RESEARCH ARTICLE

The Combined Contribution of Social Support and Occupational Factors in Promoting Post-Traumatic Growth in Nurses Caring for COVID-19 Patients: A Correlational Study

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Abstract: *Background*: During the Coronavirus Disease 2019 (COVID-19) that began in March 2020, nurses encountered unprecedented challenges, leading to significant physical and psychological distress. This study investigated the factors contributing to posttraumatic growth (PTG) among nurses following the pandemic, focusing on personal, social, and organizational predictors. *Methods*: This cross-sectional correlational study used survey data from 307 nurses who provided direct care to COVID-19 patients. Participants completed an online survey that included items on demographic information, trauma experiences, social support from personal and work relationships, occupational factors (e.g., resource availability, job conditions, job satisfaction), and PTG. Multiple regression analyses were conducted to identify the significant predictors of PTG. *Findings*: Coworker support was the strongest predictor of PTG, followed by job conditions, job satisfaction, and personal interactions. Resource availability, specifically that of mechanical ventilators, also significantly predicted PTG. However, supervisor support and PPE availability of personal protective equipment did not significantly influence PTG. *Conclusion*: This study contributes to the literature on PTG at work by examining the effects of occupational enablers and proposing practical interventions for healthcare organizations. *Application to Practice*: Our findings suggest that occupational health practices should focus on enhancing peer support, improving working conditions, ensuring adequate resources, and providing comprehensive mental health support. These measures can help promote nurses' PTG and ensure their well-being following a traumatic event.

Keywords: COVID-19, post-traumatic growth at work, healthcare, nurses, leadership, management

Background

Trauma can serve as a catalyst for posttraumatic growth (PTG), which refers to significant positive transformations in self-perception, relationships with others, and philosophy of life (Cui et al., 2021; Tedeschi & Calhoun, 1996), typically arising from struggles with severe life crises (Maitlis, 2020). Experiencing PTG is associated with enhanced life satisfaction (Mostarac & Brajković, 2022) and, importantly, improved coping abilities in the workplace (Sim et al., 2024). Given its potential to help individuals reframe and grow from traumatic experiences in the workplace (Maitlis, 2020), there is a growing need for a better understanding of the conditions that foster PTG in the workplace (Feingold et al., 2022). This need has become particularly prominent in the nursing context in the wake of the coronavirus disease (COVID-19) pandemic (Cui et al., 2021).

The pandemic placed extraordinary demands on nurses serving on the front lines of patient care. Even under normal conditions, nurses—primarily responsible for direct care delivery—are exposed to heavy workloads and occupational risks (Babamohamadi et al., 2023), making them more vulnerable to physical and psychological distress than other healthcare professionals (Pappa et al., 2020). These vulnerabilities were intensified during the pandemic, as nurses worldwide were subjected to prolonged trauma and extreme emotional strain. This struggle increased the risk of developing posttraumatic stress disorder, commonly referred to as post-traumatic stress disorder (PTSD; Hernández-Bojorge et al., 2024). PTSD is characterized by cognitive dissonance and emotional distress triggered by traumatic events, involving either

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Applying Research to Occupational Health Practice

This study investigated the factors influencing posttraumatic growth among nurses who had provided direct care to COVID-19 patients in acute care hospitals. The findings reveal that strong peer support and a positive work environment contribute significantly to nurses' ability to experience personal growth following traumatic events. For occupational health practice, these insights underscore the importance of fostering a collaborative work culture that encourages peer support, advocating for adequate resources needed for direct patient care, and improving job satisfaction to build nurses' resilience. Hospital administrators, nurse managers, and staff nurses must implement supportive interventions at both the physical and psychological levels to transform traumatic work experiences into opportunities for growth.

direct or indirect experiences of potential or actual death or repeated exposure to distressing details of such events (American Psychiatric Association, 2020; Raudenská et al., 2020).

A large-scale international study conducted during the pandemic found that 13.3% of more than 12,000 nurses scored above the clinical threshold for trauma symptoms indicative of potential PTSD (Chen et al., 2021). Moreover, nearly one-quarter of all healthcare workers overall met the diagnostic criteria for the disorder (Hennein et al., 2021). In addition, a national survey by the Korean Health and Welfare Resources Research Institute found that approximately 60% of nurses did not take proper breaks and 77% continued to work while sick during the pandemic (Kang et al., 2022). Respondents also reported increased responsibilities, insufficient personal protective equipment (PPE), sleep disturbances, and fear of infection—all contributing to elevated psychological distress, including anxiety, depression, and, in severe cases, suicidal ideation (Kang et al., 2022).

Amid these challenges, the COVID-19 pandemic also provided an opportunity to explore how positive psychological changes can emerge in nurses following mass traumatic events (Cui et al., 2021; Raudenská et al., 2020). For some individuals, the processing of trauma may even prompt reflective rumination, which can lead to PTG (Feingold et al., 2022). For example, during the pandemic, nurses reported developing PTG by reassessing their life values and strengthening their interpersonal relationships (Yim & Kim, 2022). This growth enabled them to continue working in the nursing profession and to perform more effectively in high-stress trauma situations (Zeng et al., 2024). In such cases, the pandemic functioned not only as a massive traumatic event but also as a catalyst for positive psychological changes (Cui et al., 2021; Raudenská et al., 2020). However, a gap remains in understanding how occupational conditions facilitate PTG in response to trauma (Feingold et al., 2022; Maitlis, 2020). While existing studies have primarily focused on individual psychological processes such as self-disclosure, deliberate rumination, and adaptive coping (Finstad et al., 2021; Yim & Kim, 2022; Zhang et al., 2021), less attention has been paid to the organizational and environmental factors that support PTG, particularly among healthcare workers (O'Donovan & Burke, 2022).

Accordingly, the present study aimed to identify the key factors that contribute to the development of PTG among Korean nurses who provided direct care to patients with COVID-19. Building on Maitlis's (2020) model of PTG at work and previous empirical studies, this study investigated how various occupational and relational conditions influenced nurses' PTG during the COVID-19 pandemic. The predictors examined in this study of nurses' PTG during the pandemic are organized into five conceptual categories, as illustrated in Figure 1: (1) critical incident experience, (2) social support from personal relationships, (3) social support from work relationships, (4) resource availability, and (5) occupational perceptions. The following sections outline each category and its theoretical grounding. The first category was included based on prior research suggesting that exposure to critical incidents can positively influence personal growth (Okoli et al., 2021; Sattler et al., 2014; Yim & Kim, 2022). To capture this, the study included variables indicating whether nurses had contracted COVID-19 or cared for patients at risk of COVID-19 transmission.

The second and third categories were informed by Maitlis's (2020) model of PTG at work, which emphasizes the role of support from both personal and work relationships in facilitating growth after trauma. This model highlights "enablers" that help employees manage emotional disruptions after traumatic events, thereby promoting positive sense-making. Among these enablers, personal and work-related relationship support—particularly the latter—has been shown to play an essential role in coping with emotional distress and sustaining commitment in the workplace. Prior studies on various professions, such as emergency workers, military personnel, and athletes, have consistently shown a positive association between support from workplace relationships and PTG (Donovan, 2022; Moore et al., 2021; Sattler et al., 2014; Seol et al., 2024). Building on these findings, the present study examined two specific sources of work-based support—coworkers and supervisors—to explore how distinct types of occupational support influence nurses' PTG.

The fourth category focused on resource availability. Previous research has shown a positive relationship between a better work environment and PTG among nurses (S. Y. Jung & Park, 2021). Additionally, the Conservation of Resources (COR) theory posits that access to sufficient resources is essential for fostering resilience and managing stress after traumatic events (Sattler et al., 2014). In healthcare settings, certain professional resources are vital in facilitating PTG (Blanco-Donoso et al., 2021). For example, the shortage of PPE was a key concern during the pandemic, despite its critical role in preventing viral

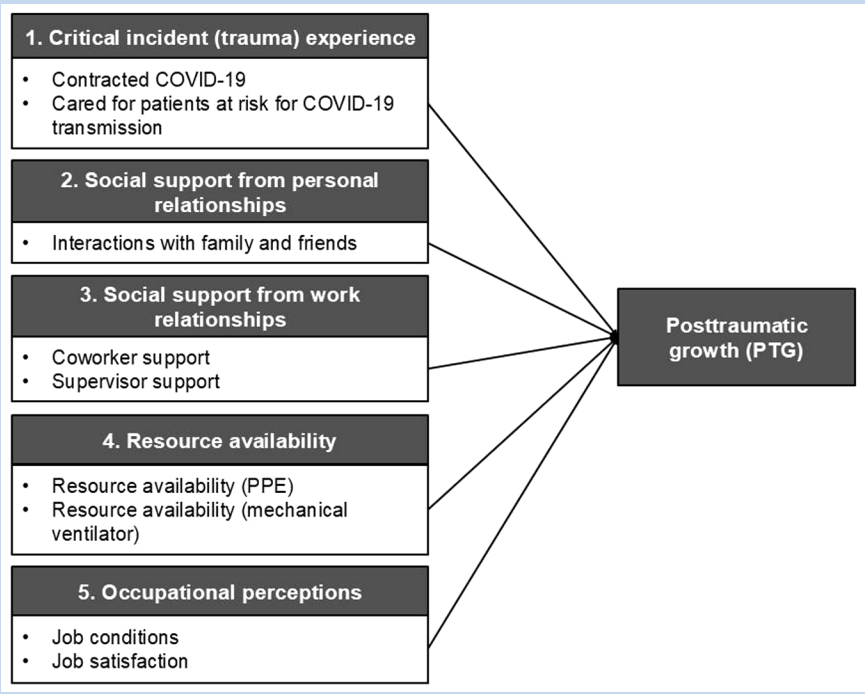

Figure 1. Research Model of Posttraumatic Growth (PTG) predictors in this study
Note. PPE = personal protective equipment.

transmission (Delgado et al., 2020). Empirical studies have linked PPE shortages to lower levels of PTG among healthcare workers (Moreno-Jiménez et al., 2021), underscoring the need for adequate resources to promote PTG in nurses who care for patients with COVID-19. Therefore, we hypothesized that the availability of essential treatment resources would contribute to the development of PTG among nurses. Lastly, the fifth category focused on occupational perceptions. Beyond social support and resource-related factors, this study also considered subjective evaluations of the work environment, such as perceived job conditions and job satisfaction. Prior findings suggest that these perceptions are uniquely and significantly associated with PTG (Sattler et al., 2014), a finding that underscores the need for further investigation into how nurses' subjective occupational experiences influence their psychological growth following trauma.

Previous research on PTG has primarily focused on individual processes and the role of immediate social support in facilitating growth (Maitlis, 2020). However, to advance the understanding of PTG in workplace settings, it is critical to consider a broader range of predictors, including social and occupational factors as well as subjective perceptions of their work environments. Accordingly, this study aimed to investigate how trauma experience, support from personal and work relationships, resource availability, and perceived job conditions and satisfaction contribute to PTG among nurses during the COVID-19 pandemic (see Figure 1 for a summary of study variables).

Methods

Research Design

This cross-sectional, correlational study analyzed data from nurses as part of the Global Consortium of Nursing and Midwifery Studies, a multinational consortium comprising 75 countries. The current study used responses from only Korean nurses, as the Korean dataset contains unique data on PTG.

Setting and Sample

In November 2022, data were collected from two Korean hospitals that had experienced a significant influx of COVID-19 patient admissions. The nursing departments at these hospitals assisted in participant recruitment by sending invitation emails that contained secure links to an online survey targeting nurses who cared for COVID-19 patients. As only certain hospitals in Korea were designated as COVID-19 treatment facilities with isolation beds, snowball sampling was used to ensure an adequate sample size. The inclusion criteria for participants were nurses who had provided direct care to COVID-19 patients in acute care hospitals. Nurses holding managerial positions were excluded because their responsibilities typically did not involve direct patient care. A detailed description of the sampling method has been previously published (Lee et al., 2024). Of the 310 nurses who responded, three responses were excluded due to repetitive response patterns across many items, resulting in a final analytic sample of 307 nurses. This sample size met the statistical rule of thumb of at least 10

participants per independent variable for multiple regression analysis (Maxwell, 2000), thereby validating its adequacy for the study's analytical needs.

Measures

The online survey collected the participants' demographic information, including age (Cui et al., 2021), gender (O'Donovan & Burke, 2022), and nursing experience (Cui et al., 2021). It also gathered data on their educational background (Cui et al., 2021; Okoli et al., 2021), practice setting (public or private hospital), employment status (full-time or part-time), and work unit.

The survey also assessed participants' critical trauma experiences related to the COVID-19 pandemic. First, the nurses were asked if they had been diagnosed with COVID-19 using a binary response (0=*no*, 1=*yes*). Participants also rated the frequency with which they cared for COVID-19 patients who posed a transmission risk to themselves and their families on a 4-point scale ranging from 1 (*none*) to 4 (*often*).

Participants compared the social support they utilized during the COVID-19 pandemic with pre-pandemic levels, focusing specifically on their interactions with family and friends (two items). Responses were recorded on a scale ranging from 1 (*did not use or used less than before*) to 3 (*used more than before*). Cronbach's alpha for the scale was .67.

Coworker and supervisor support were measured using the Copenhagen Psychosocial Questionnaire Scale II, specifically the coworker support (three items) and supervisor support (three items) subscales (Pejtersen et al., 2010). Example items include "How often do you get help and support from your colleagues?" (coworker support) and "How often do you get help and support from your nearest superior?" (supervisor support). Responses were recorded on a scale of 1 (*never*) to 5 (*always*). For the study sample, Cronbach's alpha was .82 for coworker support and .87 for supervisor support.

To assess resource availability during the COVID-19 pandemic, the participants were asked to rate the availability of two essential resources necessary for caring for COVID-19 patients: PPE and mechanical ventilators. The responses were rated on a scale ranging from 1 (*not available*) to 5 (*always available*). For clarity in statistical analysis, the responses were recategorized as 0 (*not/rarely available*) or 1 (*sometimes/usually/always available*).

Guided by previous research (Brešan et al., 2021), participants were asked to rate their overall work environment on a scale of 1 (*poor*) to 5 (*excellent*) to assess job conditions. Job satisfaction was also measured by a single item: "Overall, I am satisfied with my current job." Responses were rated on a scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). Previous research has shown that single-item measures have good psychometric properties (Dolbier et al., 2005**)**.

The 10-item Post-Traumatic Growth Inventory-Short Form was used to measure PTG. This instrument has demonstrated good reliability and construct validity (Cann et al., 2010). Responses were rated on a scale from 0 (*I did not experience this change as a result of my crisis*) to 5 (*I experienced this change to a very great degree as a result of my crisis*). For the study sample, the Cronbach's alpha coefficient for the scale was .91.

Data Analysis

Descriptive statistics were employed to examine sample characteristics, and Pearson correlations were used to investigate the relationships between the predictors and PTG. Multiple regression analyses were conducted to examine the effects of the nine predictors of PTG. In the regression models, we controlled for nurses' age, gender, nursing experience, education level, and practice setting, given their potential impact on PTG (O'Donovan & Burke, 2022; Okoli et al., 2021; see also Cui et al., 2021). All statistical analyses were performed using IBM SPSS V.29.0 (Armonk, NY: IBM Corp.), with a significance level set at $p < .05$.

Ethical Considerations

Ethical considerations were strictly adhered to, ensuring voluntary and anonymous participation, adherence to the Declaration of Helsinki, and ethical approval by the Yonsei University Health System Institutional Review Board (#4-2022-0675). The introduction page of the online survey informed participants of the study's purpose, eligibility criteria, duration, and the estimated time required to complete the survey. They were informed that their participation was voluntary, and they could choose to withdraw at any time without consequences. Written informed consent was obtained from all participants, and mandatory consent checkboxes were included at the beginning of the survey. Participants provided informed consent by selecting these checkboxes.

Results

The demographic characteristics of the participants revealed that the majority were women (n=289, 94.1%), with a mean age of 31.2 (SD=6.5) years (Table 1). The mean nursing experience was 89.4 months (SD=66.2). Most participants held a BSN degree (n=245, 79.8%) and were full-time employees (n=294, 95.8%). Approximately 73.0% (n=224) of the participants worked in private settings, where work units were diverse, with the majority (n=207, 67.4%) working in medical/surgical or medical-surgical units. In addition, a significant number of participants (n=217, 70.7%) had been diagnosed with COVID-19, and 31.3% (n=96) reported frequently caring for patients with COVID-19 who were at risk of transmission. Resource availability was generally high, with only 6.5% (n=20) and 17.6% (n=54) reporting that PPEs and mechanical ventilators were usually unavailable when caring for COVID-19 patients, respectively. The mean score for coworker support was 3.11 (SD=0.83) and 2.81 (SD=0.94) for supervisor support, both measured on a 5-point Likert scale. Social support had a mean score of 1.85 (SD=0.60) on a 3-point scale.

Table 1. Demographic and Organizational Characteristics and Corresponding Mean PTG Scores ($N = 307$)

Characteristics	Category	*n* (%) or *M* (*SD*)	PTG score *M* (*SD*)
Demographic variables			
Gender	Women	289 (94.1)	21.90 (9.98)
	Men	18 (5.9)	22.61 (11.20)
Age		31.2 (6.5)	
Nursing experience (months)		89.4 (66.2)	
Educational level	Associate degree	38 (12.4)	23.00 (9.59)
	Baccalaureate degree	245 (79.8)	21.45 (10.06)
	Master's degree or higher	24 (7.8)	25.25 (10.22)
Employment status	Full-time	294 (95.8)	21.97 (10.11)
	Part-time/temporary	13 (4.2)	21.31 (8.55)
Practice setting	Public	83 (27.0)	22.18 (10.16)
	Private	224 (73.0)	21.85 (10.02)
Work unit	Medical/surgical/medical-surgical	207 (67.4)	21.40 (10.38)
	Critical	43 (14.0)	22.21 (8.41)
	Surgical	19 (6.2)	23.74 (8.99)
	Emergency	16 (5.2)	23.31 (10.82)
	Specialty units	22 (7.2)	23.95 (10.31)
Organizational variables			
Trauma experience (contracted COVID-19)	Yes	217 (70.7)	21.54 (9.81)
	No	90 (29.3)	22.91 (10.57)
Trauma experience (cared for patients at risk for COVID-19 transmission)	Experienced this often	96 (31.3)	20.79 (11.01)
	Occasionally experienced this	139 (45.3)	21.66 (9.72)
	Rarely experienced this	54 (17.6)	22.76 (9.01)
	Did not experience this	18 (5.9)	27.78 (8.41)
Resource availability (PPE)	Not available[a]	20 (6.5)	18.60 (10.96)
	Available[b]	287 (93.5)	22.17 (9.95)
Resource availability (mechanical ventilator)	Not available[a]	54 (17.6)	17.67 (9.82)
	Available[b]	253 (82.4)	22.85 (9.87)

Note. Specialty units include obstetrics, pediatrics, and psychiatry units. *M* = mean; *SD* = standard deviation; PPE = personal protective equipment.
[a]Not available and rarely available.
[b]Sometimes available, usually available, and always available.

Table 2 presents the correlations and descriptive statistics of the key variables. Coworker support (r=.40, p<.001), job satisfaction (r=.35, p<.001), job conditions (r=.35, p<.001), supervisor support (r=.30, p<.001), resource availability of mechanical ventilators (r=.20, p<.001), and interactions with family and friends (r=.15, p=.008) were significantly and positively associated with PTG. Job conditions were significantly negatively correlated with trauma experience of COVID-19 diagnosis (r=−.12, p=.03) and caring for COVID-19 patients at risk of transmission (r=−.21, p<.001). Job conditions were positively correlated with job satisfaction (r=.52, p<.001), coworker support (r=.29, p<.001), and supervisor support (r=.25, p<.001).

Table 3 displays the results of the multiple regression analysis, which identifies the predictors of PTG. The variance inflation factors between the predictors ranged from 1.07 to 2.65, indicating no potential problems with multicollinearity (Hair et al., 1998). The regression model was statistically significant and explained approximately 28% of the variance in PTG. Among various predictors, coworker support was the strongest predictor for PTG (β=.286, p<.001), followed by job conditions (β=.166, p=.008), job satisfaction (β=.126, p=.050), and interactions with family and friends (β=.112, p=.034) based on the standardized coefficients. It is important to note that supervisor support was not a significant predictor of PTG (β=−.007, p=.918). Moreover, the availability of mechanical ventilators was another important predictor, showing a positive and significant association with PTG (β=.107, p=.043), whereas the resource availability of PPE had a non-significant positive association with PTG (β=.022, p=.681).

Discussion

During the COVID-19 pandemic, frontline nurses faced significant challenges in caring for critically ill patients and risking exposure to infectious diseases. Consequently, implementing effective interventions to manage mental health during and after pandemics is crucial (Levi & Moss, 2022). Although extensive research on PTG exists, gaps remain regarding the specific support that organizations can offer to facilitate employees' PTG (Cunningham & Pfeiffer, 2022). This study examined the effects of multiple workplace-related factors influencing PTG among nurses who worked directly with COVID-19 patients and identified key organizational enablers of PTG to address this research gap. Overall, the findings of this study underscore the complex interplay between critical incident experience, social support, and occupational factors in fostering PTG, highlighting significant predictors such as coworker support, job conditions, job satisfaction, and resource availability.

Multiple regression analysis revealed that coworker support was the strongest predictor of PTG among nurses, surpassing the effect of social support from personal relationships. This finding highlights the unique role of different sources of social support in promoting PTG within high-stress professional settings. While the role of social support in promoting PTG is well-established (Tedeschi & Calhoun, 1996; Yim & Kim, 2022), including in healthcare settings (Zhang et al., 2021), our findings underscore the importance of occupational sources of support in high-stress professions when compared to the general population. For instance, Woodward et al. (2015) found that among traumatized adults in the general population, support from family and friends buffered against maladaptive posttraumatic cognitions, whereas support from a close other in the social domain had a limited effect. In contrast, Sattler et al.'s (2014) study of firefighters, an occupational group regularly exposed to trauma, showed that occupational support, rather than non-occupational support (i.e., family), was significantly associated with PTG. Particularly, Donovan (2022) emphasized that peer support within high-stress occupational settings, particularly among first responders (e.g., firefighters, police officers, emergency medical dispatchers), facilitates adaptive cognitive processing and contributes to PTG. Taken together, these findings suggest that in trauma-prone occupational environments, support from coworkers or peers who share similar experiences may be particularly effective, as it provides a sense of shared understanding and professional solidarity. Future research should explore how different sources of support contribute to PTG, with particular attention to the various occupational contexts.

Extending this line of inquiry, the present study further underscores the role of coworker support, particularly given the finding that supervisor support did not significantly predict PTG, is inconsistent with previous research reporting a strong mitigating effect of supervisor support on PTSD in the healthcare context (H. Jung et al., 2020; S. Y. Jung & Park, 2021). One possible explanation for this discrepancy could be the unique stressors and dynamics of the COVID-19 pandemic, where immediate peer support may have been more accessible and practical than support from supervisors, who might also have been overwhelmed by crisis management responsibilities. However, these inconsistent results require further research to clarify the role of supervisory support in nurses' PTG.

Additionally, this study found that the physical state and subjective perception of job conditions were significantly associated with PTG among nurses, supporting COR theory. This theory posits that a well-resourced and supportive work environment is essential for resilience and effective stress management (Sattler et al., 2014). The positive correlation between job conditions and PTG highlights the importance of a positive work environment in facilitating growth after trauma. Thus, when nurses perceived their work conditions as decent, they were more likely to experience positive personal changes despite the adversities they faced during the COVID-19 pandemic. Moreover, resource availability, specifically the availability of medical ventilators, was a significant predictor of PTG. Consistent with previous research (Cui et al., 2021; Levi & Moss, 2022), our findings underscore the importance of providing adequate resources and maintaining working

Table 2. Correlations and Descriptive Statistics for Key Study Variables ($N = 307$)

Variable	1	2	3	4	5	6	7	8	9	10
1. Contracted COVID-19	—									
2. Cared for patients at risk for COVID-19	.08	—								
3. Interactions with family and friends	.00	.07	—							
4. Coworker support	−.04	−.08	.04	—						
5. Supervisor support	.00	−.16**	.10	.63***	—					
6. Resource availability (PPE)	.12*	.04	.12*	.13*	.14*	—				
7. Resource availability (mechanical ventilator)	−.05	−.05	.12*	.20**	.11	.23***	—			
8. Job conditions	−.12*	−.21***	.05	.29***	.25***	−.03	.06	—		
9. Job satisfaction	−.02	−.14*	.17**	.29***	.24***	.17***	.15***	.52***	—	
10. PTG	−.06	−.14*	.15**	.40***	.30***	.09	.20***	.35***	.35***	—
M	0.71	3.02	1.85	3.11	2.81	0.94	0.82	2.72	3.15	21.94
SD	0.46	0.85	0.60	0.83	0.94	0.25	0.38	0.72	0.85	10.04

Note. *M* = mean; *SD* = standard deviation; PPE = personal protective equipment; PTG = posttraumatic growth.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3. Multiple Regression Analysis of Predictors of Posttraumatic Growth Among Nurses ($N = 307$)

Variable	*B*	*SE* (*B*)	β	*p*
Age	0.245	0.123	.159	.048
Gender (0 = Women, 1 = Men)	2.753	2.173	.065	.206
Nursing experience (months)	−0.015	0.012	−.098	.227
Education	0.276	1.195	.012	.817
Practice setting (0 = Public, 1 = Private)	0.939	1.138	.042	.410
Contracted COVID-19 (0 = No, 1 = Yes)	−0.140	1.127	−.006	.901
Cared for patients at risk for COVID-19 transmission	−0.741	0.611	−.063	.226
Interactions with family and friends	1.877	0.879	.112	.034
Coworker support	3.427	0.814	.286	<.001
Supervisor support	−0.074	0.714	−.007	.918
Resource availability (PPE)	0.894	2.174	.022	.681
Resource availability (mechanical ventilator)	2.808	1.379	.107	.043
Job satisfaction	1.475	0.750	.126	.050
Job conditions	2.291	0.855	.166	.008
R^2	.278			
Adjusted R^2	.243			
F (*p*)	8.01 (<.001)			

Note. SE = standard error; PPE = personal protective equipment.

conditions that support high-quality care to foster PTG among nurses. This finding highlights that, beyond personal and social support, the availability of critical medical resources is crucial for enabling healthcare workers to cope with and grow from traumatic experiences. Surprisingly, PPE availability was not significantly associated with PTG, possibly because of its relatively higher baseline availability compared to mechanical ventilators in our study or the possibility that PPE availability was perceived as a baseline necessity rather than a differentiating factor for growth (Çiriş Yildiz et al., 2022).

Contrary to earlier studies that linked direct exposure to trauma with PTG (Sattler et al., 2014; Yim & Kim, 2022), our findings did not show that contracting COVID-19 or caring for patients at risk of COVID-19 transmission significantly predicted PTG among nurses. Although age was used as a control variable in our study, the results supported previous research, showing that age had a significant positive effect on PTG. Prior studies have demonstrated that older nurses and healthcare workers tend to exhibit higher resilience when addressing COVID-19 (Afshari et al., 2021; Croghan et al., 2021) and often adopt avoidant coping strategies (Maiorano et al., 2020) compared to younger nurses. Thus, while direct exposure to trauma may not uniformly lead to PTG, factors such as age and associated resilience could play crucial roles, underscoring the complex and multifaceted nature of PTG among healthcare professionals.

Limitations and Future Studies

Our study expands the literature on PTG in the workplace by examining the effects of occupational enablers and suggesting practical interventions for healthcare organizations. However, areas for theoretical and methodological enhancement in future research exist. Building on Maitlis's (2020) model of PTG at work, future studies could integrate the specific work-related enablers of PTG that were identified in our study into a comprehensive model that includes the processes of psychological sense-making and emotional management. A longitudinal design would be effective in observing the growth process over time, especially in tracking the transformation of

PTSD to PTG, as demonstrated in prior PTG studies (e.g., Yim & Kim, 2022). Furthermore, exploring PTG in response to routine workplace adversities, such as abusive supervision, incivility, and unexpected outbreaks of infectious diseases (Maitlis, 2020) could provide valuable insights. These events are becoming increasingly common but have been underexplored in PTG research (Cunningham & Pfeiffer, 2022).

The study's reliance on retrospective self-reporting may have introduced recall bias, potentially leading participants to minimize or exaggerate past adversities and current perceptions (Zhang et al., 2021). The limited diversity of our participants may hinder the generalizability of the study findings. Therefore, future research should aim to include a broader and more diverse sample from various healthcare settings to enhance the applicability and robustness of the results.

Implications for Occupational Health Nursing Practice

This study clarified the factors promoting PTG following workplace adversity and provides organizational implications for the effective management of work-related trauma, such as the COVID-19 pandemic. Robust social support from coworkers and optimal workplace conditions, including the availability of essential medical resources, were pivotal in enhancing PTG among nurses. Therefore, healthcare organizations and nursing managers should focus on improving the work environment by addressing these factors. This enhancement involves promoting psychological resilience (Finstad et al., 2021) and facilitating sense-making (Maitlis, 2020). To encourage coworker support, nursing management should implement targeted strategies such as experience-sharing meetings and individual consultations among coworkers to foster proactive coping and promote psychological recovery (Zeng et al., 2024).

Additionally, organizations and managers must ensure a timely supply of the necessary work equipment (Delgado et al., 2020) and provide professional training (Liu et al., 2018). Practical steps include engaging in critical incident debriefing, counseling, and emotional management training conducted by trained facilitators (Cunningham & Pfeiffer, 2022; Levi & Moss, 2022; Sattler et al., 2014; Zhang et al., 2021). When implemented as part of targeted and regular psychological interventions that recognize the significance of the work of frontline nurses during the COVID-19 pandemic, such measures have been shown to result in high levels of PTG (Cui et al., 2021).

Author Note

This work was conducted while Dr. Ja Kyung Seo was a postdoctoral researcher at Yonsei University.

Author Contributions

Study conception: Ja Kyung Seo & Seung Eun Lee; Data collection: Seung Eun Lee; Analysis and interpretation of results: Ja Kyung Seo; Draft manuscript preparation: Ja Kyung Seo, Seung Eun Lee, & Jeong Hoon Seol; Revision and editing: Ja Kyung Seo, Seung Eun Lee, & Jeong Hoon Seol. All authors reviewed the results and revised the final version of the manuscript.

Conflict of Interest

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