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Examining the Associations between Personal Protective Equipment, Training, Policy, and Acute Care Workers' Psychological Distress during the COVID-19 Pandemic

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Abstract: Previous studies have demonstrated an association between low personal protective equipment (PPE) availability and high stress and anxiety among frontline healthcare workers during the COVID-19 pandemic. It is unclear how other factors, such as infection prevention and control (IPC) training and IPC policy support, correlate with workers' distress. The current study explores these relationships. We conducted a secondary analysis of a public survey dataset from Statistics Canada. Acute care workers' survey responses (n = 7379) were analyzed using structural equation modeling to examine relationships between features of the IPC work environment and acute care workers' ratings of their stress and mental health. We found that PPE availability ($\beta = -0.16$), workplace supports (i.e., training, IPC policy compliance, and enforcement) ($\beta = -0.16$), and support for staying home when sick ($\beta = -0.19$) were all negatively correlated with distress. Together, these features explained 18.4% of the overall variability in workers' distress. Among surveyed acute care workers, PPE availability was related to their distress; however, having workplace support and an emphasis on staying home when sick was also relevant. Overall, the results highlight that, in addition to PPE availability, workplace supports and emphasis on staying home are important. IPC professionals and healthcare leaders should consider these multiple features as they support acute care workers during future infectious disease outbreaks.

Keywords: infection prevention; personal protective equipment; COVID-19

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1. Introduction

The COVID-19 pandemic has brought intense stress on healthcare workers, with many reporting symptoms of depression, anxiety, and burnout [1–4]. Previous studies have associated these adverse mental health outcomes with the limited availability of personal protective equipment (PPE) such as masks, gloves, and medical gowns [4–7]. However, PPE availability is only one part of the infection prevention and control (IPC) equation; other workplace supports, such as IPC training and IPC policy, may also have some effect on workers' stress and mental health. In other words, it may be some combination of having the tools, knowing how to use them, and having support in doing so, that provides the most benefit.

The goal of the current study is to examine the relationships between these multiple features (i.e., PPE availability, IPC training, IPC social support) and acute care workers' psychological distress, which we define as a combination of high stress and poor mental health. To explore these relationships, we use structural equation modeling with observed variables from a publicly available survey dataset collected in late 2020 among 7379 acute care workers in Canada [8]. This study aims to answer the following research questions: (1) Does the survey dataset support the association between low PPE availability and high healthcare worker distress? (2) Is sufficient PPE/IPC training negatively associated with distress? (3) Similarly, does IPC policy support demonstrate a negative association?

Background

Although this study focuses on healthcare worker distress, most theoretical models instead describe general work stress, implying that prolonged stress can negatively impact workers' mental health [9–11]. One popular model is Kanter's theory of organizational empowerment [12] which is frequently used to describe stress among nurses [13,14]. Kanter's model emphasizes the importance of having 'power' within a work organization. According to Kanter, power results from conditions in the workplace, such as having "information, support, and resources" [14] (p. 261). When these conditions are met, workers are empowered and can thrive. However, when they are not met, workers are *dis*empowered, resulting in work stress. Another model proposed by Fillion et al. [15] includes similar components, such as "workplace support" (p. 6) and "job resources" (p. 6) when explaining "emotional distress" (p. 6) among palliative care nurses. Lindzer et al. [16] propose yet another model, "the demand-control-support model" (p. 38), to explain physicians' stress. In this model, it is not only the challenges of medical practice (the 'demand') that causes physicians' stress; their autonomy (or 'control') and social support ('support') also have an effect. Viewed together, these models suggest that the development of work stress stems from multiple features of the work environment. Some combination of resources, information, support (or lack thereof), and other factors may contribute to acute care workers' stress.

As described above, Kanter and Fillion et al.'s models of work stress highlight 'resources' as having a causal impact on stress. Essentially, these models argue that workers experience stress when they are without the 'tools to do the job.' Within the context of the pandemic, a key infection prevention resource for healthcare workers is personal protective equipment (PPE). Studies to date support the models' proposed effect: healthcare workers have reported that low PPE availability is a significant source of stress and anxiety during the pandemic [4–7]. However, the models of work stress described earlier suggest that we consider other features of the IPC work environment as well. One such feature, drawn from Kanter's' model, is 'information.' Education or training is a common approach to information sharing in healthcare. Education is seen as a core responsibility for infection prevention and control (IPC) professionals and a key strategy for facilitating behavior change towards practices that reduce transmission of infectious diseases [17,18]. Within the context of the pandemic, the importance of educating workers regarding new COVID-related practices has been emphasized in several studies [19,20]. These studies take the pragmatic view that training helps bring workers up to date on the necessary IPC practices; however, it is also possible that an additional benefit of training is that providing workers with crucial information about how to protect themselves from COVID-19 may also reduce their stress.

All the above models also propose 'social support' as a feature that impacts work stress. Definitions of social support vary somewhat; however, it is typically viewed as "attention and instrumental support from coworkers and supervisors" [21] (p. 5). A recent systematic review by Chiguedere et al. [4] found that having low social support was associated with poorer healthcare worker mental health during the pandemic. However, considering infection prevention specifically, instrumental social support would encompass workers' perceptions regarding others' adherence to policies to prevent transmission of COVID-19. In other words, IPC policy compliance is one way that workers demonstrate their support for keeping each other safe; as such, higher commitment to policies may relate to lower worker distress. Enforcement of IPC policies by managers or supervisors can be considered as similar support.

Taken together, these elements of PPE availability, PPE/IPC training, and IPC policy support culminate into an infection prevention work environment. As demonstrated in earlier sections, various models of work stress suggest that it is a combination of the features in a work environment that ultimately explain workers' stress and mental health. As such, considering these combined features may provide a more accurate and comprehensive account of workers' distress. In practice, these models can help health leaders and policy-makers to know whether to direct efforts towards a singular issue (i.e., PPE availability) or whether they ought to consider a multi-faceted approach. However, previous studies of IPC-related work stress during the pandemic have focused exclusively on a single feature, often PPE availability. These studies overlook how multiple features might simultaneously impact workers' distress, resulting in a critical knowledge gap.

The objective of the present study is to evaluate a proposed model to fill that gap (Figure 1). Crucially, the proposed model considers multiple aspects of the IPC environment and predicts directional relationships between (1) PPE availability, (2) IPC/PPE training, (3) IPC policy support, and acute care workers' distress. This part of the model is grounded in Kanter's model of work stress, considering PPE availability as a 'resource,' training as 'information,' and IPC policy support as 'support.' Consistent with that model, we hypothesize that each IPC feature will provide some unique contribution to explaining variability in workers' distress. More specifically, we hypothesize that:

H.1: *Higher PPE availability is associated with lower distress;*

H.2: *Higher IPC/PPE training is associated with lower distress; and,*

H.3: *Higher IPC policy support is associated with lower distress.*

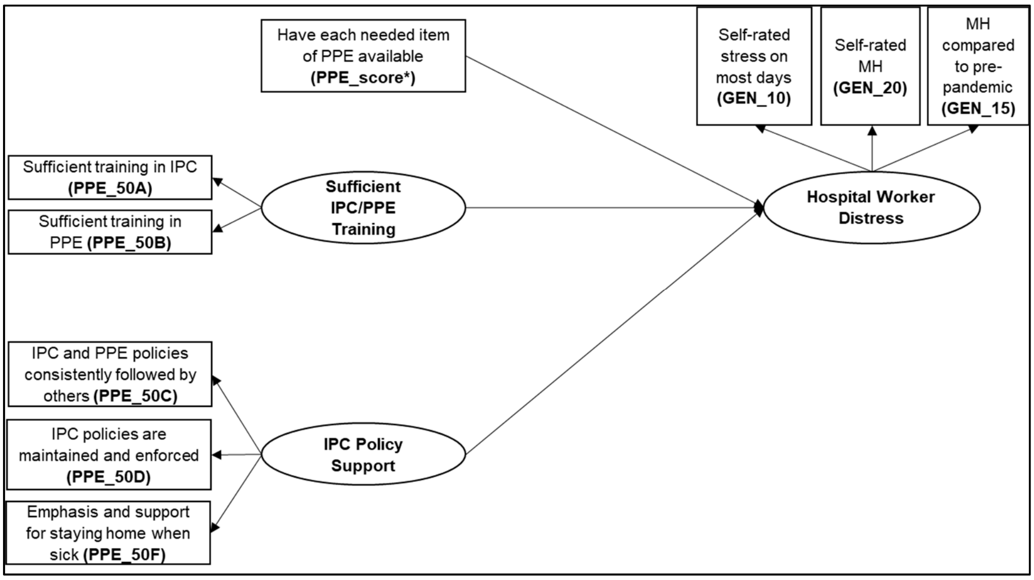

Figure 1. Proposed path model relating IPC work environment with acute care workers' distress during the COVID-19 pandemic. PPE = personal protective equipment; IPC = infection prevention and control; MH = mental health. * $p < 0.05$.

2. Materials and Methods

2.1. Design

We conducted secondary analyses of a public dataset from Statistics Canada [8]. The Impacts of COVID-19 on Health Care Workers: Infection Prevention and Control (ICHCWIPC) survey [22] was a cross-sectional survey conducted in late 2020. The survey asked healthcare workers, including clinical providers (e.g., physicians, nurses, allied health professionals) and non-clinical staff (e.g., administrative support), about their experiences with infection prevention and PPE during the COVID-19 pandemic. Regarding study ethics, Statistics Canada uses a rigorous process to remove or consolidate any variables that could potentially identify individual respondents. Participation in the survey was voluntary. Secondary analyses of public datasets do not require a formal ethics review at our institution.

2.2. Sample

Participants were recruited using an email invitation sent to a compiled list of healthcare organizations (e.g., federal healthcare agencies and regional healthcare organizations), requesting that they distribute the survey link to workers within their organizations [22]. Recruitment advertisements were also circulated using Statistics Canada's social media accounts and website. Interested healthcare workers followed the survey link, and completed it online. In total, Statistics Canada received 18,139 valid survey responses. There is no response rate available for this voluntary survey; however, the total number of responses was 93.5% of the set target of 20,000 responses [22]. Importantly, we used responses from acute care workers only (n = 7379). This group was selected, given their frontline role in providing inpatient care during the pandemic. Demographics for the acute care sample are provided in Table 1.

Table 1. Acute care sample demographics (n = 7379).

	Frequency	%
Female	663	9.0%
Male	6691	90.7%
Not Specified	25	0.3%
Physician	237	3.2%
Nurse	3544	48.0%
Personal Support Worker/Care Aide	59	0.8%
Emergency Medical Personnel	5	0.1%
Allied Health Professional	1850	25.1%
Laboratory Worker	1164	15.8%
Pharmacist	72	1.0%
Dental Worker	4	0.1%
Other	437	5.9%
Not Specified	7	0.1%
Less than 10 years	2522	34.2%
10–19 years	1853	25.1%
20 or more years	1987	26.9%
Not specified	1017	13.8%

2.3. Measures

We used 17 items from the survey in our analyses. As indicators of acute care workers' distress, we used three items that asked respondents to rate their stress or mental health. For stress, the item asked: "Thinking about the amount of stress in your life, how would you describe most of your days?" [23]; responses were on a scale from 1 = *not at all stressful* to 5 = *extremely stressful*. For mental health, the first item asked: "In general, how would you describe your mental health?" [23]; responses were on a scale from 1 = *excellent* to 5 = *poor*. The second mental health item asked: "Compared to before the COVID-19 pandemic, how would you say your mental health is now?" [23]; responses were on a scale from 1 = *much better now* to 5 = *much worse now*. PPE availability was measured using a derived variable, calculated by summing the instances across eight survey items (i.e., PPE_Q30A-PPE_Q30H) where each respondent indicated that, in the time since March 2020, an item of PPE was "Always available when needed" [23] (p. 15). The summed 'Always' instances were divided by the total instances that each respondent indicated that they needed an item of PPE (i.e., total instances of 'Always available when needed,' 'Usually available when needed,' 'Sometimes available when needed,' and 'Never available when needed'). This method produced a single score for each respondent, reflecting the proportion of needed PPE items that were 'Always' available. Notably, a similar procedure was used in a recent study of PPE availability during the pandemic [6]. For IPC/PPE training, we used two items that asked respondents to rate their agreement with the statements: "There was sufficient training on the proper use of PPE" [23] (p. 12) and "There was sufficient training on infection prevention and control (IPC) guidelines or protocols" [23] (p. 12). Responses to these items were on a scale from 1 = *strongly agree* to 5 = *strongly disagree*; however, to facilitate interpretation of the model, we reverse-scaled them so that higher scores represent higher ratings. For IPC policy support, we used three items asking workers to rate their agreement with the statements: "Policies regarding PPE or IPC were consistently followed by others" [23] (p. 28), "IPC policies were enforced and maintained," and "There was sufficient emphasis on and supports for employees to stay home when sick." Responses to these items were on a five-point scale from 1 = *strongly agree* to 5 = *strongly disagree*. Again, the three policy support items were reverse-scaled so that higher scores represent more policy support. Finally, previous findings suggest that proximity to COVID-19 patients also influences healthcare worker distress during the pandemic [24]. As such, an item that asked respondents about providing direct care to suspected and confirmed COVID-19 patients (ENV_25A) was included in the structural equation model as a covariate.

2.4. Data Analysis

Before starting the structural equation modeling analysis, we divided the dataset into training (50%) and holdout (50%) datasets. The training dataset was used to perform any modifications to improve local model fit, while the holdout dataset allowed us to evaluate global fit on unseen data. For the first step of the analysis, we performed confirmatory factor analysis using the lavaan package [25] in R [26] to determine whether the selected survey items were satisfactory indicators of the proposed latent variables (i.e., sufficient training, IPC policy support). Next, we used the same software program to conduct structural equation modeling analyses to examine the relationships between the study variables. For the structural equation modeling analysis, we used a bootstrapping procedure (1000 samples) to estimate all parameters. To answer our research questions regarding the direct effects of PPE availability, PPE/IPC training, and IPC policy support on workers' distress, we examined the significance, direction, and effect size (R^2) of the three standardized path coefficients between the (1) PPE availability score, (2) sufficient training factor, and (3) IPC policy support factor, and the HCW distress factor.

3. Results

3.1. Preliminary Analysis

Descriptive statistics, skewness, and zero-order correlations were calculated using the full dataset for all selected survey items (Table 2, p. 6). Missingness was very low for the items (Table 2), so fitting missing data points was unnecessary. Global fit of the confirmatory factor analysis model was assessed using several indices, including chi-square goodness-of-fit (χ^2), root-mean-square error of approximation (RMSEA), standardized root mean residual (SRMR), Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI). For the chi-square test, significant results (i.e., $p < 0.05$) suggest poor model fit; however, the results of this test can falsely suggest fit problems in very large samples [27]. For RMSEA and SRMR, values less than 0.8 indicate an acceptable fit. Values greater than 0.90 indicate an acceptable fit for the CFI and TLI. Initial fit testing was conducted using the training dataset.

During the first round of confirmatory factor analysis, we found that although the model fit was acceptable ($\chi^2 = 88.69$, $df = 16$, $p < 0.001$, CFI = 0.99, TLI = 0.99, SRMR = 0.02, RMSEA = 0.035, 90% CI = [0.028, 0.043]), the sufficient training and IPC social support factors were highly correlated ($r = 0.81$), suggesting multicollinearity. Based on this observation, we reviewed the item correlation matrix (Table 2) and specified a new model to include a single workplace supports factor, which included the training items and two policy support items related to (1) policy compliance by others and (2) policy enforcement (Figure 2). Theoretically, this model encompasses the same features. PPE availability is still understood as a 'resource.' Training, or 'information,' is still present in the model, but nested into a broader array of workplace supports, that also includes policy compliance and enforcement. Emphasis and support for staying home when sick represent another 'support;' notably, support for staying home appears to be distinct from the other workplace supports.

Table 2. Descriptive Statistics and correlations between variables (n = 7379).

Variable	1	2	3	4	5	6	7	8	9
1. PPE availability	--								
2. Sufficient IPC training	0.31	--							
3. Sufficient PPE training	0.35	0.72	--						
4. IPC/PPE policies consistently followed by others	0.31	0.44	0.52	--					
5. IPC policies are enforced	0.33	0.46	0.55	0.72	--				
6. Emphasis and support for staying home when sick	0.36	0.30	0.36	0.33	0.37	--			
7. Self-rated stress on most days	−0.21	−0.19	−0.21	−0.19	−0.19	−0.23	--		
8. Self-rated MH	−0.22	−0.15	−0.20	−0.18	−0.19	−0.23	0.51	--	
9. MH compared to pre-pandemic	−0.22	−0.15	−0.16	−0.17	−0.18	−0.22	0.38	0.45	--
M	0.70	3.91	3.60	3.08	3.39	2.99	3.12	3.97	3.67
SD	0.29	1.00	1.09	1.14	1.06	1.34	1.09	0.75	0.79
Skewness	−0.72	−1.01	−0.64	−0.09	−0.46	−0.09	−0.16	−0.08	−0.48
Missing Data	1.8%	0.5%	0.4%	0.5%	0.5%	0.4%	0.1%	0.1%	0.3%

Note: PPE = personal protective equipment; IPC = infection prevention and control; MH = mental health.

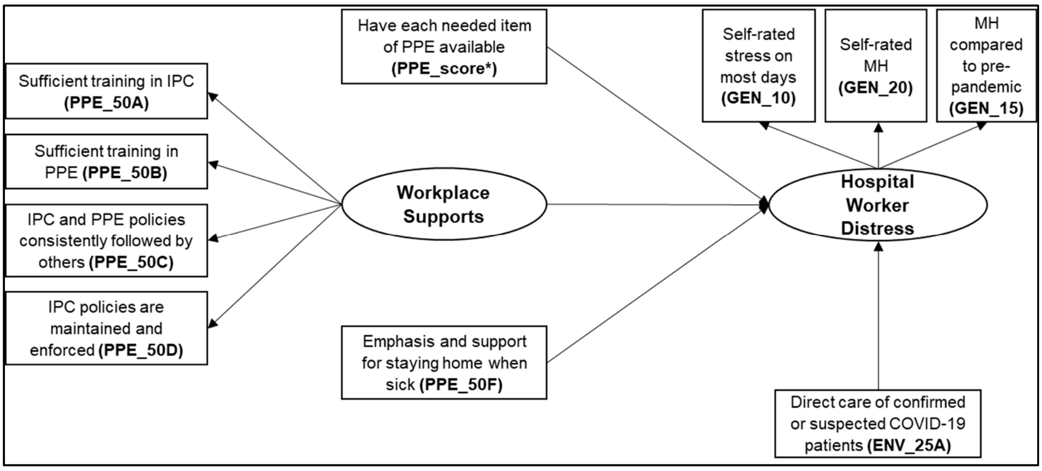

Figure 2. Revised path model relating IPC environment with acute care workers' distress during the COVID-19 pandemic. PPE = personal protective equipment; IPC = infection prevention and control; MH = mental health. * $p < 0.05$.

Model fit for this revised model (Figure 2) was initially poor (χ^2 = 1416.09, df = 13, $p < 0.001$, CFI = 0.85, TLI = 0.77, SRMR = 0.06, RMSEA = 0.173, 90% CI = [0.165, 0.180]). However, using standardized residuals and software modification indices to identify areas of local misfit, we respecified the model to include two covariances (i.e., PPE_50C and PPE_50D; PPE_50A and PPE_50B), which enhanced model fit substantially (χ^2 = 30.98, df = 11, $p < 0.01$, CFI = 1.00, TLI = 1.00, SRMR = 0.01, RMSEA = 0.022, 90% CI = [0.013, 0.032]). Importantly, these items' similar emphasis on training and policies provided some theoretical support for the modifications. The final confirmatory factor analysis model was evaluated using the holdout dataset, and the global fit was similar (χ^2 = 25.38, df = 11, $p < 0.01$, CFI = 1.00, TLI = 1.00, SRMR = 0.01, RMSEA = 0.019, 90% CI = [0.009, 0.029]). The revised model is demonstrated in Figure 2.

3.2. Structural Equation Modelling Analysis

The revised confirmatory factor analysis model (Model 1) fit the training data poorly (see Table 3). As before, standardized residuals and modification indices were reviewed to identify any areas of a local misfit. Two recommended modifications made theoretical sense: (1) a directional pathway such that PPE availability predicted workplace supports, and

(2) a directional pathway such that workplace supports predicted emphasis and support on staying home when sick. These paths were added to respecify the model (Model 2), and the global model fit was assessed again using the training dataset (see Table 3). Model 1 and Model 2 were compared using the chi-square difference test, and Model 2 exhibited a significantly better fit to the data. Model 2 was retained and re-evaluated using the holdout dataset. Global fit with the holdout dataset was in the acceptable range (χ^2 = 263.334, *df* = 29, *p* < 0.001, CFI = 0.98, TLI = 0.97, SRMR = 0.03, RMSEA = 0.048, 90% CI = [0.043, 0.054]). Bootstrapped estimates of standardized path coefficients for the final model are provided in Table 4, and the structural model results are shown in Figure 3.

Table 3. Global fit indices for two proposed structural models in the training dataset (*n* = 3690).

	χ^2			RMSEA		CFI	TLI	SRMR	AIC	BIC
	Value	***df***	***p***	**Value**	**90% CI**					
Model 1	1063.84	29	<0.001	0.102	[0.096, 0.107]	0.90	0.85	0.14	58,435.19	58,558.14
Model 2	216.62	29	<0.001	0.043	[0.038, 0.049]	0.98	0.97	0.03	68,822.40	68,963.79

Note: RMSEA = root-mean-square error of approximation; CI = confidence interval; CFI = comparative fit index; TLI = Tucker–Lewis Index; SRMR = standardized root mean residual; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion.

Table 4. Bootstrapped path coefficients relating features of IPC environment to HCW distress (Model 2) in holdout dataset (*n* = 3689).

			95% CI			
	B	**SE**	**LL**	**UL**	**β**	R^2
HCW Distress						0.184
PPE availability	−0.62	0.09	−0.79	−0.45	−0.16	
Workplace supports	−0.13	0.02	−0.16	−0.09	−0.16	
Emphasis and support for staying home when sick	−0.19	0.03	−0.24	−0.12	−0.19	
Workplace supports						0.241
PPE availability	1.91	0.08	1.73	2.06	0.49	
Emphasis and support for staying home when sick						0.264
Workplace supports	0.61	0.02	0.57	0.65	0.51	

Note: PPE = personal protective equipment; IPC = infection prevention and control; HCW = healthcare worker; CI = confidence interval; LL = lower limit; UL = upper limit.

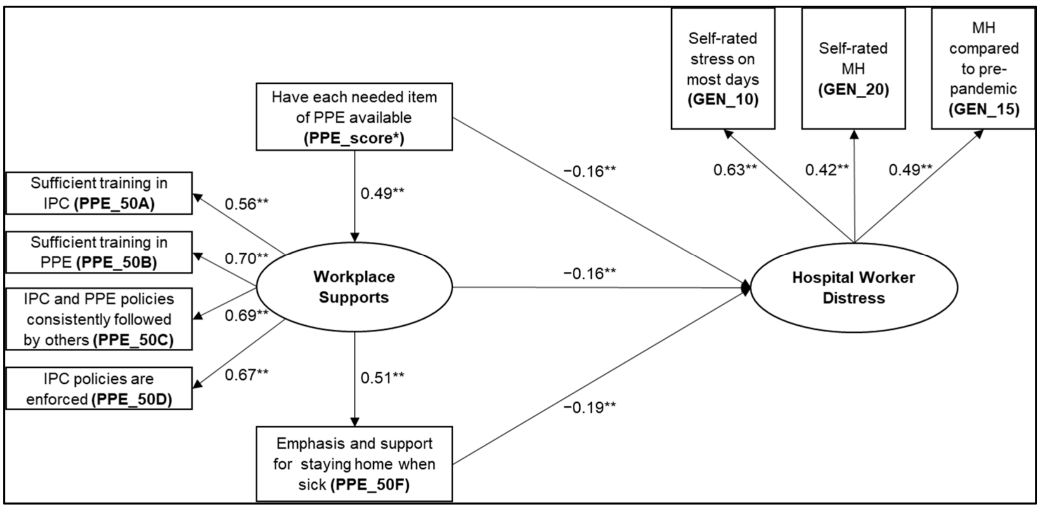

Figure 3. Structural equation results for model relating IPC work environment with acute care worker distress (Model 2) in holdout dataset (*n* = 3689). ** *p* < 0.01. * *p* < 0.05.

Based on the final structural equation model, PPE availability, workplace support, and support for staying home when sick significantly predicted acute care worker distress. There was a significant negative correlation between PPE availability and distress, such that higher PPE availability was associated with lower distress (β = −0.16). There was also a significant negative correlation between workplace supports and distress, such that higher supports were associated with lower distress (β = −0.16). A significant negative correlation was also observed between support for staying home when sick and distress, such that higher support was associated with lower distress (β = −0.19). Together, PPE availability, workplace support, and support for staying home when sick explained 18.4% of the variability in distress. PPE availability was also positively correlated with workplace supports (β = 0.49), with 24.1% of the variability in supports explained by PPE availability. Higher supports, in turn, were positively correlated with support for staying home when sick (β = 0.51), with 26.4% of the variability in support for staying home explained by workplace supports.

4. Discussion

Consistent with our hypothesis (**H.1**), the results of this study support the assertion that, within the context of the COVID-19 pandemic, limited PPE availability contributes to acute care workers' distress. Although we did not find statistical evidence of a direct association between training and distress (**H.2**), this feature was integrated into the broader factor of workplace support, which was significantly associated with distress. Similarly, there was no direct association between IPC policy support and distress (**H.3**); rather, policy compliance and enforcement were relevant dimensions of workplace support. A single indicator—emphasis and support for staying home when sick—was also relevant. This indicator appeared distinct from the other training and policy supports, representing a significant departure from the initial model. Its distinction could be because training and policy are routine activities in healthcare organizations, while support for staying home runs opposite to a deeply embedded culture of presenteeism [28]. The item might also be distinguished by the type of support. As the model suggests, training and policy are workplace organizational supports. On the other hand, support for staying home might be more indicative of social support, capturing dimensions like social permission to call in sick and teams' flexibility in adapting to staffing changes.

Although it was not predicted, the results suggest a potential relationship between PPE availability and workplace support. It is possible that having PPE was a prerequisite to other supports; otherwise, training and policy activities were deferred until enough PPE was available so workers could implement them. Another possibility is that where PPE availability was low, acquiring supplies was seen as a more urgent need. The results also suggest a potential relationship between workplace support and support for staying home when sick. Some correlations between these variables make theoretical sense, given that workplace supports include a policy dimension, and staying home when sick is often a policy. In any case, these findings both demonstrate that, even when the relationships between the features of the IPC work environment and distress are accounted for, there are still significant, directional relationships between features. To supplement our understanding of the IPC work environment, future studies should examine the interconnections between these features more directly.

Findings of a recent study by van Hout et al. [29] provide a potential explanation for the observed relationships. The authors found that similar elements of the work environment, namely (1) IPC training and (2) trust within a health organization, were associated with greater confidence in avoiding COVID-19 infection. Viewed from this perspective, it is possible that the elements in the infection prevention work environment support confidence, and thereby lowers distress. Future studies should further explore this potential causal pathway.

This study has several limitations. The survey used a voluntary, non-probability sampling approach, so the results may not generalize to all acute care workers in Canada.

In addition, although there is some evidence that patterns of distress were similar across countries [30], this study only included Canadian healthcare workers, and may not generalize to other countries. The data were also collected at a single time point, and given that pandemic circumstances change rapidly, the results may not be generalizable to other time points. Indeed, a longitudinal survey of Italian anesthetists found that an observed relationship between perceptions of procedural safety and work stress in spring 2020 (i.e., pandemic Wave 1) [31] and fall 2020 (i.e., pandemic Wave 2) [32] was no longer present in autumn and winter 2021 (i.e., pandemic Wave 4) [33]. There is also recent evidence suggesting negative psychological impacts of prolonged PPE use among healthcare workers [34], which raises the possibility that the relationship between PPE availability and distress may have also changed.

This study used a public dataset and is somewhat limited by the items that were available in the survey. Items that were potentially relevant to distress were organized into a theoretical measurement model that we felt had good face validity, and this measurement model exhibited an acceptable fit to the data (i.e., items loaded acceptably onto the proposed latent trait); however, we did not formally review the validity or reliability of these measures. In addition, there are many other factors that have been previously associated with healthcare worker distress that were not included in our model, including fear of COVID-19 [35], worry about transmitting the virus [36], and moral distress [37]. As such, the results of this study should be considered exploratory—they are not intended to provide a full, comprehensive model of acute care workers' distress.

Finally, it is possible that the relationships described in this study could be explained by unmeasured or 'confounding' variables. One potential confound is the overall availability of workplace resources (i.e., staffing, equipment, funding), which could relate the elements of the infection prevention work environment to workers' distress. Another possible confound is workers' overall perceptions of organizational support. Previous studies have correlated this factor with distress among healthcare workers during the pandemic [24,35]. Because of the potential for confounding variables, this study does not provide conclusive evidence about causality (e.g., that low workplace support causes distress).

Implications for Research and Practice

With the acute phase of the pandemic behind us, there is an opportunity to reflect and consider how to best support healthcare workers in future crises. A common strategy during the COVID-19 pandemic was to increase the availability of mental health services for healthcare workers, despite the modest utilization of those services [38]. The results of this study suggest we consider workplace factors instead, especially those that relate to the infection prevention environment.

IPC professionals and healthcare leaders looking to support acute care workers during infectious disease outbreaks should be aware that multiple features of the infection prevention work environment, including infection prevention training, policy, and support for staying home when sick, are associated with workers' stress and mental health. Regarding policy, this study highlights the importance of actions that go beyond simply developing policy to include (1) policy enforcement and (2) encouraging workers to follow them. Accordingly, leaders and policymakers should consider what actions they will take to fairly enforce and encourage policy adherence in future outbreaks. In addition, we found that support for staying home when sick was also an important factor in determining workers' distress. As such, leaders and policymakers should engage their team members to determine how they might best support them in staying home during future outbreaks.

There are also implications for health researchers. Given the tremendous stress of the pandemic on acute care workers, understanding how these features of the IPC work environment impact workers' distress is of critical importance. The findings from this study provide some initial insight into how these phenomena intersect; however, additional factors, such as the specific activities of IPC professionals, should also be considered. There is also an opportunity for researchers to explore acute care workers' attitudes and perceptions about what strategies were most effective in supporting them to stay home when sick.

5. Conclusions

In this study, we used a public dataset to examine the impact of the infection prevention work environment on acute care workers' psychological distress during the COVID-19 pandemic. The findings build on previous research that demonstrated a significant negative association between PPE availability and healthcare workers' distress. This study extends our understanding of workers' distress to other elements of the infection prevention work environment, such as training, policy, and support for staying home when sick. Attention to these elements may help to better support acute care workers during future health emergencies.

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Data Availability Statement: A publicly available dataset was analyzed in this study. This data can be found here: https://www.statcan.gc.ca/en/survey/household/5340 (accessed on 4 October 2021).

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