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Short communication

Downstream consequences of moral distress in COVID-19 frontline healthcare workers: Longitudinal associations with moral injury-related guilt

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ABSTRACT
Objective: To examine the longitudinal associations between dimensions of COVID-19 pandemic-related moral distress (MD) and moral injury (MI)-related guilt in a large sample of frontline COVID-19 healthcare workers (FHCWs).
Methods: Data from a diverse occupational cohort of 786 COVID-19 FHCWs were collected during the initial peak of the COVID-19 pandemic in New York City and again 7 months later. Baseline MD and MI-related guilt at follow-up were assessed in three domains: family-, work-, and infection-related. Social support was evaluated as a potential moderator of associations between MD and MI-related guilt.
Results: A total of 66.8% of FHCWs reported moderate-or-greater levels of MI-related guilt, the most prevalent of which were family (59.9%) or work-related (29.4%). MD was robustly predictive of guilt in a domain-specific manner. Further, among FHCWs with high levels of work-related MD, those with greater perceptions of supervisory support were less likely to develop work-related guilt 7 months later.
Discussion: MD was found to be highly prevalent in FHCWs during the initial wave of the COVID-19 pandemic and was linked to the development of MI-related guilt over time. Prevention and early intervention efforts to mitigate MD and bolster supervisor support may help reduce risk for MI-related guilt in this population.

1. Introduction

Moral distress (MD) refers to negative psychiatric sequelae (e.g., helplessness) that can arise when individuals involved in stressful/traumatic situations are constrained from doing what they believe is right [1,2]. MD has been shown to be elevated in COVID-19 frontline healthcare workers (FHCWs) [3-5] who have, at times, needed to isolate from their families; risk infecting themselves, their loved ones, or patients to provide care; and consider withholding life-saving resources [6]. The long-term consequences of COVID-19-related MD remain unknown. While it may be a transitory experience that diminishes concomitantly with the acuity of the pandemic, MD may also increase risk for moral injury (MI) [2,7]. MI can arise as a consequence of committing, witnessing, or failing to prevent acts that go against deeply-held moral beliefs, and is characterized by persistent feelings of guilt, shame, and/or remorse [8-10]. Determining whether MD predicts key indicators of MI, such as guilt, may inform prevention and intervention efforts. Guilt is a core feature of MI [10,11] and associated with various psychiatric problems, such as depression, burnout, and suicidal ideation [12-14]. Here, we built upon our previous work [5] to evaluate whether

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family-, work-, and infection-related MD predicted MI-related guilt in these domains seven months after initial exposure in an occupationally-diverse cohort of COVID-19 FHCWs. To our knowledge, this is the first prospective study to examine these associations. Because acute stress is linked to chronic psychological difficulties [15], we hypothesized MD would predict MI-related guilt. Further, because greater social support is protective against the development of MI [8–10], we hypothesized it would moderate (i.e., weaken) this association.

2. Methods

2.1. Participants

FHCWs at an urban tertiary care hospital in NYC participated in two surveys: (1) between 4/14/20–5/11/20, which corresponded with the first peak of the pandemic; and (2) at a 7-month follow-up between 11/19/20–1/11/21, which corresponded with a secondary rise-and-plateau of the pandemic. In total, 2579 FHCWs completed the T1 survey and 786 (30.5%) completed T1 and T2. Age, gender, profession, marital and parental status, supervisory role and redeployment status, and pre-pandemic psychiatric history between T2 completers and non-completers did not differ (all $\chi^2 < 1.32$, all $p's > 0.20$).

2.1.1. Measures

**Time 1 moral distress.** An 11-item measure of COVID-19-related MD was administered at T1. Our previous work [5] revealed a three-factor solution: *family-related MD* (e.g., “I feel torn between my desire/duty to help patients versus loved ones”); *work-related MD* (e.g., “I worry about not being able to do enough for COVID-19 patients”); and *infection-related MD* (e.g., “I worry about infecting family with COVID-19”).

**Time 1 Occupational Support.** Respondents were asked: “to what extent do you feel valued by your immediate supervisors (team leader, service chief, etc.)?” and “to what extent do you feel valued by hospital leadership?” (4-point scale: Not at all valued to Very much valued).

**Time 1 Social Support.** Score on abbreviated 3-item version of the MOS Social Support Scale [16]: e.g., “How often is each of the following...”

Fig. 1. Prevalence of family-, work-, and infection-related guilt at Time 2 in COVID-19 frontline health care workers.

Fig. 2. Interaction of Time 1 work-related moral distress and supervisor support in predicting Time 2 work-related moral guilt.
3. Results

Fig. 1 shows the prevalence of T2 MI-related guilt in the full sample. A total of 66.8% endorsed one or more aspects of guilt. Family-related guilt was the most prevalent (59.9%), followed by work-related (29.4%) and infection-related (13.5%). Supplemental Table 2 shows family- and work-related MD at T1 predicted family-related guilt; work-related MD predicted work-related guilt; and infection- and family-related MD predicted infection-related guilt. Fig. 2 shows the significant interaction between T1 work-related MD and T1 supervisor support on T2 work-related guilt. Among FHCWs with higher T1 MD, those who endorsed greater supervisor support at T1 were less likely to endorse work-related guilt at T2.

Note. Work-related moral distress units are standardized scores with 0 = sample mean.

4. Discussion

To our knowledge, this is the first study to show COVID-19-related MD, characterized by worries/concerns during the initial pandemic peak, predicts MI-related guilt in FHCWs. Two-thirds of FHCWs endorsed moderate-to-severe guilt seven months into the pandemic, which was similar to estimates of MD 7-months prior (52%–87%). These findings suggest MD and MI-related guilt are highly prevalent, and that MD may not be a transitory experience; instead, it may confer increased risk for the development of MI-related guilt. Assessment of MD during crises may help identify individuals most at risk of ongoing guilt and who may benefit from early intervention [17,18]. Because family-related guilt was the most prevalent in our sample, policies that provide practical support, such as childcare and staff lodging [19], may also help mitigate risk for ongoing guilt in FHCWs. Results also showed greater supervisor support during the initial COVID-19 peak moderated the effect of MD on MI-related guilt. While it may not be feasible to eliminate morally distressing situations during times of crisis, strategies that promote a culture of support and operationalize the capacity for supervisors to be supportive and establish psychological safety may attenuate the risk for guilt [20,21]. Research is needed to replicate these findings in other samples and with other indicators of MI, such as shame [11]; and evaluate the effectiveness of interventions targeting MD.

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Role of the sponsor

The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; or decision to submit the manuscript for publication.

Relevant financial relationships

Dr Feder is named co-inventor on an issued patent in the US, and several issued patents outside the US, filed by ISMMS for the use of ketamine as a therapy for PTSD; this intellectual property has not been licensed. Dr Pietrzak is a research consultant to the Office of Well-Being and Resilience at the Icahn School of Medicine at Mount Sinai. Drs. Fischer, Norman, Feingold, Pecoraro, and Ripp report no financial relationships.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.genhosppsych.2022.11.003.

References

[1] Jameton A. Nursing practice: The ethical issues. 1984.
[2] Williams RD, Brundage JA, Williams EB. Moral injury in times of COVID-19. J Health Serv Psychol 2020;46:65–9
[3] Milietjeij I, Forthun I, Huftammer KO, et al. Priority-setting dilemmas, moral distress and support experienced by nurses and physicians in the early phase of the COVID-19 pandemic in Norway. Nurs Ethics 2021;28:66–81.
[4] Wilson CA, Metwally H, Heavner S, et al. Chronicling moral distress among healthcare providers during the COVID-19 pandemic: a longitudinal analysis of mental health strain, burnout, and maladaptive coping behaviours. Int J Ment Health Nurs 2022;31:111–27.
[5] Norman SB, Feingold BH, Kaye-Kauderer H, et al. Moral distress in frontline healthcare workers in the initial epicenter of the COVID-19 pandemic in the United States: relationship to PTSD symptoms, burnout, and psychosocial functioning. Depress Anxiety 2021;38:1007–12.
[6] Truong BD, Mitchell C, Daley GQ. The toughest triage—allocating ventilators in a pandemic. N Engl J Med 2020;382:1973–5.
[7] Cartolovni A, Stolt M, Scott PA, et al. Moral injury in healthcare professionals: a scoping review and discussion. Nurs Ethics 2021;28:590–602.
[8] Griffin BJ, Parcell N, Burkman K, et al. Moral injury: an integrative review. J Trauma Stress 2019;32:350–62.
[9] Koenig HG, Yousef NA, Pearce M. Assessment of moral injury in veterans and active duty military personnel with PTSD: a review. Front Psychol 2019;10:443.
[10] Litz BT, Stein N, Delaney E, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. Clin Psychol Rev 2009;29:695–706.
[11] Norman S. Trauma-informed guilt reduction therapy: overview of the treatment and research. Curr Treat Opt Psychiatry 2022;1:11–.
[12] Bryan CJ, Morrow CE, Etienne N, et al. Guilt, shame, and suicidal ideation in a military outpatient clinical sample. Depress Anxiety 2013;30:55–60.
[13] Greenmeyer JR, Montgomery M, Hosford C, et al. Guilt and burnout in medical students. Teach Learn Med 2022;34:69–77.
[14] Browne KC, Trim RS, Myers US, et al. Trauma-related guilt: conceptual development and relationship with posttraumatic stress and depressive symptoms. J Trauma Stress 2015;28:134–44.
[15] Bryant RA. The current evidence for acute stress disorder. Curr Psychiatry Rep 2018;20:1–8.
[16] Sherbourne CD, Stewart AL. The MOS social support survey. Soc Sci Med 1991;32: 705–14.
[17] Maugus S, Price MA. Moral injury in the wake of coronavirus: attending to the psychological impact of the pandemic. Psychol Trauma Theory Res Pract Policy 2020;12:5131.
[18] Norman SB, Wilkins KC, Myers US, et al. Trauma informed guilt reduction therapy with combat veterans. Cogn Behav Prac 2014;21:78–88.
[19] Sinclair RR, Allen T, Barber L, et al. Occupational health science in the time of COVID-19: now more than ever. Occupat Health Sci 2020:1–22.

[20] Blake H, Bermingham F, Johnson G, et al. Mitigating the psychological impact of COVID-19 on healthcare workers: a digital learning package. Int J Environ Res Public Health 2020;17:2997.

[21] Roycroft M, Wilkes D, Pattani S, et al. Limiting moral injury in healthcare professionals during the COVID-19 pandemic. Occup Med 2020:312–4.