.00	.40	.05	−.04					
Supervisor support (SS)	2.53	.72	.09*	−.29*	.41*				
Colleague support (CS)	3.08	.46	−.08*	−.13*	.29*	.26*			
Emotional exhaustion (EE)	2.58	.52	−.16*	.38*	−.20*	−.28*	−.13*		
WFC	2.07	.58	−.23*	.52*	−.18*	−.33*	−.21*	.43*	

Note. *$p < .01$.

Figure 2. Model of main variables with emotional exhaustion as mediator.
Notes. *$p < .01$, **$p < .001$.
--- indicates non-significant path.

Table 2. Parameter Estimates of Indirect Paths with Exhaustion as Mediator.

Indirect Effects	Standardized Coefficient (β)	Standard Error (SE)	P-value
Job demands → Exhaustion → WFC	.10	.02	.000
Decision latitude → Exhaustion → WFC	−.04	.01	.002
Supervisor support → Exhaustion → WFC	−.02	.01	.004
Colleague support → Exhaustion → WFC	−.01	.01	.532

H2a proposed that emotional exhaustion will mediate the relationship between decision latitude and WFC (decision latitude → emotional exhaustion → WFC). Decision latitude is negatively related to emotional exhaustion ($\beta = -.17$, $p = .001$), while not to WFC ($\beta = -.07$, $p = .116$). The results show a fully mediated model, as the indirect path is significant ($\beta = -.04$, $p = .002$, 95% CI [.07, .02]), but not the direct path. *H2a* was supported.

Both hypotheses 2b and 2c examined the mediating effects of emotional exhaustion on support and WFC. Supervisor support is negatively related to both emotional exhaustion ($\beta = -.09$, $p = .001$) and WFC ($\beta = -.09$, $p = .000$) while colleague support is negatively related to WFC ($\beta = -.12$, $p = .001$), but not to emotional exhaustion ($\beta = -.02$, $p = .518$). The indirect effect of supervisor support on WFC was negative and significant ($\beta = -.02$, $p = .004$, 95% CI [.04, .01]), indicating partial mediation. *H2b* was thus partially supported. The indirect effect of colleague support on WFC was nonsignificant. *H2c* was not supported. Lastly, within our model, age is directly related to WFC ($\beta = -.004$, $p = .001$).

Discussion

The purpose of this study was to evaluate whether emotional exhaustion, a core component of burnout, mediated the relationship between job characteristics (job demands and job resources) and WFC. Above all, our results show a strong predictive relationship between job demands, emotional exhaustion, and WFC. Even though both direct and indirect paths are significant in the tested model, the direct path of job demands on WFC (job demands → WFC) was stronger than that of job demands on emotional exhaustion (job demands → emotional exhaustion). Moreover, emotional exhaustion partially mediated the relationship between job demands and WFC. Our study supports a large body of research on the negative effects of job demands on health and wellbeing (Bogaert et al., 2013; Burns et al., 2016; Seidler et al., 2014). It also supports the spillover effects of stressors into several personal domains, in line with the literature (Demerouti et al., 2004; Zhou et al., 2019) and demonstrates that emotional exhaustion is a precursor to WFC.

Our study also extends knowledge of the pathway in relation to decision latitude, emotional exhaustion, and WFC. Emotional exhaustion fully mediated the relationship between decision latitude and WFC. Decision latitude refers to those job characteristics that allow employees to make their own decisions and control their work, contributing to workplace autonomy (Kowalski et al., 2010). The scope of nurses' decision-making authority has largely been a fraught battle. Day-to-day practice has been constrained by both organizational structures and policies. Earlier studies examining decision latitude indicate that the combination of low decision-making authority and high psychological demands is a risk factor for emotional exhaustion (Bourbonnais et al., 1998), while more recent studies show that decision latitude has a mediating role between work environment and some dimensions of burnout (Bogaert et al., 2013).

This study highlights the nuances related to sources of support and how they impact the work–family domain. Supervisor support was significantly related to our two outcome variables, emotional exhaustion, and WFC. Moreover, emotional exhaustion partially mediated the relationship between supervisor support and WFC. Nurse managers play an important role in supporting nurses, and by extension, ensuring quality patient care (McSherry et al., 2012). Managerial support involves providing emotional support, looking for creative solutions that meet both organizational and employee needs as well as facilitating flexible work practices (Hammer et al., 2009). Nonetheless, nurse managers also have limited decision-making ability as they work within the constraints of broader organizational goals and limited resources (Fallman et al., 2019). Generally, employees who report more supervisor support also report lower WFC (Allen et al., 2000; Kossek et al., 2011; Hammer et al., 2009). Although many studies use a cross-sectional design, Kelly et al.'s (2014) randomized study shows how workplace interventions can reduce WFC.

Both trained supervisor support and increased control over scheduling reduced WFC in employees with greater family demands.

There were no significant indirect effects with regard to colleague support and WFC through emotional exhaustion. Colleague support did, however, directly predict lower WFC. It is easy to understand how support at work can reduce WFC. Strategies such as colleagues listening to individuals that are distressed, shouldering some of the workload when necessary, and accepting to replace a shift may be helpful in decreasing the likelihood of work stress interfering with family life. However, these strategies may be more helpful in the short term and less effective in the long term. All in all, there are many different sources of support, such as family, friends, and workplace leaders (Kossek et al., 2011) and each of these sources has a role in buffering WFC.

Lastly, similar to other studies, our findings show that younger nurses are more prone to WFC (Reichl et al., 2014). Younger nurses may not have the resources nor the stability that older nurses have from a broader social network. Moreover, irregular work schedules may also be a contributing factor, making it difficult for young nurses to commit to social activities with family and friends. Interestingly, Unruh, Raffenaud, and Fottler's (2016) study on new graduate nurses indicates that 30% to 40% of nurses experience WFC one or more times a week. Also, younger new graduate nurses experienced more family–work conflict than older nurses largely as a result of childcare responsibilities. It is also possible that younger nurses lack the confidence and experience that older nurses have.

There are several limitations to this study. First, this is a cross-sectional study, and we cannot evaluate the long-term effects of job characteristics over time. The cross-lagged effects of these variables in a two-wave study would provide much needed data regarding changes in emotional exhaustion and WFC as a function of time in nurses. Although there are some excellent studies examining the long-term effects of job demands, emotional exhaustion, and WFC in other occupational groups (e.g., Hall et al., 2010; Rubio et al., 2015), there are no longitudinal studies that we are aware of with nurses. Moreover, our model did not include the contribution of the different categories of fatigue (chronic versus acute) to emotional exhaustion. Second, although we examined both supervisor and colleague support, a more comprehensive questionnaire examining different types of support would enable us to further identify which kinds of support are most beneficial to nurses. Third, a mixed-method study would allow us to gain an in-depth understanding of both the mechanisms by which job demands and resources impact outcome variables. It would also help us identify policies which could assist nurses with maintaining work–family balance. Fourth, including questions on work schedules would give us relevant information because long work hours and shiftwork also contribute to increased WFC (Ghislieri et al., 2017).

This study has several implications for managers. First, our findings suggest that organizational resources can positively affect employee wellbeing. Both decision latitude and managerial support decreases WFC through emotional exhaustion. This suggests that workplace environments that foster nurse autonomy and policies that support nurses may indirectly decrease the risk of WFC. Allowing nurses to practice within their complete scope of practice, instigating scheduling practices that promote family life are all interventions that can have an effect on the wellbeing of nurses. Our study demonstrates that the negative impact of job demands goes beyond burnout symptoms and potentially spills over to the family domain. Given that WFC is a precursor to employee productivity (Amstad et al., 2011), developing policies which promote work–life balance become a winning strategy for health care institutions. Furthermore, evidence-based interventions should dictate reasonable family-oriented workplace interventions which can help all employees (Skinner & Chapman, 2013).

At a theoretical level, our study makes several contributions to the literature on the JD-R model through the greater understanding of direct and indirect processes linking workplace characteristics to WFC in nurses within the context of health care. Also, our study suggests that emotional exhaustion leads to WFC, in lieu of WFC being the antecedent of emotional exhaustion. Lastly, our findings support the principal of loss spirals by showing that negative stressors, if they are greater than a person's resources, may lead to further losses and depletion of resources, ultimately effecting the work–family dynamic. Exploring these relationships through mediation analysis further elucidates the pathways contributing to negative health outcomes in nurses.

We are presently experiencing a worldwide nursing shortage which, according to several projections, may become more severe. Unfortunately, it seems unrealistic, at this point in time, to even consider decreasing job demands for nurses within health care. It is therefore important for managers to work on the resource side of the equation by identifying both interventions and policies that provide nurses with the necessary support which can improve their health outcomes. This, in turn, will have positive ramifications in the workplace.

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