



Moral Stress among Swedish Health Care Workers During the COVID-19 Pandemic: A Cross-Sectional Study

ORIGINAL ARTICLE

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ABSTRACT

Aims: This study quantifies to what extent Health care workers (HCWs) experienced moral stress and to what extent their experiences of moral stress were related to gender and age as well as to working directly with COVID-19 patients and other work-related factors.

Methods: This study consists of a cross-sectional survey that was conducted among 16,044 Swedish HCWs. A total of 153,300 HCWs and support staff who participated in the COVID-19 training offered by the Karolinska Institute were invited by email to participate in a web survey during autumn 2020.

Results: This study is the first to quantify the frequency and severity of moral stress in a large group of HCWs. Moral stress was reported to a higher extent by HCWs involved in COVID-19 care and those involved in direct patient care. A lack of resources and the restrictions that hindered the patients' family and friends from being involved were major causes of moral stress. Informal support was reported as being the most available and useful for dealing with moral stress.

Conclusions: Our findings suggest that moral stress is common among HCWs who work with infected patients during a pandemic. The goal should not be to eliminate moral stress, as such stress may be viewed as a normal reaction to moral issues, but organizational structures (sufficient staffing and resources), could decrease the likelihood of morally stressful situations. Finally, to avoid the development of moral distress and its potential consequences, improvements could be made in providing HCWs with support tools for managing moral stress.

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BACKGROUND

The coronavirus disease 2019 (COVID-19) pandemic has overwhelmed health systems globally and put pressure on health care workers (HCWs) to adjust their practices due to a lack of resources (Morley, Grady, McCarthy, & Ulrich, 2020). This has forced HCWs to make decisions regarding the prioritization of care. HCWs are used to prioritizing care; however, the pandemic has added new aspects to this practice due to suddenly elevated needs. Limited resources, such as protective equipment, must be used to minimize the risk of infecting patients and themselves (Chamsi-Pasha & Albar, 2020). A main challenge for HCWs is to provide care for patients in need and to ensure the optimal use of limited resources (Petrini, 2010). This situation exposes HCWs to moral challenges that evoke moral stress, which is a healthy and normal reaction to morally challenging situations and decision-making (Cacchione, 2020). However, if moral stress is not adequately dealt with, it may develop into moral distress, which in turn may lead to secondary consequences such as burnout (Gustavsson, Arnberg, Juth, & von Schreeb, 2020). Furthermore, unaddressed and repeated moral distress may affect core values and personal integrity since conduct and inner convictions are in conflict (Thomas & Mc Mullough, 2015).

Within the research on moral distress, various disciplines use different approaches to describe the same phenomenon (Gustavsson, Arnberg, Juth, & von Schreeb, 2020). There are closely related concepts, such as moral injury, which originated within military medicine (acting or failing to prevent an act that contravenes one's own moral values) (Williamson, Stevelink & Greenberg, 2018). Moral stress, moral distress and ethical distress are often used in an interrelated way to describe the same phenomena in the research literature. However, some studies differentiate between moral stress and moral distress, while others use only the concepts of moral stress (Nilsson et al., 2011; Lutzen et al., 2003) or ethical distress (Durocher et al., 2017). For this study, we take a stand in the theoretical separation between moral stress and moral distress, in which moral stress is viewed as a normal stress reaction to a moral challenging situation, whereas moral distress is viewed as the negative stress reaction that develops depending on the severity, frequency, repetitiveness, and duration of morally challenging situations (Gustavsson, Arnberg, Juth, & von Schreeb, 2020).

Depression, anxiety and stress disorders have been commonly reported among HCWs during the COVID-19 pandemic (Greenberg, Docherty, Gnanapragasam & Wessely, 2020; Holmes et al., 2020; Lai et al., 2020; Stuijtzand et al., 2020; Walton, Murray & Christian, 2020; Shanafelt, Ripp & Trockel 2020; Morgantini et al., 2020). However, few large studies have quantified the levels of moral stress or moral distress among this population during the pandemic. In one study from Norway, 67% of

1,606 HCWs who cared for COVID-19 patients reported experiencing priority-setting dilemmas (Miljeteig et al., 2021). However, while levels of moral distress were low on average, they varied among occupational groups. Moral distress has been reported in two quantitative studies concerning psychosocial wellbeing and moral injury. In one study, moral injury was associated with higher levels of anxiety, depression, and posttraumatic stress disorder (Lamb et al., 2021). A study in the USA found that a supportive workplace environment was linked to lower levels of moral injury (Hines, Chin, Glick & Wickwire, 2021). These studies highlight that moral distress is associated with secondary psychological consequences and suggest that HCWs may benefit from support when facing moral challenges. Qualitative studies among nurses during the pandemic have reported increased ethical challenges, especially regarding the decreased opportunity and time to provide human-centered health care (Chamsi-Pasha & Albar 2020; Fernández-Castillo, González-Caro, Fernández-García, Porcel-Gálvez, & Garnacho-Montero, 2021). Similar findings in Swedish qualitative studies have demonstrated that HCWs have been strained regarding stress and moral stress but have also reported increased collaboration and a sense of meaningfulness during the pandemic (Rücker et al., 2021; Fagerdahl, Torbjörnsson, Gustavsson & Älgå, 2021).

The conditions giving rise to moral stress are poorly understood; hence, more knowledge is needed on how, when and in what situations moral stress develops to better mitigate moral distress and burnout among HCWs. Furthermore, it is unclear what support mechanisms HCWs find beneficial for managing moral stress. This study examines moral stress, while further studies will examine moral distress and its consequences among the same participants.

AIM

This study aims to quantify the experiences of moral stress by HCWs recruited from 153,300 participants in the COVID-19 training offered by Karolinska Institute (KI) in 2020. The study quantifies to what extent these HCWs experienced moral stress and to what extent their experiences of moral stress were related to working directly with COVID-19 patients and other work-related factors (e.g., profession and workplace demographics) as well as age and gender.

METHODS

This descriptive study consists of a cross-sectional survey of Swedish HCWs conducted during the end of the first and the beginning of the second wave of the pandemic, in which the health care system was strained due to

lack of resources, thereby exposing the staff to difficult decisions. The second wave in Sweden started at the end of October 2020 and lasted until January 2021. Similar reports of HCW experiences have been reported in other parts of the world (In Harm's Way, 2020).

DATA COLLECTION PROCEDURE

In March 2020, on behalf of the Swedish National Board of Health and Welfare, KI developed a web course related to COVID-19 for Swedish 1) HCWs, 2) administrative- and 3) support staff (The center for research on healthcare in disasters, 2020); as of September 2020, a total of 153,300 individuals had participated in the web course. The course aimed to develop readiness and knowledge among personnel in the entire health care sector to prevent the spread of COVID-19. Information about COVID-19, principles of hygiene and the use of personal protective equipment (PPE) were important parts of the course (The center for research on healthcare in disasters, 2020). Between September 23 and October 13, 2020, participating HCWs who had worked with patient care during the COVID-19 pandemic were asked by email to answer a web survey. The aim of the study was presented in the email, which stated that the survey was mainly intended for HCWs who had worked in patient care during the COVID-19 pandemic. The survey took approximately 30–45 minutes to complete. Two reminders were sent out by email, and the survey was closed on November 3, 2020.

The survey was administered through a safe and secure platform designed to support data capture for research studies: the Research Electronic Data Capture (REDCap) tool, hosted by KI (Harris et al., 2019; Harris et al., 2009).

PARTICIPANTS

The HCW participants came from all 21 county councils in Sweden. Of the 23,425 replies received, 6,551 were removed due to incomplete answers in the background information section and non-answers to the moral stress questions. Of the remaining 16,876 completed questionnaires, the 832 duplicate entries that resulted when participants entered more than one reply were removed, resulting in a final sample of 16,044 participants for analysis. Due to a lack of data concerning the number of HCWs among all 153,300 web course participants, the response rate was difficult to assess. See Appendix 1, Table A 1, for an overview of respondents' internal dropout rates. A majority of the participants were employed in a health care profession related to direct patient care, including health care assistants, assisting nurses, nurses, specialized nurses, and physicians. Staffing assistants/coordinators and managers were professions that were in the minority. Professions related to patient care but not directly involved in COVID-19 care included professionals such as dentists/dental nurses

and radiologists. The mean age of the sample was $M = 46$ ($SD = 12$). Most of the respondents (85%) were female. Almost half (44%) had worked in direct COVID-19 care. See Table 1 for descriptive characteristics.

SURVEY QUESTIONS

Moral stress

The survey questions related to moral stress were used as outcome variables in the analyses. The questions were developed based on results from a scoping review

DESCRIPTIVE CHARACTERISTICS			
CHARACTERISTIC	TOTAL	COVID-19 CARE, N (%)	
		NO	YES
Age, years			
<20	218 (1)	134 (2)	84 (1)
20–30	1830 (12)	862 (10)	968 (14)
31–40	3029 (19)	1555 (17)	1474 (21)
41–50	4032 (25)	2208 (25)	1824 (26)
51–65	6493 (41)	4002 (45)	2491 (36)
>65	233 (1)	171 (2)	62 (1)
Gender			
Female	13563 (85.4)	7656 (85.4)	5907 (85.4)
Male	2276 (14.3)	1281 (14.3)	995 (14.4)
Other	45 (0.3)	30 (0.3)	15 (0.2)
Occupational groups			
Direct patient care	12640 (79)	6604 (73)	6036 (87)
Managers	470 (3)	259 (3)	211 (3)
Coordinators	82 (1)	55 (1)	27 (0)
Indirect patient care ^a	1219 (8)	806 (9)	413 (6)
Other ^b	1554 (10)	1277 (14)	277 (4)
Months at workplace			
<6	1480 (10)	769 (9)	711 (11)
6–12	1542 (10)	848 (10)	694 (11)
13–60	6217 (41)	3431 (41)	2786 (42)
61–120	2570 (17)	1470 (17)	1100 (17)
121–240	2100 (14)	1237 (15)	863 (13)
>240	1190 (8)	736 (9)	454 (7)

Table 1 Descriptive characteristics.

Note: Group totals differ due to incomplete survey responses.

^a: Psychologists, dentists/dental nurses, physiotherapists/occupational therapists/dietitians, audiologists/speech therapists, pharmacists, radiology nurses/medical physicists, biomedical scientists/laboratory assistants, and chiropractors.

^b: Other which is not specified in the above.

(Gustavsson, Arnberg, Juth & von Schreeb, 2020) and a qualitative study (Gustavsson, Juth, Arnberg & von Schreeb, 2022) that explored the characteristics of moral stress and moral distress among Swedish disaster responders. The survey was based on descriptions of perceived moral challenges and the management and consequences of these challenges. Thus, questions related to moral challenges, moral stress, moral distress, and associated consequences have not been used in previous studies. Therefore, the survey was first piloted among four disaster-oriented health responders and refined based on their comments. Thereafter, the questions were adapted to fit the circumstances of the pandemic in Sweden, and the survey was piloted a second time with four Swedish HCWs who had been involved in COVID-19 care; the questions were again refined.

The participants were presented with a description of moral stress: "Some situations may mean that you cannot follow and act on your moral values. These situations may give rise to moral stress, for example, feelings of powerlessness, frustration, helplessness, and anger/sadness. The situations may, for example, be that you have needed to make decisions even though the options available seemed wrong, or where you have been prevented by circumstances from doing what is in line with your values, or where you have been involved in a decision against your beliefs by another's action or decision". Then, the participants were asked if they had "been in situations of moral stress" and to respond on a five-point scale (response categories: *never*, *rarely*, *occasionally*, *often*, *very often*). Then, they were asked five questions about their perceptions of the severity of the moral stress in various situations: 1) ethical dilemma: when all the alternatives felt wrong, but I had to act/make a decision; 2) I made or was included in a decision that was not aligned with my moral values; 3) when others' decisions hindered me from acting in accordance with my moral values; 4) when other circumstances hindered me, such as lack of time or materials and structural resources; and 5) when I took action, but I felt that it was not sufficient according to my moral perceptions. Responses were provided on a 7-point scale ranging from *none* to *extreme*. Then, we asked nine questions related to the perceived causes of morally stressful situations, namely, 1) resource constraints, such as PPE, material, staff, beds; 2) clashes between one's own moral values and those of the workplace/other actors; 3) being forced to act outside of one's competence; 4) cultural, social and political aspects; 5) leadership and structures in the team; 6) colleagues' behaviors and decisions; 7) placing one's own safety before patient care; 8) the isolation of patients who were limited in regard to the visits and involvement of relatives; and 9) difficulties related to relatives/intimates being involved in patients' end-of-life care. In addition, there were four questions about what support for dealing with morally stressful situations the

respondents perceived to be available. The responses to the questions about causes and support were on a 7-point scale ranging from *disagree* to *fully agree*. The survey questions can be found in the supplementary files. For ease of interpretation, the descriptive statistics are presented with response options grouped into disagree/none, partly agree/moderate stress, and agree/high stress, whereas the full range of the response scales was used in the regression models.

Explanatory variables

We used survey responses related to demographic and occupational characteristics as explanatory variables in the analyses. The participants' professions were categorized into five groups: professions with direct patient care, managers, coordinators, professions with indirect patient care, and "other". For the descriptive statistics, age was grouped into six categories (≤ 19 , 20–29, 30–39, 40–49, 50–64, ≥ 65 years of age), and time at workplace was grouped into six categories (≤ 5 , 6–11, 12–59, 60–119, 120–239, ≥ 240 months). In the regression models, age was entered as a continuous variable, centered on the mean age of the sample and divided by 10 to provide more sensible parameter values. One question in the background section was related to involvement in COVID-19 care, with three options: 1) worked with direct COVID-19 care; 2) worked with non-direct COVID-19 care; and 3) worked with both. Responses were then grouped into two categories: worked with direct COVID-19 care (Groups 1 and 3) and worked with non-direct COVID-19 care (Group 2). Descriptive statistics are presented conditional on this variable.

STATISTICAL ANALYSIS

Due to the exploratory nature of this study, descriptive statistics are provided in depth, together with ordinal logistic regressions to test associations between aspects of moral stress as outcome variables and demographic and occupational characteristics as explanatory variables. The main effects of the explanatory variables were evaluated in multivariate models. Of note, the high correlation between the explanatory variables of age and time at workplace led to issues with multicollinearity, and thus only age was retained in the analyses. We evaluated multiple imputation to replace missing values in the explanatory variables; however, as the results from the imputed datasets were very similar to the analyses on the original dataset and had poorer goodness of fit, we report the results from the unimputed dataset. In the regression with experiences of moral stress as the outcome, we included all respondents: for the rest of the outcomes, we excluded those who had never experienced situations with moral stress. The associations are presented as odds ratios (ORs) with 95% Wald confidence intervals (CIs). As the outcomes are ordinal, the OR is interpreted as the odds of responding

with a higher rating on the outcome variable compared to the reference category. SPSS version 28.0 was used for all data analyses. The level of significance was specified at 0.05.

RESULTS

FREQUENCY AND SEVERITY OF MORALLY STRESSING SITUATIONS

Most of the respondents (n = 15,278; 76%) reported having experienced moral stress ranging from occasionally to very often during the COVID-19 pandemic. Specifically, 85% of those who had worked with direct COVID-19 care (n = 6,676) reported that they had been in situations with moral stress occasionally or often/very often compared to 68% (n = 8,602) of those who had not been involved in direct COVID-19 care (Figure 1). The regression (Table 2) indicated that the participants who had worked with direct COVID-19 care were more likely to report a higher frequency of morally stressing situations; this was also true for occupational groups categorized as working with direct patient care compared to other groups. Men and increasing age were associated with less frequent experiences of morally stressing situations. For detailed descriptive statistics, see Supplementary Tables A2-A9 in Appendix 1.

A lack of resources and feelings of insufficiency were reported as evoking the greatest moral stress, such

DIFFERENCES IN THE FREQUENCY OF EXPERIENCING MORALLY STRESSFUL SITUATIONS	
PREDICTOR	FREQUENCY OF MORALLY STRESSFUL SITUATIONS, OR [95% CI] (N = 14,935)
Age (×10 years)	0.88 [0.86; 0.91]***
Sex	
Male	0.77 [0.71; 0.84]***
Female (ref)	1.00
COVID care	
Yes	2.37 [2.23; 2.51]***
No (ref)	1.00
Occupational group	
Indirect patient care	0.63 [0.57; 0.70]***
Coordinators	1.23 [0.84; 1.80]
Managers	1.09 [0.93; 1.27]
Other	0.74 [0.67; 0.82]***
Direct patient care (ref)	1.00

Table 2 Differences in the frequency of experiencing morally stressful situations.

Note: The outcome was assessed on a 5-point scale from Never to Very Often and treated as an ordinal variable in the analysis.

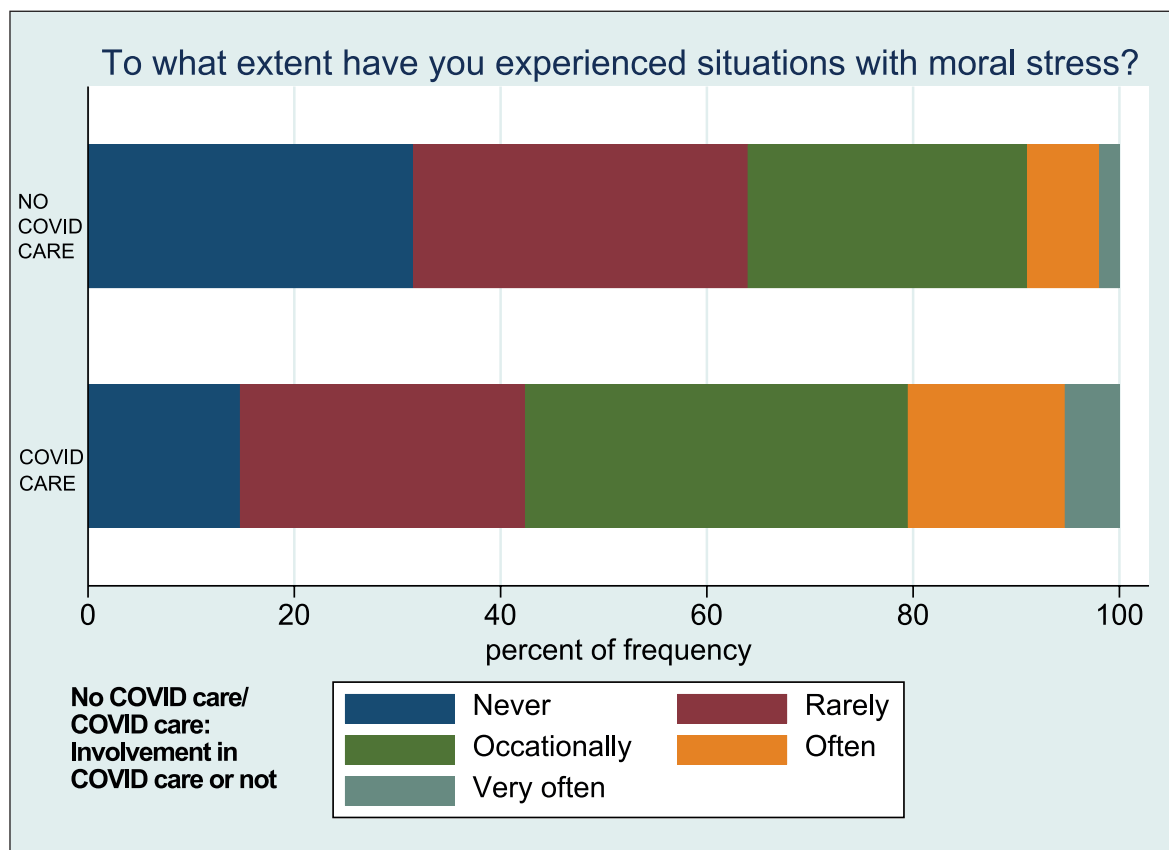


Figure 1 The extent of experiencing situations with moral stress. Participants involved in COVID-19 care reported a higher frequency of morally stressing situations (p < 0.001).

as, “Other circumstances hindered me, such as lack of time or materials and structural resources” (external circumstances) and “I took action, but I felt that it was not sufficient according to my moral perceptions” (feelings of insufficiency) (Figure 2). Among HCWs involved in COVID-19 care, those working in an intensive care unit, a COVID-19 ward, an intermediate care

unit, palliative care, geriatrics, and emergency wards reported higher levels of moral stress than those in an inpatient care ward or primary health care services. HCWs in municipal elderly care reported high levels of moral stress, although these levels were lower than those in the abovementioned categories. There were differences in perceived severity of moral stress related

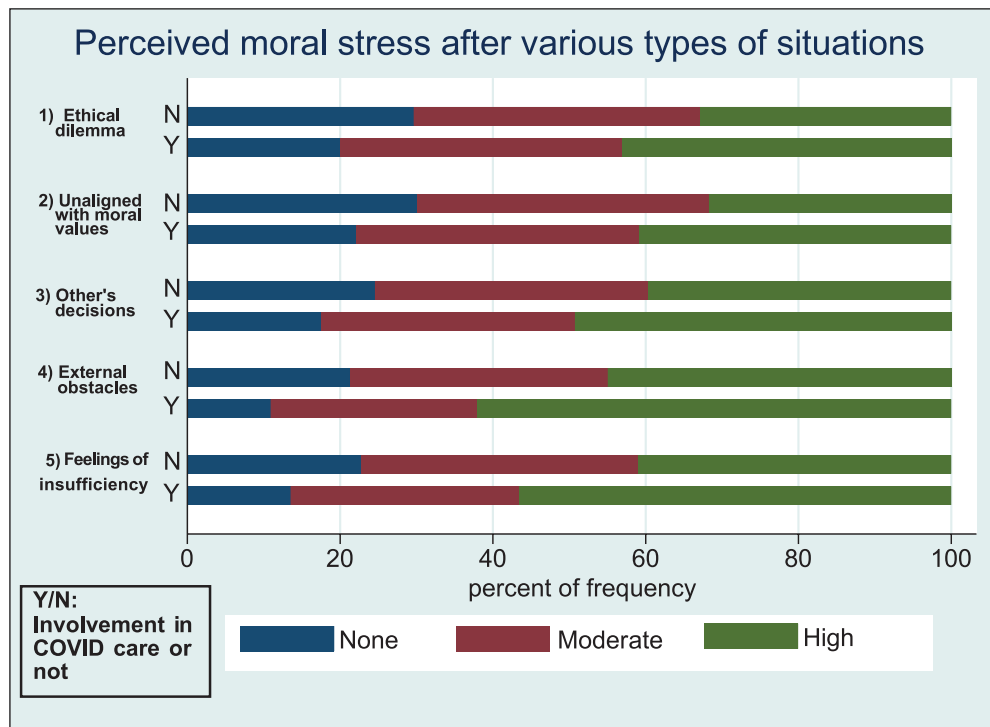


Figure 2 Perceived moral stress after various types of situations. Participants involved in COVID-19 care reported higher levels of stress in all situations (all $ps < 0.001$).

DIFFERENCES IN RATINGS OF SEVERITY OF THE STRESS ASSOCIATED WITH DIFFERENT TYPES OF MORALLY STRESSFUL SITUATIONS					
PREDICTOR	TYPE OF SITUATION, OR [95% CI]				
	ETHICAL DILEMMA (N = 10050)	UNALIGNED WITH MORAL VALUES (N = 10022)	OTHERS' DECISIONS (N = 9988)	EXTERNAL OBSTACLES (N = 9979)	FEELINGS OF INSUFFICIENCY (N = 9972)
Age (×10 years)	0.93 [0.90; 0.96]***	0.93 [0.90; 0.96]***	0.89 [0.87; 0.92]***	0.85 [0.83; 0.88]***	0.88 [0.86; 0.91]***
Sex					
Male	1.01 [0.92; 1.11]	0.92 [0.83; 1.01]	0.96 [0.87; 1.06]	0.82 [0.74; 0.90]***	0.81 [0.73; 0.89]***
Female (ref)	1.00	1.00	1.00	1.00	1.00
COVID care					
Yes	1.48 [1.38; 1.59]***	1.41 [1.31; 1.51]***	1.43 [1.34; 1.54]***	1.91 [1.78; 2.05]***	1.80 [1.68; 1.94]***
No (ref)	1.00	1.00	1.00	1.00	1.00
Occupational group					
Indirect patient care	0.61 [0.53; 0.71]***	0.72 [0.63; 0.83]***	0.80 [0.70; 0.92]**	0.66 [0.57; 0.75]***	0.68 [0.59; 0.77]***
Coordinators	1.00 [0.63; 1.58]	1.37 [0.91; 2.05]	1.08 [0.72; 1.60]	0.58 [0.38; 0.86]**	0.81 [0.50; 1.29]
Managers	1.05 [0.87; 1.26]	1.10 [0.91; 1.34]	1.05 [0.85; 1.30]	1.01 [0.82; 1.24]	0.90 [0.74; 1.11]
Other	0.81 [0.71; 0.92]**	0.86 [0.75; 0.98]*	0.84 [0.74; 0.96]*	0.67 [0.58; 0.76]***	0.75 [0.66; 0.85]***
Direct patient care (ref)	1.00	1.00	1.00	1.00	1.00

Table 3 Differences in ratings of severity of the stress associated with different types of morally stressful situations. Note: Moral stress was assessed on a 7-point scale from None to Extreme and treated as ordinal variables in the analyses.

to occupational factors (Table 3): working with COVID-19 care and with direct patient care were associated with a higher likelihood of experiencing high moral stress in any of the different types of situations. Increasing age was consistently associated with a lower likelihood of experiencing these situations as stressful, whereas gender was associated with higher levels of stress in two of the types of situations: other circumstances hindered me, and my actions felt insufficient.

PERCEIVED CAUSES OF MORALLY STRESSFUL SITUATIONS

A lack of resources was described as the main reason for situations that caused moral stress, especially among those who worked with COVID-19 care. The lack of resources included a lack of personal protective equipment, staff, and care beds. Difficulties related to relatives not being present for patients' end-of-life care and the isolation of patients who could not have visits scored high, yet lower than resource constraints. Following these factors, leadership structures within the team and placing one's own safety before caring for patients were reported as causes for situations that evoked moral stress (Table 4).

The participants did not find the following factors to be major causes of difficult situations: clashes between the organization or other actors' policies and my moral values, being forced to act beyond my professional competence, and colleagues' behavior and decisions. A minority of the respondents agreed that the statement "cultural, social and political aspects" was one of the major causes of morally stressing situations. Regarding differences in the likelihood of reporting a perceived cause, there were similar patterns for all causes, with some exceptions (Table 4). COVID-19 care was clearly related to an increased likelihood of identifying all causes, particularly those related to the isolation of sick and dying patients. Direct patient care was again clearly associated with a higher likelihood of endorsing all causes, with the exception of resource constraints, a cause that managers were more likely to identify as salient. Age and gender were less consistently associated with the likelihood of perceiving a particular cause, but increasing age and male gender were generally associated with ascribing a lower likelihood to a cause.

PERCEPTIONS OF AVAILABILITY AND HELPFULNESS OF SUPPORT

More than half (56%) of the participants involved in COVID-19 care and almost half (46%) of those not involved in COVID-19 care agreed with the statement "it was up to them to solve the situation, find support and come up with solutions/ideas regarding managing morally stressful situations" (Table 5). Furthermore, the participants reported that informal support from colleagues in their team and contact with friends/

family/other colleagues were the main tools that were available and used to manage moral stress. Formal support was reported to be less available and useful than informal support regarding managing moral stress. The support functions consisted of 1) formal support, such as workplace support, reflection groups, and end-of-shift talks; 2) psychologists/therapists, occupational health care, and leadership support; and 3) informal support (contact with colleagues in the team, family, friends, and other colleagues).

Working with COVID-19 care was associated with a higher likelihood of utilizing all sources of support (Table 5). Regarding occupational type, there were no clear patterns for occupations in the direct patient care group. Rather, managers were clearly more likely to endorse high levels of all types of support. Men were more likely than women to endorse formal types of support but less likely to endorse informal support, and the associations for increasing age followed a similar pattern.

DISCUSSION

This study is the first to quantify moral stress in a large group of HCWs, and we found that moral stress was present among a majority of HCWs during the COVID-19 pandemic. The rate of experiencing situations that evoked higher levels of moral stress was particularly high among those involved in direct COVID-19 care, yet many who did not work with COVID-19 care also reported experiencing high levels of moral stress. Working in areas with a high incidence of infection was also reported in a systematic review as a main contributing factor for increased stress and as negatively affecting wellbeing during the pandemic (Vizheh, et al., 2020).

Study findings from Italy, Spain, and China (Jia et al., 2021; Fernández-Castillo et al., 2021; Mazza et al., 2020), corroborate the high prevalence of ethical challenges and stress among those who work closest to infected patients. However, some studies mention the double-sided effect among HCWs involved in COVID-19 care in Sweden; they report a higher sense of meaningfulness due to more focus on caring for the patient and less administrative work, while at the same time facing the intensity of morally challenging situations (Rücker, et al., 2021). Furthermore, a study from China of HCWs reported less burnout due to a higher sense of control among those working in the frontline than other HCWs, and the authors suggested that this may be due to the frontline workers continuously receiving new and updated information about the pandemic (Wu et al., 2020). HCWs of younger age and those employed for a shorter time at the workplace seem to experience moral stress to a slightly higher degree, which perhaps indicates that they may particularly need information about moral

DIFFERENCES IN PERCEIVED CAUSES OF MORALLY STRESSFUL SITUATIONS									
PREDICTOR	PERCEIVED CAUSE. OR [95% CI]								
	RESOURCE CONSTRAINTS (N = 9210)	CLASH BETWEEN OWN/OTHERS' MORAL VALUES (N = 9196)	FORCED ACT OUTSIDE OF COMPETENCE (N = 9193)	CULTURAL, SOCIAL AND POLITICAL ASPECTS (N = 9188)	LEADERSHIP, TEAM STRUCTURES (N = 9186)	COLLEAGUES/ BEHAVIORS/ DECISIONS (N = 9188)	OWN SAFETY BEFORE PATIENT CARE (N = 9176)	PATIENT ISOLATION HINDERING VISITS (N = 9170)	DIFFICULTIES IN END-OF-LIFE CARE (N = 9164)
Age (x10 years)	0.87 [0.84; 0.89]***	1.01 [0.98; 1.04]	0.83 [0.81; 0.86]***	0.97 [0.94; 1.00]*	0.97 [0.94; 1.00]	0.91 [0.89; 0.94]***	0.93 [0.90; 0.96]***	0.92 [0.89; 0.95]***	0.93 [0.90; 0.96]***
Sex									
Male	0.73 [0.66; 0.81]***	0.91 [0.82; 1.01]	0.92 [0.84; 1.02]	0.99 [0.89; 1.10]	0.90 [0.81; 1.00]*	0.94 [0.85; 1.05]	0.83 [0.75; 0.92]***	0.69 [0.63; 0.77]***	0.71 [0.64; 0.79]***
Female (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
COVID care									
Yes	1.99 [1.84; 2.14]***	1.45 [1.34; 1.56]***	1.76 [1.63; 1.90]***	1.42 [1.32; 1.53]***	1.37 [1.28; 1.48]***	1.22 [1.14; 1.32]***	1.85 [1.71; 1.99]***	2.40 [2.23; 2.59]***	3.07 [2.84; 3.32]***
No (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Occupational group									
Indirect patient care	0.65 [0.56; 0.76]***	0.77 [0.67; 0.90]**	0.69 [0.60; 0.80]***	0.72 [0.62; 0.83]***	0.81 [0.70; 0.93]**	0.57 [0.49; 0.66]***	0.63 [0.55; 0.73]***	0.48 [0.42; 0.56]***	0.44 [0.37; 0.52]***
Coordinators	0.88 [0.57; 1.38]	0.88 [0.58; 1.33]	1.02 [0.62; 1.66]	1.26 [0.80; 2.00]	0.77 [0.48; 1.24]	1.19 [0.76; 1.86]	0.86 [0.58; 1.27]	0.68 [0.45; 1.03]	1.15 [0.69; 1.92]
Managers	1.32 [1.07; 1.62]**	0.81 [0.66; 1.00]	1.18 [0.97; 1.43]	1.02 [0.84; 1.24]	0.78 [0.64; 0.94]**	0.81 [0.67; 0.98]*	0.38 [0.31; 0.47]***	0.68 [0.55; 0.84]***	0.57 [0.46; 0.72]***
Other	0.66 [0.57; 0.76]***	0.87 [0.76; 1.00]	0.90 [0.79; 1.04]	0.89 [0.77; 1.03]	0.88 [0.76; 1.02]	0.86 [0.75; 0.99]*	0.73 [0.63; 0.85]***	0.51 [0.44; 0.59]***	0.39 [0.33; 0.46]***
Direct patient care (ref)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 4 Differences in perceived causes of morally stressful situations.

Note: Each outcome was assessed on a 7-point scale from Disagree to Fully Agree and treated as ordinal variables in the analyses.

DIFFERENCES IN THE PERCEIVED AVAILABILITY AND USEFULNESS OF SOURCES OF SUPPORT FOR MORAL STRESS

PREDICTOR	SOURCES OF SUPPORT, OR [95% CI]			
	OWN SOLUTION/ IDEAS, FINDING OWN SUPPORT (N = 8741)	WORKPLACE SUPPORT, REFLECTION GROUPS ETC. (N = 8730)	PSYCHOLOGIST/COUNSELLOR, OCCUPATIONAL HEALTH CARE, LEADERSHIP SUPPORT (N = 8727)	INFORMAL SUPPORT; COLLEAGUES, FRIENDS/FAMILY (N = 8721)
Age (×10 years)	0.98 [0.95; 1.01]	1.08 [1.04; 1.11]***	1.05 [1.02; 1.09]**	0.94 [0.91; 0.97]***
Sex				
Male	1.17 [1.06; 1.29]**	1.26 [1.14; 1.40]***	1.17 [1.06; 1.30]**	0.86 [0.78; 0.95]**
Female (ref)	1.00	1.00	1.00	1.00
COVID care				
Yes	1.44 [1.34; 1.55]***	1.16 [1.07; 1.25]***	1.37 [1.27; 1.48]***	1.62 [1.50; 1.74]***
No (ref)	1.00	1.00	1.00	1.00
Occupational group				
Indirect patient care	1.03 [0.89; 1.20]	0.91 [0.79; 1.06]	0.97 [0.82; 1.13]	1.18 [1.01; 1.37]*
Coordinators	0.66 [0.39; 1.12]	1.48 [1.01; 2.16]*	1.51 [0.93; 2.45]	1.23 [0.74; 2.03]
Managers	1.44 [1.18; 1.77]***	1.31 [1.07; 1.62]**	1.91 [1.58; 2.32]***	2.09 [1.73; 2.54]***
Other	0.89 [0.77; 1.04]	1.10 [0.95; 1.27]	1.21 [1.05; 1.39]**	0.95 [0.82; 1.10]
Direct patient care (ref)	1.00	1.00	1.00	1.00

Table 5 Differences in the perceived availability and usefulness of sources of support for moral stress.

Note: Each outcome was assessed on a 7-point scale from Disagree to Fully Agree and treated as ordinal variables in the analyses.

stressors, support, and opportunities to discuss and reflect on moral issues with colleagues (Hines, Chin, Glick & Wickwire, 2021). The results further indicate that proximity to COVID-19 patient care is linked to higher ratings of moral stress.

SUGGESTIONS FOR HOW MORAL STRESS CAN BE ADDRESSED

Interestingly, situations commonly associated with moral stress, such as moral dilemmas or feelings of being complicit, were not the main reported causes among the study participants. Instead, the responses indicated that the lack of resources was the main reason. Situations related to the isolation of patients were the second most common contributors to moral stress. This contrasts with common definitions of moral stress (Jameton, 1984; Wilkinson, 1987), in which moral dilemmas are the conceptual point of departure. However, institutional constraints that hinder acting upon one's own moral values, as mentioned by Jameton, are in line with the findings in our study that highlight resource limitation as a major cause of moral stress. These findings provide input for how HCWs could be supported during their work in an ongoing pandemic. For example, effective support includes finding new ways to include the relatives of a patient and to acknowledge and address resource constraints to every extent possible. If organizations clarify the consequences of and stimulate discussions about structural constraints, moral stress may be

reduced. Indeed, a study from the USA found that a supportive work environment decreases the levels of moral injury among HCWs (Hines, Chin, Glick & Wickwire, 2021).

SUPPORT STRUCTURES FOR HCWS

We found that informal support was perceived as more useful and available than formal workplace support when dealing with morally challenging situations. This finding relates to a Norwegian study, in which existing support structures, such as communication with managers and discussions with colleagues, were found to be more helpful than formal support from outside the workplace (Miljeteig et al., 2021). There are several possible explanations for this outcome; perhaps formal support is either not accessible or available, and therefore informal support is perceived as more important. There were clear differences in the perceptions of support related to both occupational factors and gender and age. However, organizations could consider encouraging HCWs to make use of their social support network and creating teams with supportive colleagues at their workplaces. Moreover, organizations could examine the accessibility and delivery of their formal support since a high workload may hinder HCWs from utilizing formal support during their shift. We also hypothesize that formal support sources may be viewed by HCWs as targeting mental health problems and not the burdens of normal reactions to difficult situations, which would often be misguided.

The results from this study indicate that moral stress cannot be limited to a certain discipline or reduced to individual psychological health problems. Instead, it has a wider explanation, including a lack of resources, which suggests that interventions to reduce stress must be answered with a multifactorial approach. Moral stress cannot be eased unless the underlying factors are understood, and to ensure the availability of sufficient resources and organizational structures, including peer support and functioning leadership, which provide support for adequate prioritization when resources are limited. Given the group differences noted in this study, this task may need different strategies depending on, for example, the occupational group that is targeted. Additionally, providing HCWs with the opportunity to reflect on moral issues as moral issues (and not merely psychological problems) is likely to be beneficial since this approach takes HCWs' problems seriously.

METHODOLOGICAL CONSIDERATIONS AND LIMITATIONS

This study was conducted during a pandemic and did not contain any data on pre-pandemic moral stress exposure, which precludes conclusions about changes in moral stress compared to before the pandemic. The participants may differ from other Swedish HCWs in demographic aspects or in having the time or energy to participate in the survey. Data were collected between the first and second waves of the pandemic in Sweden. Therefore, there was a high workload placed on health care services at the time, which may have negatively affected the response rate. Furthermore, the length of the survey may have caused respondents to drop out, which is indicated by a near monotonic pattern of a lower number of respondents in the tables and regression analyses. This study is one of the first to quantify a phenomenon that is currently not well known; thus, the uncertainty related to the validity of our measures of moral stress needs to be considered when interpreting the results. We acknowledge the low response rate; however, many of those who underwent the COVID-19 courses and thus were invited to the study were not eligible (nonmedical administrative and support staff), although we lack specific data on how many there were. Therefore, we cannot ascertain the representativeness of the sample. Nonetheless, they represent the responses of several thousand HCWs who worked during the COVID-19 pandemic, which provides valuable insight.

CONCLUSION

Our findings suggest that moral stress is common among HCWs and that there are differences in perceptions of the experience and severity of moral stress across occupational groups and across age and gender. Moral

stress seems to be particularly widespread among personnel who work with patients with a potentially lethal transmittable disease during a pandemic situation and need increased attention related to morally challenging situations. Informal support is perceived to be most available and useful for managing moral stress; however, group differences in perceptions of support sources indicate that health care organizations may benefit from examining limitations to current formal support offerings and increasing opportunities for informal support. Furthermore, as the common causes of moral stress were specific to the pandemic, we hope it is possible to alleviate some of the moral stress among HCWs by highlighting the moral dimensions of working with resource constraints. To conclude, the goal should not be to eliminate moral stress, as such stress may be viewed as a normal reaction to moral issues, but to provide organizational structures, such as sufficient staffing and resources to the extent possible, to decrease the likelihood of situations in which moral stress could be profound. Finally, to avoid the development of moral distress and its potential consequences, improvements could be made in providing HCWs with support tools for managing moral stress.

DATA ACCESSIBILITY STATEMENTS

Relevant data will be available upon reasonable request from the authors.

ADDITIONAL FILES

The additional files for this article can be found as follows:

- **Supplementary File 1.** The survey questions (uploaded only as a supplementary file, not here). DOI: <https://doi.org/10.16993/sjwop.170.s1>
- **Supplementary File 2.** Appendix 1, Tables A1-A9 (uploaded only as a supplementary file, not here). DOI: <https://doi.org/10.16993/sjwop.170.s2>

ETHICS AND CONSENT

Ethical permission was attained for this study from the Swedish Regional Ethics Review Board, Stockholm (2017-12-21, DNR: 2017/2182-31), with approved amendments 2020-06-26, DNR: 2020-03161.

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COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS

All authors were involved in the conception, design and during the development of the study manuscript. The first author developed the questionnaire, catered the data collection with support from all other authors. Data analysis was catered by the first author together with a statistician. With support of the other authors, the first author catered the writing. All authors have had full access to the data, accept responsibility to submit for publication and agreed on the final version.

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