

Factors related to perioperative nurses' job satisfaction and intention to leave

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Abstract

Aim: This study investigated factors associated with perioperative nurses' job satisfaction and their intention to leave. Recruitment and retention of nurses are particularly important in a specialist environment such as the perioperative setting where it is especially difficult to attract and retain nurses due to its unique environment.

Methods: Cross-sectional data were drawn from a larger study on nurses' work environments, conducted in one province of Canada. An e-survey tool, consisting of validated scales, was administered by the provincial nurses' union to a stratified random sample of registered nurses. The study sample consisted of 113 perioperative nurses working in acute-care hospitals. This study included two outcome variables (job satisfaction and intention to leave) and five predictor variables (three aspects of work environment, workload, and emotional exhaustion). Data were analyzed using multivariate linear and logistic regressions.

Results: A multivariate linear regression model explained 49% (adjusted R^2) of variance in nurses' job satisfaction, and a multivariate logistic regression explained 19% (McFadden's R^2) of the variance in their intent to leave. After controlling for work status and other predictors, nurse-physician relationship was significantly related to nurses' job satisfaction, and emotional exhaustion was the key predictor for both outcome variables.

Conclusions: This study demonstrated that higher emotional exhaustion is associated with decreased job satisfaction and increased intention to leave among perioperative nurses. The findings suggest that nurse managers should create an empowering and open work environment that fosters perioperative nurses' job satisfaction and reduces their intention to leave.

KEYWORDS

burnout, turnover, work environment, work satisfaction, workload

1 | INTRODUCTION

The nursing shortage and nurses' turnover are ongoing international concerns in healthcare systems as they can affect the quality of patient care, nurses' well-being, and the financial burden on hospitals (Han, Trinkoff, & Gurses, 2015). In

particular, there has been a growing shortage of perioperative nurses, with 20% of the perioperative nursing workforce expected to retire within the next couple of years (Root, 2015). The typical orientation of perioperative nurses requires an investment of up to 1 year in time and \$100,000 (US) or more (Zinn, Guglielmi, Davis, & Moses, 2012).

Moreover, the recruitment and retention of nurses are particularly challenging in the perioperative setting where nurses are required to work with multiple health professionals in a fast-paced, high-technology environment with high patient turnover (Björn, Josephson, Wadensten, & Rissén, 2015; Gillespie, Wallis, & Chaboyer, 2008). Increased nurses' job satisfaction and decreased nurse turnover would help to retain perioperative nurses in this unique and challenging area.

Job satisfaction refers to one's attitudes toward a job (Price, 2002) and turnover intention is "conscious and deliberate willfulness to leave the organization" (Tett & Meyer, 1993, p. 262). In a study that examined nurses' job satisfaction using a national sample of 55,516 registered nurses (RN) in 206 hospitals in the USA, researchers found that RNs' job satisfaction varied by work unit (Boyle, Miller, Gajewski, Hart, & Dunton, 2006). Among RNs in 10 unit types, perioperative RNs were least satisfied with their jobs, indicating a need to further investigate perioperative RNs' job satisfaction and related factors. Although researchers have examined factors related to nurses' job satisfaction and turnover intentions in hospitals (Carter & Tourangeau, 2012; Dahinten, Lee, & MacPhee, 2016; Han et al., 2015), factors that might influence such outcomes in perioperative settings are under-investigated.

Even though findings have been inconsistent, a multitude of factors have been linked to hospital nurses' job satisfaction and turnover intentions; one significant factor is work environment (Zhang et al., 2014), which includes considerations such as leadership, organizational supports, collaborative relationships, and staffing and resource adequacy (Lake, 2002). Research has shown that better work environments are related to increased job satisfaction and decreased intention to leave (Zhang et al., 2014). In these studies, work environment was measured as nurses' overall perceptions of their environment; however, different dimensions of the work environment may contribute differently to RNs' job satisfaction and intention to leave. In addition, these studies aggregated data from nurses working across different acute-care units, limiting our understanding of work environment factors most related to perioperative RNs' job satisfaction and turnover intentions. In a study that examined RNs' work environments across 11 unit types using a national sample of 5,322 RNs from 519 US hospitals, investigators found that RNs' perceptions of their work environment differed according to their unit types. Furthermore, compared to RNs in other settings, perioperative RNs reported that their work environments were less favorable (Choi & Boyle, 2014). Therefore, there is a need to examine relationships between specific dimensions of the work environment and perioperative RNs' job satisfaction and turnover intentions.

Although workload is one of the commonly investigated factors related to RNs' job satisfaction and turnover intention

(MacPhee, Dahinten, & Havaei, 2017; Van Bogaert, Kowalski, Weeks, & Clarke, 2013), no common definition for nurses' workload is available in the literature (MacPhee et al., 2017). Nursing workload has typically been measured in terms of nurse–patient ratios or nursing hours per patient day. However, such measures do not accurately capture the nursing workload in a unit as they do not take into account the cognitive demands of workload (Neill, 2011; van den Oetelaar, Van Stel, Van Rhenen, Stellato, & Grolman, 2016). In a recent Canadian study that examined the effects of several workload indicators on patient and nurse outcomes (MacPhee et al., 2017), researchers found that nurse perceptions of heavy workload uniquely predicted job satisfaction over and above the effects of patient–nurse ratios and patient acuity. Therefore, this current study included nurse-perceived workload as a possible predictor of perioperative RNs' job satisfaction and intention to leave.

Burnout has been linked to decreased job satisfaction and increased nurse turnover (Chan, Tam, Lung, Wong, & Chau, 2013; Lu, Barriball, Zhang, & While, 2012). The Maslach burnout inventory (MBI) is typically used to measure nurse burnout, and in this study, burnout was assessed in terms of emotional exhaustion, which is a key aspect of burnout. Emotional exhaustion refers to one's physical and emotional depletion due to excessive work and stress (Maslach, Jackson, & Leiter, 1997). In a Belgian study, there were significant relationships between nurses' emotional exhaustion and their job satisfaction and turnover intentions (Van Bogaert, Clarke, Roelant, Meulemans, & Van de Heyning, 2010). In another study, higher levels of emotional exhaustion were related to higher levels of intention to leave among Canadian nurses (Havaei, MacPhee, & Dahinten, 2016). Although research has shown that burnout is an important predictor of decreased job satisfaction and increased turnover intentions among hospital nurses, research that examined such relationships in the perioperative setting is very limited. Therefore, the aim of this study was to investigate factors associated with RNs' job satisfaction and their turnover intentions in perioperative settings.

2 | METHODS

2.1 | Design and sample

This study was a secondary analysis of data collected in 2014 as part of a larger nurses' workload impact study in British Columbia (BC), Canada (MacPhee et al., 2017). Institutional Review Board ethics was obtained from the University of Massachusetts Lowell (#17-193). The original study design was informed by Aiken's RN4CAST studies, which have been conducted worldwide. Study questions were validated through focus groups with provincial union members and delivered as a web-based survey via the BC

Nurses' Union (BCNU). The BCNU represents over 90% of RNs in the province. The original survey study used a proportionate stratified random sample of nurses based on their employment status and health authority employer. To protect member confidentiality, the BCNU sent out an online survey link via member emails on behalf of the researchers. Thereafter, the BCNU sent out email survey reminders at 2-week intervals for over 1 month. To increase response rate, a second invitation with hard copy surveys was mailed out through the BCNU. An incentive for survey completion was a raffle for a mini-iPad.

The inclusion criteria for the current study were: direct-care RNs, perioperative specialty, and working in acute-care hospitals. The sample for this study consisted of 113 RNs who met the criteria. The primary study sample size was 1,621 acute-care nurses. Demographics of nurses in the acute-care sample were representative of provincial acute-care nursing workforce characteristics (Canadian Institute for Health Information, 2012). Due to the nature of the BCNU database, we could not determine what proportion of these nurses were perioperative services nurses. We were unable, therefore, to calculate an accurate response rate for perioperative nurses in our sample.

2.2 | Measures

2.2.1 | Outcome variables

There were two outcome variables in this study: job satisfaction and intent to leave. Job satisfaction was measured using the mean score of two items that assessed: (a) satisfaction with current job using a 4-point response scale ranging from 1 (very dissatisfied) to 4 (very satisfied); and (b) whether they would recommend their hospital to a nurse colleague as a good place to work using a 4-point scale ranging from 1 (definitely no) to 4 (definitely yes). Higher scores indicate higher levels of job satisfaction.

Intention to leave was measured by a single item that asked about intention to leave their current job in the next year on a 4-point response scale ranging from 1 (very unlikely) to 4 (very likely). This variable was re-categorized into a dichotomous variable as 0 (unlikely) and 1 (likely) in this study. The two items used to measure job satisfaction and the single item measuring intention to leave have been widely used in international nursing studies and have been reported to be reliable measures (Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Aiken et al., 2013; Van Bogaert et al., 2013; Zhang et al., 2014).

2.2.2 | Predictor variables

Five predictor variables were used in this study: three variables that represent dimensions of work environment, nurse-

perceived workload, and emotional exhaustion. Work environment was assessed using three dimensions of the Practice Environment Scale of the Nursing Work Index (PES-NWI, Lake, 2002). The PES-NWI measures five dimensions of the work environment, nurse participation in hospital affairs (eight items), nursing foundations for quality of care (nine items), nurse manager ability, leadership, and support of nurses (four items), staffing and resource adequacy (four items), and collegial nurse-physician relations (three items), but the first two dimensions were not included in this study as they better reflect nurse work environment at the hospital level rather than the unit level (Lake, 2002). Responses were measured on 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Exploratory factor analysis of the items for the three dimensions included in this study confirmed the three-factor model which explained 71% of the overall variance in work environment. The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy of the data (KMO = 0.84), and KMO values for all items were greater than 0.77, which is well above the acceptable limit of 0.5 (Field, 2013). Therefore, mean scores were calculated for each of the three dimensions based on individual RN responses to items on the dimension. Higher scores indicate more favorable perceptions of that aspect of the work environment. For the study sample, Cronbach's alphas for dimensions of nurse manager ability, leadership, and support of nurses; staffing and resource adequacy; and collegial nurse-physician relations were .80, .85, and .81, respectively.

Nurse-perceived workload was measured using four items. Nurses were asked to identify the frequency of the following experiences: (1) arriving early or staying late to get their work done; (2) working through their breaks to complete their assigned workload; (2) feeling that they had too much work for one person to do; and (4) feeling that they compromised their professional nursing standards of care due to workload. These items were taken from the Canadian National Survey on the Work and Health of Nurses (CIHI, 2006). For this study sample, the Cronbach's alpha for the scale was .81. Exploratory factor analysis with principle components analysis of this study data further supported a one-factor model (variance explained was 48%), with factor loadings that ranged from .40 to .89. We therefore computed a mean score for the four items, with higher scores indicating higher levels of nursing workload. A similar approach was used by MacPhee et al. (2017) where they used items 1, 2 and 3 to measure nurse-perceived workload. Although they reported a satisfactory internal consistency of the three-item measure, we chose to also include item 4 to more fully capture nurse-perceived workload.

Emotional exhaustion was measured using the nine-item emotional exhaustion subscale of the MBI (Maslach et al.,

1997), which is a widely used and validated measure. Responses were measured on a 7-point scale ranging from 0 (never) to 6 (everyday). For this study sample, exploratory factor analysis with principle components analysis further supported a one-factor model (variance explained was 67%), with factor loadings ranging from .70 to .89. Therefore, a mean score for the nine items were calculated, with higher scores indicating higher levels of emotional exhaustion. The Cronbach's alpha for the scale was .94 for the study sample.

2.2.3 | Control variables

Literature reviews of 68 and 17 studies identified nurse characteristics that have been shown to be associated with nurses' job satisfaction and their turnover intention. For example, reviews found that age, education, and years of experience were positively associated with nurses' job satisfaction (B. Hayes, Bonner, & Pryor, 2010) and inversely related to nurse turnover (L. J. Hayes et al., 2012). Therefore, in this study, we controlled for four previously identified characteristics (age, work status, education level, and years of nursing experience).

2.3 | Data analysis

Descriptive statistics were used to describe the demographic characteristics of the study sample and key study variables. Pearson and Spearman correlations were used to examine the strength and direction of bivariate relationships between key study variables. Data were analyzed using multivariate linear regression and multivariate logistic regression for job satisfaction and intention to leave, respectively. Using STATA version 15 (StataCorp, LP, College Station, TX, USA), the statistical significance level was set at $p < .05$ in all analyses.

3 | RESULTS

The study participants were predominantly female (99.1%), with a mean age of 48.7 ($SD = 12.1$) years, and a mean of 20.2 ($SD = 10.2$) years of nursing experience. Half the participants (50.4%) had a baccalaureate or higher degree in nursing, and most (84.3%) had permanent positions. Table 1 presents the descriptive statistics for key study variables, and Table 2 shows the inter-correlations. Leadership and support of nurses, staffing adequacy, collegial nurse-physician relationship were positively related with job satisfaction, with correlations ranging from .20 to .55. Workload was negatively related to job satisfaction and positively related to intention to leave. Emotional exhaustion and job satisfaction were found to be significantly associated with intent to leave, in the expected direction.

TABLE 1 Demographic characteristics of participants ($N = 113$)

Characteristic	M (SD)	n (%)
Age (years)	48.7 (12.1)	
Years employed as a nurse	20.2 (10.2)	
Gender		
Male		1 (0.9)
Female		112 (99.1)
Employment status ^a		
Permanent		91 (84.3)
Temporary		17 (15.7)
Highest nursing education		
Certificate or diploma		56 (49.6)
Baccalaureate degree or higher		57 (50.4)

^aThere were five missing responses for employment status.

A multivariate linear regression model was used to investigate factors related to perioperative RNs' job satisfaction in acute-care hospitals. This model explained 49% of the variance in job satisfaction. As shown in Table 3, after controlling for other variables in the final model, collegial relationship and emotional exhaustion were significantly associated with perioperative RNs' job satisfaction. More specifically, stronger collegial relationship was related to higher levels of job satisfaction ($\beta = .21, p < .05$), and higher levels of emotional exhaustion were found to be associated with lower levels of job satisfaction ($\beta = -.21, p < .001$).

A multivariate logistic regression model was used to investigate factors associated with turnover intention, and this model explained 19% of the variance in perioperative RNs' intention to leave their jobs in the next year. As presented in Table 3, after accounting for other variables in the model, only emotional exhaustion was found to be significantly related to perioperative RNs' turnover intention. Nurses with higher emotional exhaustion were more likely to intend to leave their current jobs in the next year than nurses who experienced lower levels of emotional exhaustion (odds ratio = 1.75, 95% confidence interval = 1.25–2.11).

4 | DISCUSSION

This study examined factors related to perioperative RNs' job satisfaction and turnover intention in acute-care hospitals. Consistent with findings from earlier studies, collegial nurse-physician relationship was found to be a significant predictor of nurses' job satisfaction (Rosenstein, 2002; Tang, Chan, Zhou, & Liaw, 2013). Having a positive nurse-physician relationship is especially important in a perioperative setting due to its unique environment. Unlike nurses in

TABLE 2 Correlations between key study variables

Study variables	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Experience	0.87***									
3. Education ^a	-0.67***	-0.73***								
4. Work status ^b	-0.30**	-0.31*	0.29**							
5. Leadership and support of nurses	0.05	0.10	-0.12	-0.17						
6. Staffing adequacy	0.05	0.07	-0.11	-0.17	0.50***					
7. Collegial relationships	-0.12	-0.04	0.04	-0.10	0.41***	0.54***				
8. Workload	-0.10	-0.13	0.12	0.18	-0.42***	-0.60***	-0.24*			
9. Emotional exhaustion	-0.16	-0.19	0.10	0.27**	-0.39***	-0.54***	-0.32**	0.57***		
10. Job satisfaction	-0.01	-0.10	0.01	0.20*	0.46***	0.55***	0.47***	-0.47***	-0.63***	
11. Intention to leave ^c	0.10	0.10	-0.08	-0.01	-0.03	-0.16	-0.18**	0.19*	0.20*	-0.34***

^a0 = certificate or diploma, 1 = baccalaureate or higher.

^b0 = part-time or casual, 1 = full-time.

^c0 = no intention to leave, 1 = intention to leave.

* $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 3 Multivariate linear regression and multivariate logistic regression results for job satisfaction and intention to leave

	Job satisfaction	Intention to leave ^a
	β (95% CI)	Odds ratio (95% CI)
Work status ^b	.02 (-0.20, 0.25)	0.81 (0.33, 1.97)
Leadership and support of nurses	.16 (-0.01, 0.35)	1.68 (0.77, 3.67)
Staffing adequacy	.07 (-0.16, 0.31)	1.03 (0.42, 2.58)
Collegial nurse-physician relationships	.21 (0.04, 0.49)*	0.35 (0.13, 1.08)
Workload	-.06 (-0.14, -0.08)	1.18 (0.76, 1.84)
Emotional exhaustion	-.21 (-0.30, -0.12)***	1.75 (1.25, 2.11)*
Adjusted R ²	49%	
McFadden's R ²		19%

^a0 = no intention to leave, 1 = intention to leave.

^b0 = part-time or casual, 1 = full-time; β , standardized beta coefficient; CI, confidence interval.

* $p < .05$; *** $p < .001$, job satisfaction $\chi^2(6) = 16.32$, $p < .001$.

other clinical areas, perioperative nurses are engaged one-to-one with physicians and other team members for long periods of time. Collaborative teamwork and effective communications are associated with better patient outcomes (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015), and perioperative teams, particularly nurse-physician communications, have been extensively studied by patient safety experts. In an earlier study of operating room communications failures, over a 3-month period of time, over 421 communications events were recorded. Approximately 30% of these events were “failures” due to missing or inaccurate information or ineffective team processes, including exclusion of key individuals (Lingard et al., 2004). Consequently, many standardized communication aids and checklists have been introduced to perioperative settings to enhance team processes (Russ et al., 2013). Nurse satisfaction with physician communications, therefore, may indicate more collaborative and effective team processes.

This study's findings also revealed that nurse emotional exhaustion was independently associated with RNs' job satisfaction and intention to leave. These results are consistent with findings from earlier studies conducted in various countries. For instance, higher levels of emotional exhaustion were associated with decreased nurse job satisfaction and increased intention to leave in Canada and elsewhere (Flinkman, Laine, Leino-Kilpi, Hasselhorn, & Salanterä, 2008; Havaei et al., 2016; MacPhee et al., 2017; Van Bogaert et al., 2010).

Nurse managers should plan and implement strategies to help reduce perioperative RNs' emotional exhaustion. Emotional exhaustion is manifested as fatigue and lack of emotional and mental energy to meet job demands. A prolonged emotional/mental drain on nurses is a serious concern in specialty areas, such as perioperative nursing, where burnout is associated with risk of mistakes and decreased quality of care (Montgomery, Panagopoulou, Kehoe, & Valkanos, 2011).

Workplace stressors associated with nurses' burnout can be moderated or buffered by greater job autonomy and greater occupational self-efficacy (Livne & Goussinsky, 2017). Job demands-resources theory suggests that the wear and tear of job demands can be offset by more control over practice and by personal confidence in one's capacity to cope with workplace demands. Managers can have a positive impact on nurse "resources" by ensuring their nursing staff has a voice in making patient care decisions (Havaei et al., 2016), and by promoting workshops that teach coping strategies associated with high, occupational self-efficacy.

One workplace stressor associated with perioperative nurses' decreased job satisfaction and intent to leave is patient safety (Vowels, Topp, & Berger, 2012). Patient safety initiatives are particularly salient in perioperative settings due to the invasiveness of procedures, risks associated with anesthesia, unique technology and specific roles and accountabilities of interdisciplinary teams (Steelman, Graling, & Perkhounkova, 2013). Steelman et al. (2013) found that patient safety priorities varied by nurses' primary job roles in perioperative settings and their educational levels. Some chief concerns across settings (but in different rank order or importance) were pressure injury prevention, perioperative hypothermia, and airway emergencies. Given the specificity of perioperative nurses' reports of patient safety concerns and required resources to assist nurses in addressing safety issues, the researchers recommended doing prospective risk assessments with nurses and other healthcare providers to best understand (and match) resources to patient safety needs. Nurse managers should create environments where staff feel free to share concerns and information regarding quality, safe care delivery, followed by changes in practice for better patient and staff outcomes.

In this study, nurse-perceived workload, staffing adequacy, and nurse manager support for nurses measured by PES-NWI were not associated with RNs' intentions to leave. Studies associated with the RN4CAST global research consortium have used the PES-NWI to assess work environment factors at the unit or hospital levels. In this study, we examined individual nurse scores of the three subscales that reflect work environment characteristics at the unit level to obtain a more granular measure of nurses' perceptions of specific work environment factors, such as nurse manager

support. However, the lack of significant findings with respect to PES-NWI scores suggest that other work environment factors may matter more to perioperative nurses than the unit-level categories we measured.

Moreover, human factors researchers (Carayon et al., 2014) recommend using systems-level approaches to study nurses' work and work environments. For example, MacPhee et al. (2017) examined nurse workload factors at the unit level, task level and job level. They found that job-level perceptions of heavy workload and task-level interruptions had significant direct effects on nurse-reported patient adverse events, nurse emotional exhaustion, and job satisfaction. In previous research in perioperative settings, researchers identified job-level and task-level factors that could be associated with nurses' job satisfaction and intention to leave, such as technical skills required to participate in highly complex surgical cases (job level) (Gillespie et al., 2008) and the time spent in locating the right equipment for a procedure (task level) (Björn, Rissén, Wadensten, & Josephson, 2017; Vowels et al., 2012). Future researchers should consider investigating the impact of job and task-level factors on nurse job satisfaction and intention to leave in perioperative settings.

In this study, the average age of perioperative nurses was greater than 48 years of age. Shoji et al. (2016) found a negative relationship between self-efficacy and burnout, indicating that more mature nurses may have greater personal reserves for managing workplace stressors than younger nurses. Providing work environments with appropriate supports and training is essential to new nurse recruitment and retention. Nurse residency programs have been one way to decrease turnover and promote confidence among newer perioperative nurses (Lindsey & Kleiner, 2005). In addition, supportive environments to "grow your own nurses" (Zinn et al., 2012, p. 654) provide a means to utilize mature nurses in preceptor roles, contributing to senior nurses' greater job satisfaction and less intention to leave.

A value of the present study is that it contributes to the sparse literature examining factors related to perioperative nurses' job satisfaction and intention to leave. However, this study was limited by its monomethod survey data collection and by the use of a cross-sectional study design. Also, the study sample included Canadian perioperative nurses working in acute-care hospitals, which restricts generalizability to other settings. In addition, we were not able to investigate the impact of unknown or unmeasured factors, which could explain the remained unexplained variances in perioperative RNs' job satisfaction and intention to leave. Finally, use of a single item to measure nurses' intention to leave limited the amount of variation that could be identified.

5 | CONCLUSION

The perioperative setting is a highly stressful environment to nurses due to high patient turnover, emergency situations, and potential patient safety issues (Vowels et al., 2012). Working in such an environment could result in increased nurses' burnout, which in turn impacts their job satisfaction as well as turnover intention. Overall, this study demonstrated that better nurse-physician relationships were related to increased job satisfaction, and higher emotional exhaustion levels are associated with decreased job satisfaction and increased intention to leave among perioperative nurses. The study findings suggest that nurse managers should create an empowering and open work environment that fosters perioperative RNs' job satisfaction and reduces their intention to leave their jobs. One possible strategy is to hold regular staff meetings where nurses feel safe to raise their concerns and make suggestions to improve patient care or the working environment. Nurses should also be provided with other opportunities to share information, resources, and support so that they can participate in the improvement of unit policies and practices. Future research should also investigate factors specific to the operating room environment that may be associated with nurse job satisfaction and intention to leave factors (e.g. pressure to reduce turnover time, unavailable equipment for a surgical procedure, or having equipment that is not properly functional).

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

M.M. provided data for this study. S.L. contributed to the conception and the design of this study. S.L. conducted data analysis and drafted the manuscript. S.L, M.M, and S.D contributed to data interpretation. M.M., S.D., and S.L. made critical revisions to the paper.

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