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## Impact of Sexual Harassment and Social Support on Burnout in Physician Mothers

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### Abstract

**Background:** Burnout affects >50% of physicians, especially women. This study aimed to examine how negative workplace interactions can predict burnout, and whether positive social interactions can mitigate risk.

**Materials and Methods:** In a study of 1627 physician mothers who responded to a survey by the Physician Moms Group, an online Facebook group, we first examined the association between workplace sexual harassment and burnout. In an embedded experiment, we then measured the causal impact of priming perceived social support and connectedness on the three dimensions of employee burnout.

**Results:** Two-thirds of respondents reported having experienced sexual harassment in the past year. Sexual harassment by patients was associated with 0.27 points higher emotional exhaustion, one dimension of burnout (95% confidence interval [CI] 0.12–0.41), equivalent to the predicted impact of an additional 22 weekly work hours on emotional exhaustion. Sexual harassment by patients was also associated with 0.40 points higher patient depersonalization, another dimension of burnout (95% CI 0.27–0.53). Sexual harassment by colleagues was associated with 0.16 points higher emotional exhaustion (95% CI 0.02–0.30), but not other dimensions of burnout. We found no significant relationship between experiences of sexual harassment and levels of personal accomplishment (the third dimension of burnout) among this sample. Priming physician mothers to reflect on their connectedness with other physician mothers significantly increased their sense of personal accomplishment. The priming intervention did not yield a significant effect on emotional exhaustion or depersonalization.

**Conclusions:** Negative and positive social interactions each affect different dimensions of burnout. Sexual harassment—a pervasive type of negative social interaction—strongly predicts emotional exhaustion and depersonalization. Reflecting on social connectedness—a type of positive social interaction—can improve one's sense of personal accomplishment with an effect similar in magnitude to more intensive in-person interventions, suggesting that social connectedness through online groups merits further consideration as a tool to mitigate burnout.

**Keywords:** sexual harassment, social support, burnout, women physicians

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## Introduction

PHYSICIAN BURNOUT AFFECTS more than 50% of physicians<sup>1</sup> and is estimated to cost the U.S. health care industry \$4.6 billion each year.<sup>2</sup> Women physicians make up 40% of the physician workforce<sup>3</sup> and are especially vulnerable to burnout and depression.<sup>4,5</sup> A vast literature has measured the size and potential consequences of this burnout challenge. Burnout has been associated with sleep disorders, mental health concerns, and suicidal ideation,<sup>6</sup> painkiller misuse, as well as high turnover, reductions in work hours and effort,<sup>7</sup> suboptimal care,<sup>8</sup> and medical mistakes.<sup>9</sup> Many studies have also considered institutional predictors of burnout such as work hours, medical specialty, organizational support, leadership structures, and administrative and clerical burdens.<sup>7,10,11</sup>

The goal of this study was to assess how positive and negative social interactions and connectedness affect burnout among physician mothers. While there are many types of social interactions that likely influence employee burnout and well-being, we choose to focus on one specific type of positive and one specific type of negative interaction. For the former, we use an embedded randomized experiment to evaluate the causal impact of priming participants to reflect on positive social connectedness on three dimensions of burnout: emotional exhaustion, depersonalization, and personal accomplishment. For the latter, we examine the relationship between experiences of sexual harassment and burnout through a cross-sectional observational approach.

## Materials and Methods

This study was approved by the Stanford Institutional Review Board. All participants provided informed consent before completing the survey.

### Data and outcomes

We developed and conducted a survey on the relationship between work conditions, social connectedness, and burnout among physician mothers. The survey was conducted online from February 16, 2020, to May 16, 2020, with a voluntary sample of participants drawn from the Physician Moms Group (PMG). The Physician Moms Group comprises over 70,000 physicians who identify as mothers, including pregnant women. Member engagement is high with over 200 new posts every day, over 6,000 comments, and over 22,000 daily “likes,” and has been successfully used for prior survey research.<sup>12,13</sup>

Our primary outcome of interest was burnout. Estimates of participant burnout were calculated using the Maslach Burnout Inventory (MBI)<sup>14</sup> and coded using standard MBI instructions. The MBI consists of three subscales, each comprising a set of individual questions: emotional exhaustion (nine items), depersonalization (five items), and personal accomplishment (eight items). Unlike emotional exhaustion and depersonalization, which are negative traits of burnout, the third component of burnout measures positive feelings of personal accomplishment, or the feeling that someone can overcome or address the difficulties they face at work.

The frequency with which respondents experience each item is evaluated on a 7-point Likert scale ranging from 0 (“never”) to 6 (“every day”). All items associated with a

subscale are then averaged to create a subscale score ranging from 0 to 6. Because each dimension of burnout represents a unique construct, we follow standard MBI protocol and analyze each separately. On each subscale, a higher scaled score represents stronger agreement with the respective construct. In other words, a higher scaled score on the emotional exhaustion subscale represents higher emotional exhaustion, while a higher scaled score on the personal accomplishment subscale represents stronger feelings of personal accomplishment.

To measure the impact of positive social interactions on burnout, we embedded a randomized experiment in the survey. Respondents were randomized into one of two groups. Respondents assigned to the treatment group were shown a battery of questions on social connectedness *before* responding to the MBI scale. Respondents assigned to the control group were shown the same battery of connectedness questions *after* responding to the MBI scale. In so doing, we aimed to capture the causal impact of priming people to think about their connectedness to other physician mothers in PMG on self-reported burnout.

Priming is a common experimental tool that aims to activate mental constructs associated with external stimuli or previous experiences. Priming effects occur when exposure to a stimulus subconsciously or passively influences an individual’s response to a subsequent stimulus. For example, priming has been used to encourage nurses to think about patient safety,<sup>15</sup> to affect physician diagnostic processing,<sup>16</sup> or to impact help-seeking behavior in the general population.<sup>17</sup>

The prime included seven questions: (1) how frequently participants visit the PMG site; (2) how frequently they comment or post on the PMG site; (3) whether participants have ever directly engaged with other members of PMG through private messaging, email, or in person; and agreement with three statements, each measured on a 5-point Likert scale: (4) “I feel connected to other people in PMG,” (5) “I feel other PMG members understand what I go through every day,” and (6) “I can talk to people in PMG about my day to day problems if I need to.”

Question (7) asked respondents to “Imagine you are talking to a resident who is pregnant with her first child and comes to you for advice about whether she should join PMG. How would you describe the benefits of PMG? For example, what are some ways members support each other?” The goal of this question was to prime participants to think about the positive social support and connections offered by the online group. The survey experiment therefore answers the question of whether reflecting on connectedness with other physician mothers causally improves burnout-related outcomes.

As a measure of negative social interaction, we assessed respondents’ experiences with sexual harassment using an adaptation of the Sexual Experiences Questionnaire (SEQ).<sup>18,19</sup> This adapted instrument asked respondents to comment separately on their experiences with *patients* and *colleagues*, and utilizes three dimensions of the SEQ: gender harassment (sexist or sexual hostility demonstrated by sexist, crude, or offensive behavior), unwanted sexual attention, and sexual coercion. That is, we evaluate sexual harassment along six dimensions: (1) gender harassment from patients; (2) unwanted sexual attention from patients; (3) sexual coercion from patients; (4) gender harassment from colleagues; (5) unwanted sexual attention from colleagues; and (6) sexual coercion from colleagues.

Our primary models examined the association between each dimension of burnout and binary indicators for having had any experience with each of six dimensions of sexual harassment. Separate secondary analyses examined the association between each dimension of burnout and continuous measures reflecting the frequency of experience with each dimension of harassment.

### Sample

In total, 2,424 people completed at least one question of the survey, of whom 1783 (74%) completed one or more questions used for our primary dependent and independent variables (*i.e.*, they completed at least one question of each MBI subscale, at least one question of each sexual harassment subscale, as well as at least one question on social connectedness within the PMG group). Given the main theoretical questions of this article and the instructions of the MBI creators, we use as our main analytic universe the subset of these who completed all questions on harassment and burnout. To correctly estimate an intent-to-treat sample on the embedded survey experiment, we do not further limit the sample to those who also answered all questions on connectedness. We performed sensitivity analyses (see Supplementary Appendix SA) to confirm that these restrictions did not change our main effects.

### Covariates

Several covariates were included in our primary analyses to control for possible confounding influences. Covariates included age, race, number of children and an indicator for having young children (younger than 6 years), sexual orientation, marital status, and work characteristics, including career stage, quartile of annual income (\$0–\$180,000; \$184,000–\$240,000; \$245,000–\$320,000; \$324,000–\$2.3 million), and average number of hours worked each week.

### Statistical analysis

We evaluated the relationship between burnout and sexual harassment using a multivariable linear regression model with controls for covariates detailed above. We evaluated the relationship between social connectedness and burnout in an intent-to-treat (ITT) linear regression model, with an indicator for experimental condition assignment as the primary predictor. Although controls were not required for unbiasedness of our treatment effect estimates, they did increase the precision of these estimates. We thus included controls for all covariates detailed above in the ITT analysis of our priming experiment. All statistical analyses were performed using Stata statistical software version 15, and two-tailed *p*-values <0.05 were considered statistically significant.

### Results

Table 1 summarizes the characteristics of the 1,627 respondents in the analytic sample. Respondents' average age was 42 years (standard deviation [SD]=6.9); 93% were married and 63% reported a child younger than 6 years. Sixty-nine percent of the sample were non-Hispanic white.

Almost two-thirds reported having experienced sexual harassment by a patient in the past year, and two-thirds had also experienced sexual harassment by a patient or colleague. The average burnout scores in our sample were 2.9 for

emotional exhaustion (range = [0–6], SD = 1.3), 1.7 for depersonalization (range = [0–5.6], SD = 1.2), and 4.9 for personal accomplishment (range = [0.7–6], SD = 0.8). The mean burnout scores represent moderate-severe burnout.

Figures 1–3 each present the associations of our independent variables with the three components of burnout, respectively: emotional exhaustion, depersonalization, and personal accomplishment. Figure 1 shows a strong association between experiences of patient and colleague gender harassment and emotional exhaustion. The magnitudes of these effects are similar. Specifically, having experienced gender harassment from patients is associated with 0.27 points higher emotional exhaustion (95% confidence interval [CI] 0.12–0.41). We also see that harassment in the form of unwanted sexual attention from patients is associated with 0.17 points higher emotional exhaustion (95% CI 0.00–0.34), while gender harassment by colleagues is associated with 0.16 points higher emotional exhaustion (95% CI 0.02–0.30). Working more hours per week, on average, is also associated with higher emotional exhaustion. Having experienced gender harassment by patients is approximately equivalent in magnitude to working an extra 22 hours each week.

Figure 2 presents associations with depersonalization of patients. The relationship between experiences of gender harassment by patients and patient depersonalization is more statistically robust than the relationship between experiences of harassment by colleagues and patient depersonalization. Gender harassment perpetrated by patients is associated with a 0.40-point higher level of patient depersonalization (95% CI 0.27–0.53). More serious forms of colleague sexual coercion have a larger correlation with depersonalization of patients: having experienced sexual coercion from a colleague is associated with a 0.43-point higher level of patient depersonalization (95% CI 0.13–0.74).

Figure 3 presents associations with personal accomplishment, the third dimension of burnout. While there is no significant association between unwanted sexual attention and feelings of personal accomplishment, we do see a strong association between colleague sexual coercion and feeling less personally accomplished. Personal accomplishment was 0.23-point (95% CI –0.45 to –0.02) lower among participants who reported experiences of prior sexual coercion from a colleague than among participants who did not report such experiences.

Figures 1–3 also include an indicator for treatment assignment as part of the embedded experiment. The coefficient on the treatment indicator in each model can be interpreted as the causal effect of priming participants to reflect on positive social connections on each of the three dimensions of burnout. Selected responses to the priming question asking about benefits of PMG are found in Supplementary Appendix SB.

As shown in Figure 3, we find a modest, statistically significant effect of priming participants to reflect on social connections, on personal accomplishment. Specifically, we found that reflecting on these social connections causally increased the sense of personal accomplishment by 0.08 points (95% CI 0.00–0.16). We do not find a significant relationship between priming social connectedness and rates of emotional exhaustion or depersonalization (see Figures 1 and 2, respectively). This is in line with previous research that suggests the perceived social support is associated with improved mental health outcomes by influencing self-worth and belonging.<sup>20,21</sup>

TABLE 1. SAMPLE CHARACTERISTICS

<i>Factor</i>	<i>All</i> (N=1627)	<i>Control</i> (N=832)	<i>Treatment</i> (N=795)	<i>p</i>
<b>Demographics</b>				
Career stage, <i>n</i> (%)				
Resident	27 (1.7)	21 (2.5)	12 (1.5)	0.30
Fellow	51 (3.1)	25 (3.0)	26 (3.3)	
Attending	1,531 (94.4)	782 (94.0)	749 (94.2)	
Other	12 (0.7)	4 (0.5)	8 (1.0)	
Frequency of visits to PMG site, <i>n</i> (%)				
Rarely/never	18 (1.1)	12 (1.4)	6 (0.8)	0.10
<Monthly	32 (2.0)	22 (2.7)	10 (1.3)	
Monthly	52 (3.2)	28 (3.4)	24 (3.0)	
Weekly	385 (23.7)	205 (24.7)	180 (22.7)	
Daily	1,137 (70.0)	563 (67.8)	574 (72.3)	
Frequency of comments on PMG site, <i>n</i> (%)				
Rarely/never	378 (23.3)	212 (25.6)	166 (20.9)	0.15
<Monthly	416 (25.6)	217 (26.2)	199 (25.0)	
Monthly	328 (20.2)	159 (19.2)	169 (21.3)	
Weekly	410 (25.2)	197 (23.8)	213 (26.8)	
Daily	92 (5.7)	44 (5.3)	48 (6.0)	
Ever communicated with anyone in PMG through private message	840 (51.6)	405 (48.7)	435 (54.7)	0.015
Ever communicated with anyone in PMG through email	193 (11.9)	86 (10.3)	107 (13.5)	0.052
Ever communicated with anyone in PMG in-person	387 (23.8)	190 (22.8)	197 (24.8)	0.36
Feel connected to others in PMG, <i>n</i> (%)				
Strongly disagree	42 (2.6)	16 (1.9)	26 (3.3)	<0.001
Moderately disagree	90 (5.5)	59 (7.1)	31 (3.9)	
Neither	259 (15.9)	152 (18.3)	107 (13.5)	
Moderately agree	765 (47.1)	352 (42.4)	413 (52.0)	
Strongly agree	469 (28.9)	252 (30.3)	217 (27.3)	
Feel other PMG members understand, <i>n</i> (%)				
Strongly disagree	37 (2.3)	12 (1.4)	25 (3.2)	0.015
Moderately disagree	41 (2.5)	20 (2.4)	21 (2.7)	
Neither	112 (6.9)	69 (8.3)	43 (5.4)	
Moderately agree	689 (42.5)	337 (40.6)	352 (44.4)	
Strongly agree	744 (45.8)	393 (47.3)	351 (44.3)	
Feel I can talk with others in PMG, <i>n</i> (%)				
Strongly disagree	70 (4.3)	41 (4.9)	29 (3.7)	0.001
Moderately disagree	200 (12.3)	102 (12.3)	98 (12.4)	
Neither	338 (20.9)	190 (22.9)	148 (18.7)	
Moderately agree	620 (38.3)	278 (33.5)	342 (43.2)	
Strongly agree	392 (24.2)	218 (26.3)	174 (22.0)	
Weekly hours worked, mean (SD)	52.23 (17.21)	45.95 (23.07)	44.11 (24.71)	0.12
Sexual orientation, <i>n</i> (%)				
Heterosexual	1,563 (96.8)	801 (96.3)	775 (97.5)	0.25
Gay	22 (1.4)	15 (1.8)	7 (0.9)	
Bisexual	29 (1.8)	16 (1.9)	13 (1.6)	
Marital status				
Married	1,476 (92.6)	774 (93.0)	735 (92.5)	0.85
Divorced	89 (5.6)	42 (5.0)	47 (5.9)	
Widowed	5 (0.3)	3 (0.4)	2 (0.3)	
Never married	24 (1.5)	13 (1.6)	11 (1.4)	
Respondent income, mean (SD)				
Quartile 1	625 (38.4)	323 (38.8)	302 (38.0)	0.72
Quartile 2	352 (21.6)	180 (21.6)	172 (21.6)	
Quartile 3	326 (20.0)	158 (19.0)	168 (21.1)	
Quartile 4	324 (19.9)	171 (20.6)	153 (19.2)	
Total No. of children	2.05 (0.90)	2.01 (0.90)	2.02 (0.91)	0.82
Have at least one child under age	980 (62.7)	546 (65.6)	498 (62.6)	0.21
Age, median (IQR)	41 (37,46)	41 (37, 46)	41 (38, 46)	0.61
Race/ethnicity, <i>n</i> (%)				

(continued)

TABLE 1. (CONTINUED)

Factor	All (N=1627)	Control (N=832)	Treatment (N=795)	p
American Indian/Alaska Native	4 (0.2)	9 (1.1)	9 (1.1)	0.66
Asian	222 (13.8)	122 (14.7)	100 (12.6)	
Black/African-American	53 (3.3)	27 (3.2)	26 (3.3)	
Multiracial	57 (3.5)	31 (3.7)	26 (3.3)	
Other race	31 (1.9)	17 (2.0)	14 (1.8)	
Pacific Islander	5 (0.3)	2 (0.2)	3 (0.4)	
White	1,108 (68.7)	566 (68.0)	542 (68.2)	
Hispanic	133 (8.2)	58 (7.0)	75 (9.4)	

Panel 2: Sexual harassment and burnout, n (%)

Any patient gender harassment	1,038 (63.8)	535 (64.3)	503 (63.3)	0.66
Any patient unwanted attention	330 (20.3)	162 (19.5)	168 (21.1)	0.40
Any patient coercion	26 (1.6)	9 (1.1)	17 (2.1)	0.089
Any colleague gender harassment	1,073 (65.9)	536 (64.4)	537 (67.5)	0.18
Any colleague unwanted attention	187 (11.5)	84 (10.1)	103 (13.0)	0.071
Any colleague coercion	61 (3.7)	25 (3.0)	36 (4.5)	0.11
MBI: emotional exhaustion, mean (SD)	2.91 (1.30)	2.87 (1.29)	2.95 (1.32)	0.19
MBI: depersonalization, mean (SD)	1.68 (1.17)	1.64 (1.14)	1.72 (1.20)	0.17
MBI: personal accomplishment, mean (SD)	4.89 (0.80)	4.86 (0.79)	4.93 (0.80)	0.053

IQR, interquartile range; MBI, Maslach Burnout Inventory; PMG, Physician Moms Group; SD, standard deviation.

**Discussion**

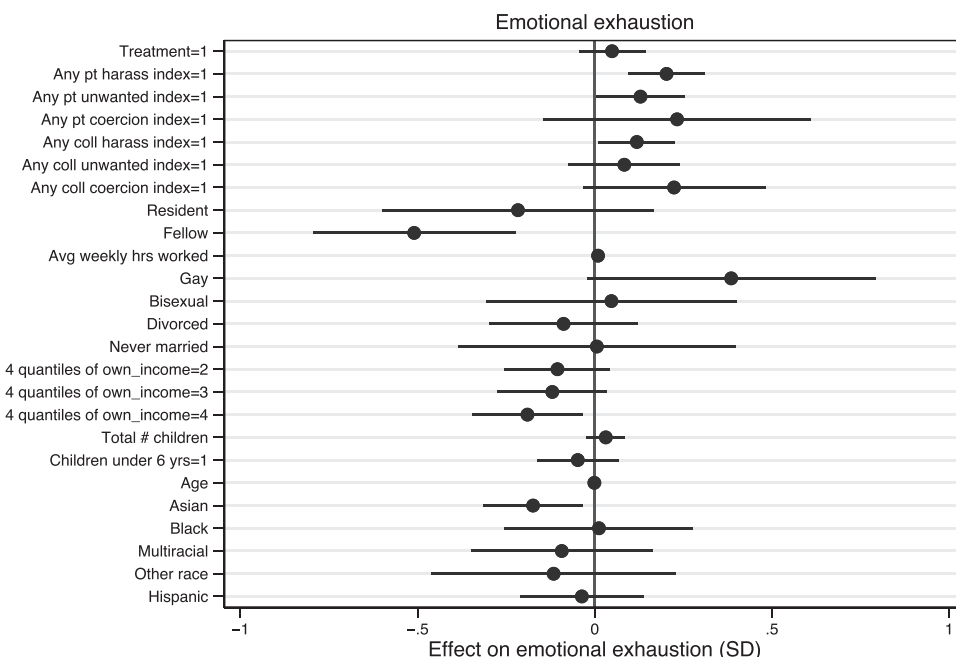
In this large survey of members of an online community of physician mothers, we measured the association between burnout and experiences of negative social interactions, specifically sexual harassment. We also embedded a randomized experiment to test whether priming positive social connectedness through online support can mitigate burnout in this group of high-risk individuals.

Respondents in this study reported substantial levels of emotional exhaustion (2.9, SD=1.3), depersonalization (1.7,

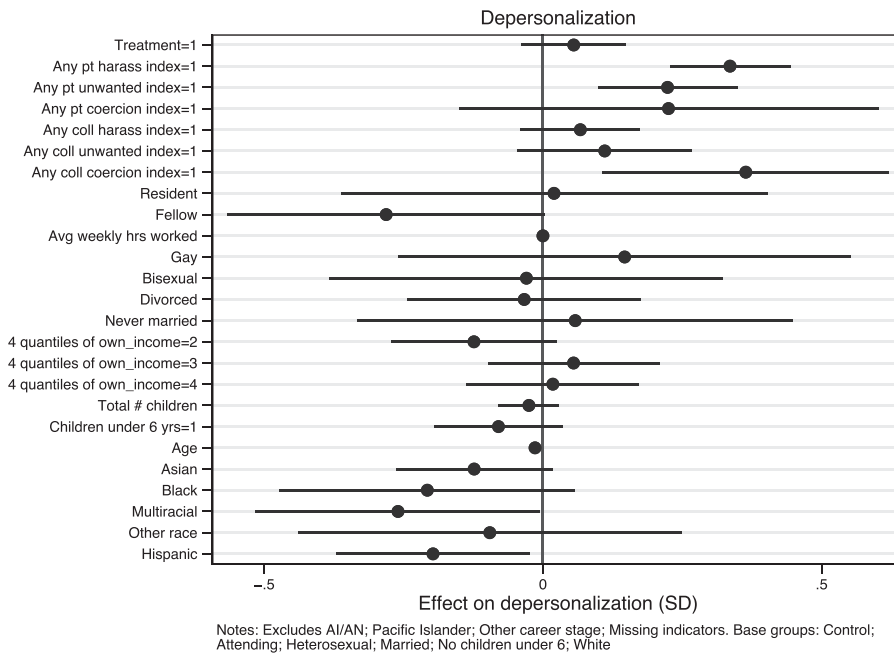
SD=1.2), and diminished personal accomplishment (4.9, SD=0.8). Moreover, we found that burnout was highly correlated with experiences of sexual harassment by both patients and colleagues: physician mothers who had experienced gender harassment also reported significantly higher rates of emotional exhaustion and depersonalization. These results align with other studies that have found a negative impact of harassment on physician mental health.<sup>19,22</sup>

While these results are specific to our sample of physician mothers, the rates of burnout in this sample are consistent

**FIG. 1.** Forest plot for the association of emotional exhaustion with treatment and covariates.



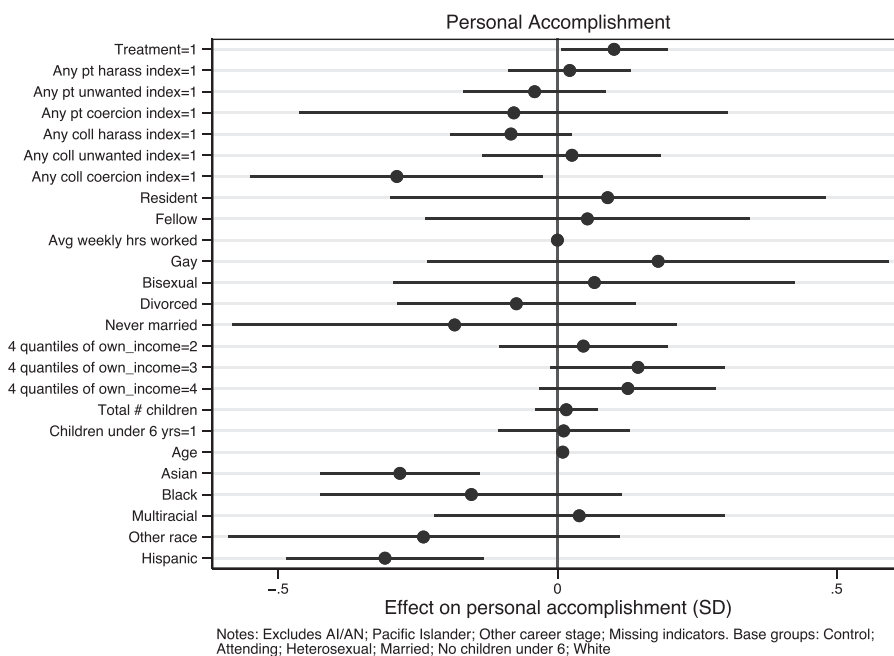
Notes: Excludes AI/AN; Pacific Islander; Other career stage; Missing indicators. Base groups: Control; Attending; Heterosexual; Married; No children under 6; White



**FIG. 2.** Forest plot for the association of depersonalization with treatment and covariates.

with findings from national studies of physician burnout.<sup>1,5,23</sup> For example, in our sample, 47% of respondents reported high levels of emotional exhaustion. For comparison, a recent review from Dyrbye and Shanafelt (2015), which includes four studies on medical resident burnout, found 23% to 44% were experiencing high emotional exhaustion.<sup>24</sup> This growing body of evidence demonstrates why the National Academy of Medicine has called physician burnout an epidemic.<sup>25</sup> The extremely high prevalence of burnout among physician mothers is becoming increasingly pressing as the proportion of women physicians grows, and the pressures imposed by the COVID-19 pandemic disproportionately exacerbate stresses for women health care providers.<sup>26,27</sup>

The rates of sexual harassment also match what has been found in other studies of women physicians.<sup>19</sup> While prior literature on gender harassment by patients and families is sparse, it is becoming increasingly clear that this behavior is harmful to physicians. A large prospective study from Sweden demonstrated significantly higher rates of suicide attempts and suicide deaths among workers who had experienced sexual harassment.<sup>28</sup> Indeed, in this study, experiencing gender harassment from patients was equivalent in magnitude to an additional 22 hours of work per week, in terms of its association with emotional exhaustion. Hospitals and health systems have not had a systematic approach to gender harassment by patients and families,<sup>29</sup> and it is



**FIG. 3.** Forest plot for the association of personal accomplishment with treatment and covariates.

imperative to address this prevalent issue to preserve the well-being of the U.S. physician work force.

The results also align with previous correlational evidence on the relationship between social support and burnout. Previous studies have estimated that stronger social support is associated with lower levels of emotional exhaustion and higher levels of personal accomplishment across a range of disciplines, including counseling staff,<sup>30</sup> teachers,<sup>31</sup> and health care workers.<sup>32,33</sup> This study suggests that there may be a causal relationship between increased social support and reduced levels of burnout, and explores one pathway through which social connections may mitigate burnout: through its effect on personal accomplishment.

Specifically, we show that priming people to reflect on their connections with peers in their online community can increase personal accomplishment scores by 0.08. To put this in context, this effect is similar in magnitude to evidence from existing studies of much more intensive in-person interventions. For example, a recent randomized controlled trial (RCT) ( $N=152$ ) measuring an 8-week in-person Balint group training for intensive care unit nurses observed a 0.10 increase in personal accomplishment, although not statistically significant.<sup>34</sup> In another study, a year-long mindfulness and empathy intervention ( $N=70$ ) found an effect size of 0.3 on personal accomplishment.<sup>35</sup> Within this context, our findings suggest one important potential avenue for reducing burnout through less intensive support systems such as online peer groups.

Solutions to the burnout epidemic are elusive. A recent systematic review of burnout solutions found that individual-level interventions have had mixed results, and systems-oriented solutions—while promising—need further research.<sup>36,37</sup> Our randomized experiment demonstrated that reflecting on social connections with other physician mothers improved participants' sense of personal accomplishment. This aligns with recent evidence showing that increasing perceived social support and affirming belonging can reduce burnout among frontline workers.<sup>21</sup> While this offers one promising avenue for improving physician burnout, the root causes of burnout stem, in large part, from institutional and systemic factors.

As such, systems-level interventions are required to reduce harassment and improve physician well-being as a long-term solution to the growing burnout crisis. However, enhancing social connectedness, especially through online communities, is a feasible and relatively easily scalable strategy that should comprise part of a comprehensive systematic approach to physician burnout and could have an immediate impact on physician well-being.

Engagement with online communities has been shown to increase feelings of trust, intimacy, community, and mental well-being, and to improve perceived decision-making skills.<sup>38,39</sup> Higher levels of involvement in online communities is associated with increased well-being,<sup>40,41</sup> but even passive participation can be beneficial.<sup>42</sup> While the sharing of personal experiences can be empowering,<sup>43</sup> non-active members of online communities still gain knowledge and a feeling of emotional support and social companionship from reading about the experiences of others.<sup>31</sup> In addition, online support groups allow information to be shared quickly and conveniently, and in a manner that is understandable and personalized.<sup>44</sup> There are drawbacks to online communities, however, including inappropriate online behavior such as

bullying, information overload, ethical issues related to disclosure of identifiable patient information, and concerns about accuracy of information, among others.<sup>45</sup>

Therefore, the development of interventions designed to reduce burnout through online communities should take into account best practices, including clear guidelines for membership and community behavior, as well as close monitoring.<sup>46</sup> Additional research is needed to fully understand the impact of online communities, as well as how best to organize them to maximize their positive impact. For example, future research should explore how the size of an online peer group affects its impact on community members' perceptions of social support and well-being, and how these effects compare to the impact of in-person peer support systems.

### Limitations

Our study has four main limitations. Although we know the total number of participants in the PMG Facebook Group, not all posts are viewed by all members of the group, and so we are unable to formally calculate a survey response rate.

Although the burnout prevalence estimates are sensitive to possible selection bias if those who chose to respond to a survey are less or more likely to report burnout, the randomization in the structure of our experiment means that the RCT results—the effect of priming social connectedness on burnout—are valid among this population. In addition, the demographic characteristics of our sample were similar to those previously reported from surveys of this online community, and the overall levels of burnout look similar to what has been observed in other studies. This suggests that our results may also be generalizable to broader populations of physician mothers.

However, because our population included only physician mothers, results may not be generalizable to all women physicians. Given that women make up nearly 40% of the physician workforce<sup>3</sup> and are particularly vulnerable to emotional exhaustion and burnout,<sup>5,7</sup> understanding their experiences is important. Additional research is needed to understand the relationship between sexual harassment, social support, and burnout among women physicians who are not mothers.

Finally, the embedded survey experiment aimed to prime social connectedness and perceived social support. Prior research has demonstrated that social support is often closely correlated with loneliness, which can also affect burnout and mental health outcomes.<sup>47</sup> It is possible that by priming survey participants to reflect on positive social connections, the intervention also temporarily affected perceived loneliness. Future research should aim to disentangle these mechanisms, as well as explore the effect of priming loneliness directly.

### Conclusion

Burnout of women physicians is a pressing policy challenge. Women will soon make up half of the physician workforce, but burnout is particularly costly both to individuals and to institutions—and women generally report higher levels of burnout.<sup>4,5,9</sup> Among a sample of physician mothers, we find that sexual harassment by patients and



colleagues is very common and strongly predicts emotional exhaustion and depersonalization. However, we also find that reflecting on online social connections can improve one's sense of personal accomplishment, suggesting that this is one potentially scalable method for those seeking to mitigate one dimension of burnout. Future studies should examine the extent to which an increase in personal accomplishment can offset any consequence of high levels of emotional exhaustion and depersonalization on physicians' well-being and patient care.

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### Disclaimer

The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

### Disclosure Statement

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### Supplementary Material

Supplementary Appendix SA  
Supplementary Appendix SB

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