ORIGINAL ARTICLE

Influence of caring for COVID-19 patients on nurse's turnover, work satisfaction and quality of care

Mélanie Lavoie-Tremblay RN, PhD, Associate Professor[1] ⓘ |
Céline Gélinas RN, PhD, Full Professor[1] ⓘ | Thalia Aubé RN, MSc, Research Assistant[1] |
Eric Tchouaket PhD, Associate Professor[2] ⓘ |
Dominique Tremblay RN, PhD, Full Professor[3] ⓘ |
Marie-Pierre Gagnon PhD, Full Professor[4] ⓘ | José Côté RN, PhD, Full Professor[5] ⓘ

[1]Ingram School of Nursing, McGill University, Montréal, Quebec, Canada

[2]Nursing Department, University of Quebec in Outaouais, Gatineau, Quebec, Canada

[3]Nursing School, University of Sherbrooke, Sherbrooke, Quebec, Canada

[4]Faculty of Nursing, Laval University, Quebec, Quebec, Canada

[5]Faculty of Nursing, Montreal University, Montréal, Quebec, Canada

Correspondence
Mélanie Lavoie-Tremblay, RN, PhD, Associate Professor, Ingram School of Nursing, McGill University, 680 Sherbrooke West, Suite 1813, Montréal, Quebec H3A 2M7, Canada.
Email: melanie.lavoie-tremblay@mcgill.ca

Abstract

Aim: This study aims to examine, through the lens of the Job Demands-Resources model, the influence of caring for COVID-19 patients on nurse's perception of chronic fatigue, quality of care, satisfaction at work and intention to leave their organisation and the profession.

Background: Studies have examined how fear of COVID-19 contributes to the mental, physical and work adjustment among nurses. To date, few studies have been conducted examining how caring for patients with COVID-19 contributes to work outcomes among nurses.

Methods: This is a cross-sectional survey involving 1705 frontline nurses and licensed practical nurses in Quebec, Canada. From these, 782 reported caring for COVID-19 patients.

Results: High chronic fatigue, poor quality of care, lower work satisfaction and higher intention to leave their organisation were found for nurses caring for COVID-19 patients. Poorly prepared and overwhelmed nurses showed higher turnover intention than those well prepared and in control.

Conclusions: There is an urgent need to provide support to nurses during the pandemic, with a long-term strategy to increase their retention.

Implications for Nursing Management: Nurse administrators play an important role in supporting their nurses during a pandemic in the form of education, training and policy development to positively impact quality of care and retention.

KEYWORDS
COVID-19, nurse, quality of care, turnover, work satisfaction

1 | BACKGROUND

In March of 2020, the World Health Organization (WHO) declared a global pandemic, given its international transmission affecting substantial amounts of people, resulting in considerable deaths and causing immense social and economic disruptions (Pappa et al., 2021). During this time, health care workers including nursing staff have had to deal with their anxiety, fear, emotional exhaustion and other

feelings in response to the crisis, have worked under immense physical and emotional pressure and have put themselves at risk while fulfilling their roles (Lorente et al., 2021). Of consequence, the pandemic led to many challenges faced by the nursing profession including increased patient volumes, higher patient loads and new COVID-19 protocols.

Evidence examining the impacts of this global pandemic on the nursing profession is fast emerging. The literature is showing the significant impact of the pandemic on nurses' mental and physical health (Labrague & De los Santos, 2020, 2021; Marvaldi et al., 2021; Rodríguez-Rey et al., 2020; Spoorthy et al., 2020; Vanhaecht et al., 2021). For instance, the high levels of stress experienced by nurses due to caring for COVID-19 patients has been reported and associated with separation from family, sleep deprivation, lack of preparedness and increased workloads due to higher health care demands and new policies and procedures to follow (e.g., Huang et al., 2020). The high levels of depression, anxiety and stress resulting from caring for COVID-19 patients have also been found to be associated with high insomnia and low general health (e.g., Abdoli et al., 2021). Furthermore, several studies have demonstrated the adverse impact of the pandemic on health care workers such as burnout, stress, depression and anxiety, with higher prevalence rates of anxiety and depression found among nurses compared with other health care workers (Pappa et al., 2021; Wang et al., 2020).

Studying nursing staff as a subgroup of health care workers is especially important as they are the frontline workers who spend the most time with patients, are present at all times of the day and as such are witness to patients suffering and death. Previous research has identified nursing staff as the highest risk group for adverse outcomes to the pandemic, such as highest prevalence of anxiety and depression (Jiaying et al., 2020; Labrague & De los Santos, 2020; Wang et al., 2020). Furthermore, a recent evidence indicates that the COVID-19 pandemic and the added physical and psychological strain for nurses are leading a significant proportion of them to consider leaving their current work setting (Berlin et al., 2021; De los Santos & Labrague, 2021; Mirzaei et al., 2021). The present study aimed at distinguishing the influence of the pandemic for the nursing staff caring for COVID-19 patients compared with non-COVID-19 patients on their intention to leave their setting and the profession as well as their satisfaction at work and perception of quality of care.

The Job Demands-Resources (JD-R) model is an appropriate conceptual framework to guide the present study. The JD-R model posits that, first, the physical, psychological, social and/or organisational demands of a job lead to strain (e.g., chronic fatigue and low work satisfaction) and impact motivation and performance (e.g., quality of care). Second, the JD-R model also posits that job resources reduce the impact of the job demands and lessen the resulting physical and psychological strain experienced by workers (Bakker et al., 2008). A number of demands and resources arise from the job setting such as high workload (e.g., Laschinger et al., 2012), staffing inadequacies (e.g., Toh et al., 2012) and work–life interference (e.g., Broetje et al., 2020). Interestingly, a documented job resource is the display of transformational leadership from nurses' superiors (e.g., Broetje

et al., 2020; Gatti et al., 2020). The impact of job demands and job resources on quality of care and nurses' chronic fatigue has also been demonstrated (e.g., LeGal et al., 2019; Van Bogaert et al., 2018). Furthermore, a number of nursing demands and resources, or lack of resources, and the resulting high strain have been associated with intentions to leave the work setting and/or profession (e.g., Hognestad Haaland et al., 2020; Moloney et al., 2018; Van der Heijden et al., 2019).

We argue that the current care context has amplified the impact of the job demands and resources on nursing staff's chronic fatigue, work satisfaction and intention to leave the work setting and/or profession. Caring for COVID-19 patients (e.g., having to continuously wear personal protective equipment [PPE], fear of being infected and infecting family members and losing patients) combined with the restrictions outside the workplace such as isolation from family and friends are significant job demands that, if not well balanced with job resources (e.g., optimal leadership, sufficient preparedness), will result in significant strain for nurses (Alizadeh et al., 2020; Franklin & Gkiouleka, 2021). This excessive strain is likely to lower motivation and increase their desire to leave their current workplace and even the nursing profession (e.g., Hognestad Haaland et al., 2020; Moloney et al., 2018; Van der Heijden et al., 2019).

A critical review highlighted the heuristic nature of the JD-R model and concluded that the model is general and flexible and that it can be used in a broad array of situations (Schaufeli & Taris, 2014). The critical review also listed a large number of demands and resources, positive and negative elements of the job and personal resources that can be studied to better predict and understand employee's strain and performance such as difficult work conditions, work overload, strategic planning and leadership (Schaufeli & Taris, 2014). We thus believe that the JD-R model is highly relevant to our investigation of nursing staff's chronic fatigue, work satisfaction and intention to leave their health care setting and the profession. In the present study, job demands were operationalized with COVID-19-related variables such as caring for COVID-19 patients, current situation at work and having been infected at work whereas resources were estimated with indicators of preparedness and transformational leadership. Strain was assessed with a measure of chronic fatigue and satisfaction at work whereas performance and motivation were estimated with measures of quality of care and nursing staff's intention to leave their health care setting and the profession.

Therefore, the primary objective of this study was to examine the influence of caring for COVID-19 patients on nursing staff's perceptions of job demands and resources and their reported strain and performance, specifically in terms of chronic fatigue, quality of care, satisfaction at work and intention to leave their health care setting and the profession. We hypothesized that the added strain associated with caring for COVID-19 patients will negatively influence nursing staff's intention to leave their current health care setting and the profession, satisfaction at work and perceived quality of care. A secondary objective was to explore job demands and resources related to the COVID-19 pandemic on nursing staff's turnover intention and to identify their determinants.

2 | METHODS

2.1 | Design and sample

This study is part of a larger cross-sectional survey (Gélinas et al., 2021). An anonymous online survey was sent to nursing staff (i.e., nurses and licensed practical nurses [LPN]) in the province of Quebec (Canada). Nursing members registered to their respective professional order (Ordre des infirmières et infirmiers du Québec [OIIQ] and Ordre des infirmières et infirmiers auxiliaires du Québec [OIIAQ]) in the province of Quebec (Canada) who agreed to be contacted for research projects were invited to participate. Out of 74,500 nurses and 28,500 LPN in Quebec, 38% and 84% of them, respectively, agreed to be contacted for research projects. Random lists of nursing members were created to ensure that members are not invited to participate in multiple projects led by different research teams within the same time period. The invitation was sent to an overall estimated number of 15,000 members, and we expected a minimum participation rate of 10%.

2.2 | Procedures

The study procedures were described in detail in a previous paper (Gélinas et al., 2021). The study (2021-2451) obtained ethics approval from the Medical/Biomedical Research Ethics Committee of the associated provincial health organisation. An invitation email with a link containing an introduction letter and a consent form was sent to OIIQ and OIIAQ nursing members to complete the anonymous survey online. The survey was made available from 22 July to 16 November 2020 and could only be completed once. Nursing staff in Quebec are English or French speakers and could select their preferred language (English or French) to complete the survey.

2.3 | Instruments

To achieve the study objectives, validated questionnaires available in English and French were selected.

2.3.1 | Job demands and resources

In the present study, job demands and resources variables focused mainly on COVID-19-related information. Job demands indicators included perception of being in control of the situation (1 = *we are overwhelmed* to 4 = *we are not yet affected by the pandemic*; two groups were also created: overwhelmed [1–2] and in control [3–4]), infected or having a member of the care team infected by COVID-19 at work, provided care to COVID-19 patients or not and had provided care to COVID-19 patients who died. Job resources indicators included participants' perception of preparedness to offer safe care during the pandemic (1 = *very poorly prepared* to 4 = *very well*

prepared; two groups were also created: poorly prepared [1–2] and well prepared [3–4]) and the 7-item transformational leadership scale (Carless et al., 2000; items rated on a 5-level scale [1 = *never* to 5 = *frequently*, if not always], total score computed by summing the seven items; Cronbach's alpha coefficients of .94 [English version] and .95 [French version]). All COVID-19 items were from a previous survey developed by the OIIQ to collect information specific to the pandemic crisis.

2.3.2 | Strain and performance

A number of indicators of strain and performance were included in the present study. First, chronic fatigue was measured with the five chronic fatigue items of the Occupational Fatigue Exhaustion Recovery Scale (OFER; Winwood et al., 2012) using a 7-level scale (0 = *strongly disagree* to 6 = *strongly agree*). A total score was computed as per the author's directives using this formula: sum (Items 1 to 5)/30 × 100. In this study sample, Cronbach's alpha coefficients of .89 and .91 were obtained for the English and the French versions, respectively. Second, satisfaction at work was measured using a single item (I am satisfied with my work) on a 7-level scale (1 = *do not agree at all* to 7 = *very strongly agree*). This work satisfaction single item measure has been shown to highly correlate with other work satisfaction scales (Wanous et al., 1997). Third, performance was assessed with one item of perceived quality of care in general (1 = *poor* to 4 = *excellent*) (Aiken et al., 2002), and one item was adapted to compare the current perceived quality of care versus prior to the COVID-19 pandemic (1 = *greatly deteriorated* to 5 = *greatly improved*). Finally, turnover intention was measured with two items (i.e., one related to the current health care setting and one related to the nursing profession) using a 7-level scale (1 = *do not agree at all* to 7 = *very strongly agree*) (O'Driscoll & Beehr, 1994). This scale has been validated in many nursing studies (Labrague & De los Santos, 2020; Lavoie-Tremblay et al., 2016). Cronbach's alpha coefficients of .49 and .60 for the quality of care items, and of .74 and .79 for the turnover intention items were obtained in this study sample for the English and the French versions, respectively.

2.3.3 | Sociodemographic

Sociodemographic information included gender, age and generation. Information related to work status included nursing profession (nurses or LPN), experience in the current health care setting and in the profession (in years) and type of health care setting (i.e., acute care, long-term care and other).

2.4 | Data analysis

Data analysis was performed using IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp. Descriptive statistics were

obtained for all study variables according to their level of measurement. All continuous variables showed skewness and kurtosis indices ± 2 which are considered acceptable to support normality of data distribution with a large sample >300 (Kim, 2013). We had very few missing data (<10%) which were not replaced. For the primary objective, providing care or not to COVID-19 patients was the main independent variable. Chronic fatigue and other job demands and resources indicators as well as performance variables (i.e., leadership, work satisfaction, turnover intention and perception of quality of care) were the dependent variables. Differences between the two groups (provided care to COVID-19 patients or not) were compared using a MANOVA. Using G*Power and considering an effect size and alpha of .05, power of 90%, two groups and seven dependent variables, a minimal sample size of 374 was required to run a MANOVA. F tests of between-subjects effects for each dependent variable were also reported.

For the secondary objective, turnover intention was the dependent variable. Independent t tests were performed for each turnover intention item (i.e., current setting and profession) and COVID-19-related job demands and resources (i.e., preparedness, situation at work, infected or team member infected at work and provided care to COVID-19 patients who died) as independent variables. Considering ratios ranging from 0.33 to 1 for independent variables, a sample size ranging from 956 to 1280 was required to run independent t tests with an alpha of .01 (Bonferroni correction for multiple tests: 0.05/4 t tests), power of 90% and effect size of 0.25. A multiple linear regression was also performed for each turnover intention item. Potential determinants were identified from the JD-R model and its related literature (Bakker et al., 2008; Schaufeli & Taris, 2014). Those found as the most robust precursors of turnover intention include work satisfaction, leadership, chronic fatigue, lack of professional competence (preparedness), complex patient conditions (caring for COVID-19 patients) and professional concerns (quality of care and situation at work) (Al et al., 2020; Labrague et al., 2020). Additionally, some individual factors are also known to influence turnover intention such as gender, age, education and work experience (Chegini et al., 2019). These individual factors were thus included as control variables. Linear regressions were performed using simultaneous entry in three blocks of independent variables. Block 1 included individual factors (gender, age, education and work experience). Block 2 included job demands (caring for COVID-19 patients, current situation at work and infected at work) and resources variables (preparedness and transformational leadership). Finally, Block 3 included the strain and performance variables (chronic fatigue, work satisfaction and perceived quality of care). No correlation were higher than .85, the tolerance values varied from .65 to .99, and the variance inflation factor (VIF) values from 1.01 to 1.54. As suggested by Kutner et al. (2005), when the tolerance value is more than .2 and, simultaneously, the VIF value is 4 and less, multicollinearity is not problematic. Moreover, significance of regression model and change in R (F tests), model summary (R, R^2 and adjusted R^2), unstandardized regression coefficients (B with 95% CI) and standardized regression coefficients (β) were reported. Significant determinants were identified, and additional linear regressions were performed to obtain final turnover intention models and effect size (Cohen's f^2) for each model was calculated.

3 | RESULTS

3.1 | Description of participants

A total of 1708 nursing respondents completed the survey for an estimated participation rate of 11%, but 1705 answered the question about caring for COVID-19 patients and were included in these analyses. The majority of participants were woman (87%) and in middle age (overall mean $= 41.10$, SD $= 10.82$), which is similar to the national-level nursing characteristics (Canadian Institute for Health Information [CIHI], 2020). A total of 790 were nurses (46.3%), and 915 (53.7%) were LPN working in acute care (29.9%), long-term care (32.8%) or other settings (37.2%) such as community care, public health and rehabilitation. A proportion of 64.7% completed a professional or college degree, 26.7% a bachelor's degree (or equivalent) and 6.5% completed graduate studies (master's or doctoral degree). Their average work experience in the profession was 14 (SD $= 10.27$) and 9 years (SD $= 8.24$) in their current health care setting. The majority (85.1%) had a permanent position and worked on day shift (59.7%) or evening shift (20.2%). A proportion of 30.5% reported being poorly prepared to offer safe care during the pandemic, and 42.3% described being overwhelmed at work. Almost half ($n = 845$, 49.6%) reported being infected or that a member of their team had been infected with COVID-19 at work. From the total sample, 782 nursing staff (45.9%) reported that they provided care to COVID-19 patients. From them, 468 (59.9%) had provided care to COVID-19 patients who died.

Sample characteristics of nursing staff who provided care to COVID-19 patients and those who did not are described in Table 1. Proportions of nurses and LPN, education level, work experience in the current setting and employment status were similar between the two groups. A higher proportion of men and nursing staff working in acute care were represented in the group who provided care to COVID-19 patients. The group who did not provide care to COVID-19 patients included older nurses, those from the baby boomer generation and participants who had more work experience in the profession. Type of work shifts (day, evening and night) also differed between the groups. Interestingly, no difference in preparedness was found between the groups. However, a higher proportion of nursing staff who provided care to COVID-19 patients felt overwhelmed at work whereas those who did not provide care to COVID-19 patients felt their situation at work was under control. Not surprisingly, the nursing staff who provided care to COVID-19 patients reported higher rates of having been infected at work and/or to have had a team member who had become infected than the nursing staff who did not care for COVID-19 patients.

TABLE 1 Description of nursing participants (N = 1705)

Characteristic	Provided care to COVID-19 patients N = 782	Did not provide care to COVID-19 patients N = 923	Chi-square or t test
Gender: n (%)			
Woman	653 (83.6)	831 (90.1)	$\chi^2 = 16.31$**
Man	110 (14.1)	76 (8.2)	
Other/prefer not to answer	18 (2.3)	15 (1.6)	
Age: Mean (SD)	40.15 (10.23)	41.88 (11.24)	$t = -3.31$**
Generation: n (%)			
X	372 (47.9)	401 (47.0)	$\chi^2 = 16.57$**
Y	232 (46.3)	328 (41.7)	
Baby boomers	316 (5.8)	194 (11.3)	
Profession: n (%)			
Nurse	369 (47.2)	421 (45.6)	$\chi^2 = 0.42$ NS
LPN	413 (52.8)	502 (54.4)	
Education: n (%)			
Professional or college	497 (63.7)	606 (65.7)	$\chi^2 = 1.40$ NS
Undergraduate	219 (28.1)	236 (25.6)	
Graduate	49 (6.3)	62 (6.7)	
Experience in nursing profession (years): mean (SD)	12.52 (8.91)	15.25 (11.13)	$t = -5.58$**
Health care setting: n (%)			
Acute care	316 (40.4)	194 (21.0)	$\chi^2 = 78.44$**
Long-term care	232 (29.7)	328 (35.5)	
Other	234 (29.9)	401 (43.4)	
Experience in current setting (years): mean (SD)	8.76 (7.82)	9.45 (8.56)	$t = -1.73$ NS
Employment: n (%)			
Permanent	665 (85.1)	786 (85.2)	$\chi^2 = 0.51$ NS
Temporary	93 (11.9)	104 (11.3)	
Other	23 (2.9)	32 (3.5)	
Work shift: n (%)			
Day	414 (53)	604 (65.6)	$\chi^2 = 28.30$**
Evening	180 (23)	164 (17.8)	
Night	99 (12.7)	80 (8.7)	
Rotation	88 (11.3)	73 (7.9)	
Preparedness to offer safe care during the pandemic: n (%)			
Well prepared	535 (68.4)	645 (70.3)	$\chi^2 = 0.48$ NS
Poorly prepared	247 (31.6)	273 (29.7)	
Situation at work: n (%)			
In control	366 (46.9)	599 (65.4)	$\chi^2 = 58.60$**
Overwhelmed	414 (53.1)	317 (34.6)	
Have you or a member of your team been infected with COVID-19: n (%)			
Yes	610 (78.0)	235 (25.5)	$\chi^2 = 479.71$**
No	150 (19.2)	660 (71.5)	
Prefer not to answer	22 (2.8)	28 (3.0)	

Note: Each characteristic had fewer than 20 missing data.
Abbreviations: NS, not significant; SD, standard deviation.
**$p < .001$.

3.2 | Influence of caring for COVID-19 patients on indicators of job demands, resources, strain and performance

Descriptive and inferential statistics of the impact of caring for COVID-19 on job demands, resources and strain and performance variables are presented in Table 2. There was a significant influence of providing care to COVID-19 patients on the combined dependent variables including chronic fatigue, leadership, work satisfaction, quality of care and turnover intention ($\Lambda = 0.96$, $F = 8.74$, $p < .001$). Leadership, work satisfaction and perceived quality of care (in general and prior to COVID-19) mean scores were lower in nursing staff who cared for COVID-19 patients compared with those who did not. In addition, chronic fatigue and intention to leave the current setting was higher in nursing staff who cared for COVID-19 patients than those who did not. However, no differences between groups were found for intention to leave the nursing profession.

3.3 | Influence of COVID-19-related job demands and resources on turnover intention during the pandemic

Overall nursing staff proportions of 29.5% and 22.3% reported a high intention (scores 5 to 7) to leave the setting and the profession, respectively. The influence of other relevant COVID-19 related characteristics on turnover intention using the 7-level scale was examined (Table 3). Interestingly, nursing staff poorly prepared and overwhelmed at work during the pandemic reported a higher intention to leave their current setting and the profession than those well prepared and in control. A greater intention to leave the setting was found in participants who reported self-infection with COVID-19 and/or infection of a team member at work. No differences were found for intention to leave the profession in relation to infection (self-infection or team member infection) with COVID-19 and caring for infected patients who died.

In the initial regression for intention to leave the current setting with three blocks, all blocks of variables contributed to a significant change in R^2 (F change > .001) increasing from an explained variance of 2% (Block 1—individual factors), 20% (Block 2—job demands and resources) to 35% (Block 3—strain and performance). Work experience in the current setting from Block 1, situation at work and leadership from Block 2 and chronic fatigue and work satisfaction from Block 3 were significant determinants in the model. The final regression model was significant ($F = 164.51$, $p < .001$; Table 4) and explained 35% of the variance of the intention to leave the setting with an effect size of Cohen's $f^2 = 0.53$.

In the initial regression for intention to leave the profession with three blocks, all blocks of variables contributed to a significant change in R^2 (F change > .001) increasing from an explained variance of 1% (Block 1—individual factors), 15% (Block 2—job demands and resources) to 29% (block 3—strain and performance). However, only variables from Block 2 (i.e., caring for COVID-19 patients, preparedness and leadership) and Block 3 (i.e., chronic fatigue, work satisfaction and quality of care) were significant determinants in the model. The final regression model was significant ($F = 108.44$, $p < .001$; Table 4) and explained 29% of the variance of the intention to leave the profession with an effect size of Cohen's $f^2 = 0.41$.

4 | DISCUSSION

The global nursing shortage was a well-recognized and well-researched issue before the pandemic (Canadian Nurses Association [CNA] and Registered Nurses Association Ontario [RNAO], 2010; International Council of Nurses [ICN], 2021; Labrague & De los Santos, 2020), and there are now signs that the pandemic may be worsening this situation (Berlin et al., 2021). Furthermore, this long-standing global public health crisis has only served to exacerbate the chronic issues the nursing workforce has faced in the past few decades such as high amounts of turnover, absenteeism, sick leaves and heavy workloads and unsafe patient ratios (CNA and RNAO, 2010; Hognestad Haaland et al., 2020; Moloney et al., 2018;

TABLE 2 Descriptive statistics and F tests of between-subjects effects for each dependent variable

Variable	Provided care to COVID-19 patients Mean (SD)	Did not provide care to COVID-19 patients Mean (SD)	F test
Chronic fatigue	56.63 (28.13)	50.39 (28.44)	19.02***
Leadership	20.00 (7.00)	21.91 (7.29)	27.88***
Work satisfaction	4.16 (1.64)	4.60 (1.45)	33.11***
Perceived quality of care (in general)	2.87 (0.79)	3.05 (0.78)	21.13***
Perceived quality of care current versus before the pandemic	2.73 (0.89)	2.85 (0.75)	9.27**
Intention to leave the current setting	3.46 (2.12)	3.12 (2.01)	10.49**
Intention to leave the profession	2.88 (2.02)	2.84 (1.97)	0.12 NS

Abbreviations: NS, not significant; SD, standard deviation.
*$p < .05$. **$p < .01$. ***$p < .001$.

TABLE 3 Turnover intention and COVID-19 work-related characteristics

| Characteristic | Turnover intention | | | | |
| | Setting | | | Profession | |
	Mean (SD)	t test		Mean (SD)	t test
Preparedness					
Poorly prepared	4.12 (2.11)	11.16***		3.60 (2.13)	9.69***
Well prepared	2.88 (1.93)			2.52 (1.84)	
Situation at work					
In control	2.69 (1.89)	−13.19***		2.44 (1.81)	−9.59***
Overwhelmed	4.00 (2.05)			3.39 (2.10)	
Self-infected or team infected					
Yes	3.39 (2.04)	−3.01**		2.86 (2.00)	−0.77 NS
No	3.08 (2.07)			2.79 (1.96)	
Provided care to COVID-19 patients who died					
Yes	3.58 (2.13)	2.00* NS		2.93 (2.05)	0.87 NS
No	3.26 (2.11)			2.80 (1.99)	

Abbreviations: NS, not significant; SD, standard deviation.
*$p < .05$. **$p < .01$. ***$p < .001$.

TABLE 4 Regression coefficients and model summary for determinants of turnover intention: (a) setting and (b) profession

| Determinant | (a) Turnover intention—setting | | | (b) Turnover intention—profession | | |
	B	95% CI	β	B	95% CI	β
Experience in setting	−.02***	−0.03 to −0.01	−.08	—	—	—
Caring for COVID-19 patients	—	—	—	.28***	0.11 to 0.45	.07
Situation at work	−.12**	−0.21 to −0.03	−.06	—	—	—
Preparedness	—	—	—	−.17**	−0.29 to −0.05	−.07
Leadership	−.05***	−0.06 to −0.03	−.16	−.02**	−0.03 to −0.01	−.08
Chronic fatigue	.02***	0.02 to 0.03	.31	.03***	0.02 to 0.03	.37
Work satisfaction	−.30***	−0.36 to −0.23	−.22	−.19***	−0.26 to −0.13	−.15
Quality of care	—	—	—	−.14*	−0.26 to −0.01	−.05
Model summary	$R = .59$	$R^2 = .35$ Adjusted $R^2 = .34$		$R = .54$	$R^2 = .29$ Adjusted $R^2 = .29$	

Note: B, unstandardized regression coefficient; CI, confidence interval; β, standardized regression coefficient.
*$p < .05$. **$p < .01$. ***$p < .001$.

Van der Heijden et al., 2019). Using the JD-R model (Bakker et al., 2008) as a conceptual framework, the present study argued that caring for COVID-19 patients during the pandemic is an important job demand that is likely to increase nursing staff's strain (e.g., chronic fatigue and low work satisfaction) and impact their performance in terms of quality of care. We further argued that if this uncontrollable job demand is not coupled with appropriate job resources, nursing staff will report increased turnover intentions. To explore these hypotheses, a large sample of nursing staff were surveyed, and results showed that nursing staff who cared for COVID-19 patients perceived less transformational leadership from their superior and had higher chronic fatigue, lower work satisfaction, lower perceived quality of care and greater intention to leave their current position. Job demands (caring for COVID-19 patients and situation at work) and job resources (transformational leadership, preparedness) as well as indicators of strain (chronic fatigue and work satisfaction) were found to be significant determinants of nursing staff's turnover intentions.

At the start of 2021, the ICN had raised significant concerns about the mass trauma that is being experienced by nurses worldwide, as a direct result of the COVID-19 pandemic. According to their report, 90% of national nursing associations are concerned that heavy workloads, lack of resources, burnout and stress related to the pandemic are the drivers behind the increased numbers of nurses leaving the profession (ICN, 2021). Country data in relation to turnover intention during the pandemic remain sparse. However, one report from the United Kingdom shows the prepandemic turnover rate was 20%,

and, in 2021, there are reports that 36% of the current nursing work-force is reporting their intention to leave their setting due to increased pressures at work (ICN, 2021). Similarly, our study findings demonstrate that nursing staff reported a high intention to leave their current setting (29.5%) and the profession (22.3%) during the COVID-19 pandemic. Previous studies in the province of Quebec suggested intentions to leave the profession in about 13% of novice nurses (Lavoie-Tremblay et al., 2008) and turnover rate among all nurses of 19.9% (Duffield et al., 2014). Our findings suggest that intention to leave the current setting was higher in nursing staff who cared for COVID-19 patients and for participants who reported self-infection with COVID-19 and/or infection of a team member at work. We argue that these factors are additional job demands that increase nurses' turnover intentions. However, no differences were found for intention to leave the nursing profession in relation to these factors. The present study also highlighted a number of job resources that may lessen the influence of these job demands such as preparedness, feeling in control at work and the leadership style of nursing management. In line with the JD-R model (Bakker et al., 2008) that stipulates that employee's strain (e.g., chronic fatigue, low work satisfaction) is reduced when job demands are met with adequate job resources, we believe that the present study adds significant insights into what can be done well or better to ensure nurses' strain is limited in times of increasing uncontrollable demands. Data on intention to leave the nursing profession during the pandemic is only beginning to emerge, but the more information we can gather on what was helpful, the better we can globally be prepared for the next situation of high demand.

The pandemic has created additional demands or stressors for nursing staff caring for COVID-19 patients. New requirements to wear PPE when providing care, rapidly changing protocols, more patient admissions, increasing bed capacity, including intensive care unit (ICU) beds, caring for more critically-ill patients and deployment to other areas of work and navigating unfamiliar settings are some of the additional job demands confronting nurses during the pandemic (Joslin & Joslin, 2020; Moradi et al., 2021) (ICN, 2021). The demands related to the pandemic are associated with psychological challenges and experiences of worry, restlessness, depression, confusion, anxiety, nervous moods and aggression (Lorente et al., 2021; Moradi et al., 2021). Nurse intention to leave and actual exit rates are highly influenced by job characteristics for which psychological stress and job dissatisfaction are products of the work environment (Labrague et al., 2020). Poor work environments are characterized as having heavy workloads, increased emotional demands and a high-level of work–life interference, factors magnified by the COVID-19 pandemic.

Another noteworthy finding from our study is that nursing staff who were poorly prepared and who felt overwhelmed at work during the pandemic reported a higher intention to leave their current setting and the profession compared with those who reported being well pre-pared and in control at work. Furthermore, nurses who reported hav-ing a leader with a transformational leadership style were more likely to report lower turnover intention. These findings are in line with the literature. During a disease outbreak, inevitably, nurses will be given new roles and additional tasks, and when nurses are adequately

trained, decreased levels of fear were observed (Labrague & De los Santos, 2020). In another study, COVID-19 pandemic training brought a significant reduction in nurses' fear of the disease and increased their mental health functioning, compared with the nurses who did not receive such training (Labrague et al., 2020; Wu et al., 2020). Past research has also found that a lack of nursing leadership is a critical factor of nurses' intention to leave their setting (AI et al., 2020; Broetje et al., 2020; Gatti et al., 2020).

Finally, high chronic fatigue and low work satisfaction, two indi-ces of nursing staff's strain, were found to be strong determinants of intention to leave the profession. In their qualitative study among nurses working in the ICU with COVID-19 patients, Moradi et al. (2021) found that ICU nurses faced physical exhaustion mostly related to wearing PPE which reduced their working ability and capac-ity to focus, as the equipment was physically heavy, resulting in fatigue and skin damage. Moreover, chronic fatigue was also reported for nurses having to wear masks and other equipment, developing sores from masks and creating communication difficulties when speaking with patients and colleagues (Maben & Bridges, 2020). From AI's review ($n = 37$), work satisfaction is a significant predictor of turnover intention. Work satisfaction is also affected by job demands and resources such as workload, salary and contingent rewards, prob-lem coping and compassion fatigue (AI et al., 2020).

4.1 | Limitations

This study was undertaken using a cross-sectional survey design, only focusing on a specific period of time; therefore, relationships between identified job demands and resources as well as indices of strain and nurses' intention to leave cannot be fully interpreted casually. As the pandemic situation evolves over time, future research could use a lon-gitudinal design to consider predictors of nursing staff's perception of quality of care, work satisfaction and intention to leave the health care setting and the profession. Finally, future research should investi-gate what mediates the proposed relationships. Identifying the main mechanism driving turnover intentions would be highly valuable for nurse managers to be better prepared for another situation of high demand.

5 | CONCLUSIONS

The COVID-19 pandemic has given the world the opportunity to high-light the contribution and value the nursing workforce brings, with its professional reputation strengthening and growing. Unfortunately, the COVID-19 pandemic remains a threat, and the work of the nursing staff is not over yet, and their health and safety remain at risk. Given all of the praise from the public and politicians for our frontline nurs-ing staff directly facing the pandemic, these recommendations should transform into supportive action by allocating sufficient financial resources to support them, now and in the future, as the profession recovers from the crisis. There is an urgency to protect the safety and

well-being of nursing staff and to provide support in response to the traumas faced during the pandemic crisis and the recovery phase, with a long-term strategy to increase the recruitment and retention of nursing staff.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

Findings from this study show that nursing staff is facing extreme added demands associated with working through the current pandemic crisis, influencing their well-being, work satisfaction and their intention to leave the profession. Chronic fatigue and low work satisfaction among nursing staff affect their turnover intention. The increase in turnover intention signifies the decline of the nursing workforce, which is an enormous hindering factor to overcoming the COVID-19 situation, and normalizing the health care system, after the pandemic (Kim et al., 2020). It is anticipated that clinical teams will need to be mobilized in order to rebuilt and redefine themselves after the pandemic (Berlin et al., 2021; Chen et al., 2021; Guixia & Hui, 2020) which will require significant insights and efforts from nursing management.

Immediate interventions are essential for enhancing the resiliency and strength of the health care system's capacity to effectively deal with the pandemic. Resilience is a set of adaptive capacities; when a health care system is resilient, it can respond to a changing context and remain functional (O' Sullivan et al., 2014). When faced with a crisis, there is adaptation to the situation with improved capacity or operational protocols, with the objective to remain healthy and functional, at the system level and individual level.

Therefore, upstream organisational measures are vital to support the mental health of nursing staff and address their fear of COVID-19 through peer and social support, psychological and mental support services (e.g. counselling or psychotherapy), provision of training related to COVID-19 and accurate and regular information updates. Provision of training and education to effectively care for these patients is essential to enhancing the nursing staff's knowledge of the disease and increasing their preparedness to providing care to coronavirus patients. The nursing staff must be educated and trained with the latest and most accurate information related to the coronavirus virus including causative factors, proper infection control practices, hospital protocols, symptom presentation and management, disease transmission and preventing transmission to themselves, co-workers and their family members. While these sources of support target function-based management of COVID-19, interventions fostering nurse individual and collective resiliency and adaptive capacity to the pandemic crisis are needed too (Dewey et al., 2020).

Finally, the present study offers initial evidence for a number of job demands and resources that can be influenced by nursing management even in contexts where additional demand is not controllable such as in a pandemic. By proactively addressing factors such as job situation, preparedness, leadership style and targeting indices of strain such chronic fatigue and work satisfaction, nursing management could be in a better position to face the next pandemic and protect nurses' physical and psychological health all while reducing overall turnover.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

ETHICS STATEMENT

The study (2021-2451) obtained ethics approval from the Medical/ Biomedical Research Ethics Committee of the associated provincial health organisation.

DATA AVAILABILITY STATEMENT

Authors do not wish to share the data.

ORCID

Mélanie Lavoie-Tremblay https://orcid.org/0000-0001-8707-9855
Céline Gélinas https://orcid.org/0000-0001-7948-5570
Eric Tchouaket https://orcid.org/0000-0002-4309-0478
Dominique Tremblay https://orcid.org/0000-0002-1798-5681
Marie-Pierre Gagnon https://orcid.org/0000-0002-0782-5457
José Côté https://orcid.org/0000-0002-0617-2861

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