Health Care Organization Policies for Employee Safety and COVID-19 Pandemic Response

A Mixed-Methods Study

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Objective: The coronavirus (COVID-19) pandemic impacted the well-being of health care workers. We examined the association between prepandemic perceptions of perceived organizational support for safety (using NOSACQ-50), safety hazards and the pandemic's impact on individual workers and institutions. **Methods:** Questionnaires from health care staff of five public health care facilities were collected in 2018 (n = 1059) and 2021 (n = 1553). In 2021, 17 workers were interviewed from the same facilities. **Results:** Interviewees reported that their organizations struggled to communicate due to changing guidelines, inadequate personal protective equipment, training, and infection control, early in the pandemic. Questionnaire reports of decreased staffing and increased workload during the pandemic were associated with lower baseline NOSACQ scores. **Conclusion:** Survey findings predicted some variation in organizational response to the pandemic. Better organizational policies for employee safety and pandemic planning could improve health care institutions' preparedness.

Keywords: health care worker safety during COVID-19, workplace safety, prevention, occupational health, safety policy

CME Learning Objectives

After completing this enduring educational activity, the learner will be better able to:

- Discuss the association between pre-pandemic perceptions of perceived organizational support for safety and the pandemic's impact on individual workers and institutions
- Outline how decreased staffing and increased workload during the pandemic were associated with lower NOSACQ scores
- Explain how better organizational safety policies and pandemic preparedness could have improved healthcare institution's ability to provide a safe work environment

On March 2020, the World Health Organization declared infection caused by the SARS-COV2 virus, COVID-19, to be a pandemic, leading to a health care emergency globally.[1] Two years into the pandemic, the United States has had a total of 86,787,443 cases (as of August 2022)[2] and the highest cumulative COVID-19 deaths per capita among its peer nations.[3]

Working in the pandemic placed an extraordinary burden on health care workers who faced enormous job demands in terms of workload, reduced staffing, policy confusion, and a lack of resources like testing and appropriate personal protective equipment (PPE) to stay safe while performing their jobs.[4] Maintaining personal safety and infection control in the face of such difficult circumstances was—and continues to be—challenging for health care workers, as health care facilities themselves became sources of infection.[5] During the initial stages of the pandemic, a lack of specific knowledge about the SARS-COV2 virus and its modes of transmission complicated the implementation of infection control practices[6] while also generating political disputes and media scrutiny.[7,8] These features of the pandemic created a unique challenge for health care organizations struggling to create a safe environment for employees and patients alike, especially with frequently changing safety guidelines.[9]

The consequence of this was severe impacts on the well-being of health care workers providing essential services.[10–13] Globally, health care workers were at a higher risk of COVID-19.[14] A British study showed that health care workers were more than two times more likely to become infected with COVID-19 and seven times more likely to develop severe COVID-19 illness than other occupational groups.[15] Further, in such a dynamic and uncertain work environment, where one was constantly in fear of one's own safety, it was inevitable that health care workers were disproportionately affected by adverse mental health outcomes like anxiety, depression, and burnout.[16–20] Prevalence estimates of mental health conditions in health care workers during the pandemic were as high as 22% for PTSD, followed by anxiety disorder (16%), major depression (13%), and acute stress disorder (7%).[21]

There have been fewer descriptions of the institutional-level response and immediate working conditions. Of particular interest is the extent to which organizational actions to protect employee safety during the pandemic might have affected health care worker well-being. Studies suggest that institutional reinforcement of infection control strategies had positive implications for health care workers' mental health during the pandemic.[22–24] Nieuwsma et al[25] compared the patterns of moral injury—a form of

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long-lasting impact on combat veterans deployed post 9/11—demonstrating similar trends developing in first-line workers facing the pandemic. Moral distress in nurses has been associated with burnout and perceptions of poor (substandard) ethical working climate.[26–28]

Our objective was to describe what some US public sector health care personnel observed in terms of institutional response to the onset of the COVID-19 pandemic, and to examine the prospective association between general organizational support for safety and staff members' subsequent experiences at work during the pandemic. To our knowledge, this is the first study to provide such an analysis.

METHODS

Survey Data

The study, "Safety and Health through Integrated, Facilitated Teams (SHIFT)," [29] was carried out in five public health care facilities: two mental health facilities, two long-term care and assisted living facilities for veterans, and one veteran's hospital.[29] The facilities ranged in size, in terms of patient capacity and employee numbers, and provided a range of chronic care and residential services as well as some acute care.

All employees were recruited for a self-administered survey covering a variety of work environment factors and health conditions.[29] Baseline surveys were conducted in 2018–2019 and follow-up surveys in 2021. The baseline questionnaire included items from validated published instruments where possible, as well as new closed-ended questions developed for this study. In particular, organizational support for safety (OSS) was assessed with the management safety empowerment subscale of the Nordic Occupational Safety Climate Questionnaire (NOSACQ-50) instrument,[30] which assesses practices such as supporting employees to help design meaningful safety routines and to report incidents and near-misses (Supplementary Table 1, http://links.lww.com/JOM/B226). A four-item scale of "safety hazards" was constructed using published items[31] which reflected employees' direct experience of day-to-day problems (Supplementary Table 1, http://links.lww.com/JOM/B226). Both of these potential predictors were used as continuous variables.

The follow-up questionnaire was expanded to include questions related to worker experiences during the COVID-19 pandemic; these new items were written by the SHIFT research team, many adapted from Smith et al[24] (Supplementary Table 2, http://links.lww.com/JOM/B226) Most of these were closed-ended and were handled as categorical outcome variables in regression analysis. The pandemic experience questions pertained to staffing changes during the pandemic, access to COVID testing at work, availability of paid sick time for COVID-19 illness, coming to work with symptoms, mental health support, supportive work environment and the intention to leave the job in the next two years (Supplementary Table 2, http://links.lww.com/JOM/B226). There were also two open text questions asking about any experiences of harassment or verbal aggression outside of work, attributable to being a health care worker, and what supports they had if they had school-age children receiving remote learning at home. These questions were qualitatively analyzed using Microsoft Excel[32] and a simple theme-based coding scheme with the purpose of identifying themes within the data and drawing conclusions from them was used. The responses to each question were extracted into an Excel spreadsheet. Valid responses were separated from non-responses (deleted blank rows) and quality checks to remove scanning software errors were performed. Once all the responses were verified, they were preliminarily reviewed to draft a thematic framework that could be used for categorization. Using this framework as a foundation, each of the responses was then read thoroughly and placed into one of the theme categories. As the categories became more populated with similar responses, the themes were slightly adjusted as necessary.

The questions were coded independently by two researchers. Later a third researcher joined in to resolve coding differences.

The fourteen job titles were divided into direct care and non-direct categories. Age was dichotomized for analyses into two categories, 18–40 years and 40–80 years.

Descriptive statistics were generated for demographic and work environment conditions in the full baseline survey population, the full follow-up population, and the group of workers who participated in both surveys (Table 1). The workplace items for the present analyses were selected by relevance to the domains highlighted in the qualitative interview data (see below), including safety hazards, organizational support for safety, supervisor and coworker support, adequate staffing, supplies at work, and use of sick days. Distributions were compared between the baseline and follow-up populations, with paired t-tests, 2-sample t-tests and chi-squared statistics as appropriate.

Within the group of workers surveyed twice ("overlap group"), within-person comparisons with paired t-tests assessed whether these individuals' opinions of any work conditions differed on the two survey occasions. Two sample t-tests at both survey occasions determined that the individuals answering both surveys were not different than the respondents that only surveyed once for these items. i.e., the overlap subgroup appeared to be representative of the larger populations.

Baseline OSS and safety hazards were used separately as independent (continuous) predictors of the odds of different (categorical) pandemic work experience variables in ordinal logistic regression models. Models were checked for satisfying the proportional odds assumption.

All quantitative analyses were done using SAS 9.4.[33]

Structured Interviews

From June through September of 2021, we sought workers from the same health care facilities to take part in qualitative interviews about the organizational response to COVID-19. Interviews were conducted using a virtual platform. The question guide for structured interviews is provided in supplementary material (Supplementary Table 3, http://links.lww.com/JOM/B226). This method allowed for the remote collection of information from care providers who were still navigating strict COVID protocols, social distancing, and increased workloads.

Using theoretical and convenience sampling, participants were recruited by a targeted email campaign through current research and union partners, and by recruiting verbally while onsite for survey collection.[34] Participants signed up for an interview using a Qualtrics survey[35] that obtained informed consent and sought demographic characteristics. Informed consent was also verbally reviewed and confirmed at the start of each interview before the recording began. Participant anonymity was protected by the researcher changing the participant's name on the screen to "interviewee" before recording.

The interview script addressed the organizational response to the pandemic, as well as how the pandemic had personally impacted the participant. Interviews were recorded using Zoom.[36] At the conclusion of each interview, the researcher downloaded the de-identified video and audio transcript for electronic storage. The transcript was compared with the video to ensure transcript accuracy.

An initial list of themes was developed by the research team and emerging themes were identified during review and coding of the transcripts. Each parent or primary theme had subthemes, and in some cases, sub-sub-themes. Transcripts were analyzed using NVivo12 software.[37] All transcripts were independently coded by two researchers who had not conducted the interviews. Once completed, a third researcher, who conducted all of the interviews, joined them to reconcile coding differences, which were resolved by consensus. The final stage of analysis consisted of reviewing each theme and making final adjustments of the theme structure and definitions.

RESULTS

Survey Data

This study included a sample of 1059 (2018) survey participants at baseline, 1553 at follow-up (2021), and the "overlap group" of 428 individuals who completed both baseline and follow-up surveys. Participants were predominantly female in both baseline and follow-up surveys and

TABLE 1. Demographic and Occupational Characteristics of Respondents to AES* Questionnaire Survey (Baseline, Follow-Up) and Interviews (2021)

	All AES Baseline (n = 1059)	All AES Follow-Up (n = 1553)	AES Baseline Only (n = 631)	AES Baseline Overlap (n = 428)	Baseline Only vs Follow-Up Respondents (*P* Value From Chi-squared)	Interviewees (n = 17)
Age, yr					0.18	
18 to < 40	279 (29%)	460 (32%)	177 (18%)	102 (11%)		5
40–80	682 (71%)	982 (68%)	401 (42%)	281 (29%)		12
Missing	98	111	53	45		
Gender					0.9	
Male	361 (34%)	583 (38%)	215 (20%)	146 (14%)		3
Female	689 (65%)	956 (62%)	413 (39%)	276 (26%)		14
Site						
Veterans' hospital	311 (29%)	493 (32%)	223 (21%)	88 (8%)		
Soldiers' home 1	194 (18%)	197 (13%)	112 (11%)	82 (8%)		5
Soldiers' home 2	138 (13%)	116 (7%)	93 (9%)	45 (4%)		3
Mental health facility 1	300 (28%)	594 (38%)	144 (14%)	156 (15%)		8
Mental health facility 2	116 (11%)	153 (10%)	59 (6%)	57 (5%)		1
Job type						
Direct care	581 (55%)	875 (56%)	348 (33%)	233 (22%)	0.82	11
Nondirect care	478 (45%)	678 (44%)	283 (27%)	195 (18%)		6

AES, All Employees Survey.

more than one-half were direct care staff (Table 1). The mean ages for men were 48 years (baseline), 47 (follow-up) and for women 47 years (baseline), 46 years (follow-up).

Assessment of baseline work environment conditions did not differ between the overlapped individuals (n = 428) and the remainder of the baseline survey participants (Table 2). Similarly, ratings by the overlap group at follow-up did not differ from the remainder of the follow-up participants, except that OSS was slightly higher in the group only surveyed at follow-up.

The pandemic work experiences that were most often reported as problematic were decreased staffing, increased workload, and inability to take time off due to COVID vaccine side effects. Ordinal logistic regression, using baseline OSS as the predictor within the group followed from baseline to 2021, showed that higher OSS scores predicted better pandemic work experiences (Table 3). Specifically, higher OSS scores increased the odds of having better staffing during the pandemic; access to COVID-19 testing at work; paid sick time for COVID-vaccine-related illness; being able to stay home from work with COVID-19 symptoms; receiving mental health supports at work; experiencing a generally supportive workplace during the pandemic; and not intending to leave the job within the next 2 years.

Similar ordinal regression models with baseline safety hazards as the predictor showed decreasing likelihood of better work conditions as the hazards score increased (Table 3). A lower safety hazards score was associated with increased odds of paid sick time for COVID-vaccine-related illness; not having to come to work with COVID-19 symptoms; mental health support at work; generally feeling supported at work during the pandemic; and not intending to leave the job within the next 2 years.

Regression models were also fitted for each outcome using both OSS and safety hazards as predictors simultaneously (Supplementary Table 4, http://links.lww.com/JOM/B226). For the outcomes of pandemic staffing, workload, access to testing and free testing, the same factors had statistically significant associations and in the same directions. For the outcome of experiencing mental health support at work, OSS was a weaker and less robust predictor although still in a positive direction. For the other four outcomes, safety hazards had a

TABLE 2. Comparisons of Work Environment Features in all Employees Survey: Two-Sample t-Tests for Baseline (f0) and Follow-Up (f2) Groups With the Overlapping Subjects; Paired *t* Test for Comparison within Overlapping Subjects (n = 428)

		AES Baseline Values (2-Sample *t* Test)			AES Follow-Up Values (2-Sample *t* Test)			Paired *t* Tests: f0 vs f2 within Follow-Up Group
Variable Name	Scale Range	Overlap Group (n = 428): Mean (SD)	Baseline Only (n = 631): Mean (SD)	*P*	Overlap Group (n = 428): Mean (SD)	Follow-Up Only (n = 1125): Mean (SD)	*P*	*P*
Organizational support for safety (NOSACQ)	1–4 (higher = better)	2.75 (0.54)	2.76 (0.52)	0.58	2.70 (0.55)	2.82 (0.56)	0.0001	0.10
Safety hazards	1–4 (higher = worse)	2.35 (0.59)	2.32 (0.58)	0.29	2.24 (0.57)	2.24 (0.60)	0.83	0.0007
Decision latitude	8–24 (higher = better)	17.23 (2.90)	17.16 (3.00)	0.71	17.08 (2.95)	16.91 (2.91)	0.31	0.42
Psychological demands	2–8 (higher = worse)	4.71 (1.28)	4.83 (1.33)	0.15	4.73 (1.36)	4.68 (1.35)	0.48	0.95
Physical demands	5–20 (higher = worse)	10.68 (3.63)	10.52 (3.90)	0.50	10.58 (3.56)	10.36 (3.56)	0.30	0.48
Civility norms	1–4 (higher = better)	2.72 (0.73)	2.78 (0.71)	0.19	2.75 (0.70)	2.77 (0.74)	0.75	0.43
Unsafe job	1–4 (higher = worse)	1.92 (0.58)	1.89 (0.56)	0.42	1.88 (0.55)	1.87 (0.58)	0.83	0.14
Coworker support	2–8 (higher = better)	5.73 (1.59)	5.59 (1.56)	0.18	5.70 (1.51)	5.83 (1.59)	0.14	0.79
Supervisor support	2–8 (higher = better)	5.85 (1.19)	5.81 (1.23)	0.60	5.81 (1.25)	5.90 (1.24)	0.22	0.39
Social support	4–16 (higher = better)	11.58 (2.31)	11.39 (2.33)	0.21	11.54 (2.31)	11.74 (2.44)	0.16	0.58

NOSACQ, Nordic Occupational Safety Climate Questionnaire

TABLE 3. Pandemic-Related Organizational Outcomes in Relation to Baseline Conditions: Ordinal Regression of Employee Questionnaire Data in Overlap Population (n = 428)

Outcome Name	Prevalence (%) of Outcome at F2	Baseline Organizational Commitment to Safety (OSS): OR (95% CI)	Baseline Safety Hazards: OR (95% CI)
Staffing levels			
Increase	25%		
Stay the same	43%		
Decrease (reference)	32%	**1.51 (1.08–2.12)**	0.88 (0.65–1.20)
Pandemic workload			
Less than usual	8%		
Same as usual	36%		
More than usual (reference)	56%	1.17 (0.82–1.67)	**0.72 (0.52–0.995)**
Access to COVID testing			
Yes	96%		
Do not know (mid-value)	1%		
No (reference)	2%	**3.16 (1.36–7.35)**	0.96 (0.40–2.29)
Free COVID testing at work			
Yes	96%		
Do not know	2%		
No (reference)	1%	**3.22 (1.42–7.28)**	0.64 (0.27–1.52)
Paid sick time for COVID vaccine side effects			
Yes	49%		
Do not know	28%		
No (reference)	22%	**1.88 (1.33–2.66)**	**0.63 (0.46–0.86)**
Coming to work with COVID symptoms			
No	85%		
Yes (reference)	15%	**3.03 (1.85–4.99)**	**0.48 (0.30–0.77)**
Mental health support at work			
Yes	44%		
Do not know	31%		
No (reference)	25%	**1.91 (1.35–2.69)**	**0.48 (0.35–0.65)**
Supportive workplace			
Very supportive	47%		
Somewhat supportive	45%		
Not at all supportive (reference)	8%	**3.10 (2.12-4.53)**	**0.46 (0.33–0.65)**
Intention to leave			
Strongly disagree	29%		
Disagree	37%		
Agree	20%		
Strongly agree (reference)	14%	**1.94 (1.39–2.71)**	**0.70 (0.52–0.94)**

Bold values are statistically significant.

weaker association although again still in the same direction as in the univariable models.

Of the 1553 participants who answered the survey, 92 answered the open-ended text question about harassment due to their role as a health care worker and 310 responded to the childcare question, a notable proportion. Respondents described being praised as essential employees during the pandemic and yet being shunned, isolated, or discriminated against for taking the vaccine or simply for being seen in scrubs and perceived as a source of infection (Table 4). Parents described juggling on-line school, childcare, scarce electronic resources, juggling work schedules and often having to miss work or drive home during lunch breaks to help with childcare (Table 5).

Interviews

The 17 subjects participating in qualitative interviews were demographically similar to the survey participants: more likely to be women over 40 years of age, White, and working in direct care. One-half of the interviewees worked at facilities that provided long-term care and the other half provided mental health services. Interviewee job experience ranged from 3 to 43 years, with most having 10 or more years' experience.

Four primary themes were identified: immediate working conditions, organizational policy and communication, pandemic impact on the organization, and impact on individuals (Table 6). All 17 interviews identified each of these themes; the largest number of coded comments were in the theme of immediate working conditions (Table 6). Ranked by the number of coded references, the top five sub-themes identified were PPE (access to, and training of use), lack of ability for staff to take time off, impact on patients such as infection rate and impact of isolation policies, increased workload, and the effects of weak communication systems.

With regards to working conditions, for workers with direct patient contact in the first months of the pandemic, none reported adequate PPE, and fit testing was rarely conducted. Training for correct PPE usage, infection control, and COVID testing took several months to be provided. Nearly all the respondents reported that having access to the vaccine at work made them feel safer and gave them hope. Interviewees reported that inadequate staffing was exacerbated during the pandemic, causing long work hours and widespread mandatory overtime, with some working 18 to 20 hours at a time without sleep. All the organizations attempted to relieve the staffing crisis by using seasonal or contract agency staff members. Although seasonal and agency staff are not often well received due to the temporary nature of their positions, most of the interviewees reported feeling relieved at the use of these additional personnel during the pandemic. In most of the facilities, some of the seasonal and agency staff members were ultimately offered regular positions to help alleviate the shortage. In addition, several of the organizations reported having the US. National Guard brought in to help ensure there

TABLE 4. Open-Ended Question in All-Employee Survey: Harassment or Verbal Aggression Outside of Work. Response Themes With Descriptions and Example Responses

	Description	Example Response(s)
Verbal aggression and harassment	Both in-person and online; especially due to fear of transmission and especially when wearing any indicator of healthcare profession	"People insulting my workplace and myself" "Verbal remarks in store while wearing scrubs" "Angry families, media, Costco, grocery stores" "Shunned for wearing scrubs in public if I had my name badge or facility shirt on, these increases [sic] and was often accompanied by negative comments" "Discrimination from the public when they know you are health care professional" "More so with being vaccinated"
Social isolation	Community, friends, and family fear being around them or stay away, or they isolate due to fear of transmission to others	"In the beginning of pandemic family and friends were nervous about being around me " "Couldn't see kids because of fear" "People at my church didn't want me there because I work in health care" "Not harassment but you lose friends due to fear"
Employment consequences	Family members' jobs changed due to the subject's healthcare profession	"Spouse was furloughed for a month" "My family members were instructed to work from home because of my job"
Refusal of treatment or services	Refused a treatment or service since they worked in healthcare or with COVID patients (due to profession)	"I had to cancel health or doctor appointments; after treating COVID patients they would not see me" "Being turned away from dental or health care" "A few stores refused"

Experiences of harassment or verbal aggression outside of work, related to the role as a healthcare professional and other people's fear of transmission during the COVID-19 pandemic.

were enough staff. The National Guard helped with infection control procedures, testing, training, and checking those entering or exiting the buildings. In one agency, it was reported that although they increased the nursing staff, predominantly in administrative nursing positions that did little to relieve the pressure of direct care nursing staff.

Social support in general and particularly that of coworkers was found to be integral for the interviewees. Although there were a few reports of more incidents of incivility from colleagues, all interviews identified a greater sense of teamwork in the first few months of the pandemic that mostly continues. They were quick to differentiate who they identified as their team, reporting that those in their immediate workspace, were the team members that they could trust and relied on, this sense of teamwork and trust did not expand broadly outside of their own working units. In addition, the interviewees—like the survey respondents—reported incidents of being harassed outside the workplace when they were visibly identified as health care workers in stores or public transportation or on the street.

Most interviewees reported that their organizations struggled to communicate effectively before the pandemic, and this communication barrier was compounded during the pandemic.[38] In fact, two facilities had spent time before the pandemic addressing some communication concerns, and the interviewees from those facilities reflected those changes by speaking more positively about communication during the pandemic than those from the other facilities. Frequently changing CDC guidelines for health care institutions compounded the problem. One staff member reported that the changes were happening so frequently that sometimes they would be given directions at morning meetings, make their rounds, and then receive new directions and policies by the time rounds were over. Staff experienced uncertainty in a wide array of policies, regarding testing, isolation, quarantine, PPE usage, and so on.

One interviewee reported that their organization had a pandemic preparedness plan, but it could not be implemented due to insufficient staffing. Others reported frustration that there was not a plan in

TABLE 5. Open-Ended Question in All-Employee Survey: Services or Arrangements for Child Learning Support. Response Themes With Descriptions and Example Responses

	Description	Example Response(s)
Change in educational style	Remote learning, home schooling	"Home learning" "Tele-learning" "Remote learning" "Zoom classes" "Homeschooled"
Financial requirements	Need laptops, high speed internet, desks/chairs, money for childcare or tutor, money for food at home	"Laptops" "Desk/chair, boost Wi-Fi, bought computer, frequent check-ins, hire tutor" "It cost so much to feed my elementary school and middle school boys we buy more food than before COVID. Every utility use has doubled"
Childcare/transportation services	Boys & Girls Club, Daycare, Girls Inc, hiring nanny/babysitter/tutor, transportation or bus services	"Running home on breaks to feed child or check in, Girls Inc. of Worcester program paid for by me" "Both children enrolled in daycare"
Family and friend supervision of children	Grandparents, sisters, friends watched kids during school	"Staying with grandparents and having them help with school and watch baby" "Had family member assist"
Spousal support/ super-vision	Spouse changed schedule to match or quit job to stay home with kids	"Husband stayed home early in the pandemic" "My wife had to stay home for a time with our child when daycare closed" "Spouse working part time or weekends to keep our child home"
Struggled or could not get support	Quit second job, going home on breaks, kids failed school	"I struggle everyday for help" "Was not able to get [support], 2 out of 3 kids failed"
Self-directed children	Teenagers able to stay home by themselves, college students	"She is teenager so is ok alone" "Teenager without supervision"
Time commitment	Called out or worked from home to help kids with remote learning or supervise children, changed shifts to stay home with kids, helping kids set up for remote with new technology, etc.	"I had to call in every Wednesday" "Much time was involved in helping with school expectations and setting up online equipment, it was stressful for many months" "I worked half day 1 day per week and had 1 additional day off per week to help supervise schoolwork"

For participants with school-age children learning remotely (at home) or preschool children requiring additional childcare services/arrangements, describe the services or arrangements required to support their children's learning.

TABLE 6. Themes Referenced in 17 Interviews With Healthcare Workers From the Surveyed Facilities

Themes, Subthemes, and SSTs		Transcript Quote	No. References
Theme	Immediate Working Conditions		1029
Subtheme	PPE	"I asked for a mask the third week in March. I was told, no we can't wear masks until we have the first positive case of COVID"	216
Subtheme	Time off	"I had given a nurse holiday time and they [management] were like just have them do a double instead of taking the day off. I'm said, I'm going to give them a holiday, because he has five kids at home, who he now has to teach too. I mean, that's not a day off."	175
Subtheme	Training	"I haven't put on PPE in 30 years since nursing school, other than the regular gloves and mask and face and eye shields, and I haven't had to decontaminate myself, since I got off active duty in the army. So, refreshing our training of the use before they just throw this stuff at us would have been helpful"	59
Subtheme	Infection control		
SST	Testing	"We [staff] were designated to do covid testing…I did volunteer, but I had been doing it for about 3 months before I was properly trained"	61
SST	Exposures	"March we started testing the veterans and they all were positive and all the staff was positive, we lost ward afterward and had to open the quarantine floor."	34
SST	Isolation	"We had a whole color system [for when] staff or a patient tested positive. Either the staff would be out, or the patient would go up to the COVID {"red") unit. There was still the potential for infection within the unit so if the unit was red patients were encouraged to stay in the room, if the unit was orange or yellow then all activities stayed on the unit, but they could go to the dining room for food and groups could be held in other locations with small groups."	11
SST	Entering/exiting the workplace	"Just getting in the buildings sometimes I was in a line of 15 people, standing outside waiting to get into this tent with a portable heater in November, freezing your butt off. Thank God, that there was a tent outside with the heater."	13
Subtheme	Coworker relationships, social support		
SST	Informal networks	"A weeklong workshop on posttraumatic stress with grief counselors and chaplains. Not everybody was comfortable doing that, though, so we have quite a few that still struggle because they're not able to be open about their experience or talk about how bad it affected them."	59
SST	Teamwork	"I do feel a responsibility to the team here to stay as one of the pillars to help them; they've lost so much, the line staff with their leaders and who they relied on. So, even though I keep saying, I want to retire, [it] probably won't be until I feel like they're in a good place."	27
SST	Union	"The Union had done so much work that management just did not want to turn it over. In terms of turning over information about infection rates."	49
SST	Incivility	"They [management] lost the human factor, there's so many more ways to motivate people than discipline. We're in a horrifying situation they started treating all of us like the enemies."	65
Subtheme	Vaccine	"The vaccine came to our facility really quickly. So I think that gave people a lot of hope."	13
Subtheme	Staffing	"People have been here working 18-to-20-hour days, so you're sleep deprived, trying to make decisions, you have no staff. I just think they thought it [combining units] would consolidate [staffing], close the whole unit and utilize resources better."	108
Subtheme	Workload	"Suddenly I was doing schedules, watching the doors. I had to set up tents literally [in] 1 day … I called Connecticut, trying to find thermometers because we didn't have them. We had to [do a] staffing report every morning. You're training on the PPE, you're watching your staff. Your staff are nervous, you're trying to calm them down. You have to order more supplies and leave your unit to get your supplies instead of having them delivered. We had people leaving in the mid-shift because they may have been exposed. People were sent home from the door, because of signs and symptoms"	120
Subtheme	Frequency of exposure to hazards at work	"Some employees could work from home, other couldn't. My wife was pregnant, I was very worried about bringing COVID back to her."	19
Theme		**Organizational Policy and Communication**	**360**
Subtheme	Guidance from leadership	"People [leaders] were very transparent, we didn't really have a roadmap, so we had to kind of come up with the playbook as things were playing out. There was open dialogue and a pretty broad audience of administrators who were involved."	85
Subtheme	Communication	"I don't know that it's something new, but communication [was a problem]. We had a conversation about this last week there's a lot of I don't want to call it secrecy, but it almost is you can't share this information, you know until the right time."	117
Subtheme	COVID policy implementation	"We stopped visitors because it was a pandemic, an emergency. The crisis is over, now visitors must start back up, are we necessarily ready? No, but it must happen, because those are the rules and management is under that pressure, they don't get a chance to say no, stop, we need a break."	66
Subtheme	Uncertainty about policies	"There was 1 day, where we had a meeting before clinical and we were given one direction; we went to clinical, got another direction; we came back from clinical and got another direction."	88
Subtheme	Emergency preparedness	"It's not the first pandemic that we humans faced, they must be more prepared for it and not just prepare the material stuff, prepare mentally for it."	4
Theme		**Impact on the Organization**	**232**
Subtheme	Employee morale	"We were questioned if too much equipment was missing. They made us open all the cabinets to check if we were hiding things. [The issue of supplies only lasted a couple of weeks; the impact of this search is still talked about]"	89
Subtheme	Impact on patients	"You're talking about people that have mental illness, locked facility; then an atmosphere where the staff are super anxious, the news is fear-mongering, and they're cut off from social supports, going outside, and told wear masks and stay away from people. For people that are already ill, you know it had quite an impact on them."	143

Theme		Impact on Individuals	93
Subtheme	Impact of the media	"When I saw the local news of course I understand, but when we hit New York Times that was absolutely crazy. The media focuses more on 'what's going on with the management'. They should honor the veterans more."	30
Subtheme	Impact on mental health	"I'm not as social or as happy as I used to be. I'm trying to trust [that] the people in the community that don't wear a mask really are vaccinated. I find that I get irrationally angry about stupid."	34
Subtheme	Impact on family	"It was … like living in a horrible nightmare that just wouldn't go away. It did impact my relationship; there was more fighting, more bickering, more I'm too tired for this. I just didn't have the energy for friends or family."	22
Subtheme	Impact on sense of identity	"I was seen as somebody to call if you don't know the answer, as somebody who had more information than the lay person or had better information than what you were hearing in the news."	5
Subtheme	Trust in the community	"When this started, I was getting thank you and signs all over 'we appreciate our essential personnel'. All of a sudden, it's like nobody cares anymore."	2

SST, sub-subtheme

place because, as they said, "this is not the first contagious illness we have had to contain." This same person reported that they have been documenting everything in a "COVID Binder" so that should something like this happen again, they would have a record of the steps taken during this crisis.

The organizational responses to COVID had a large impact on the morale of both employee and patients. Interviewees reported widespread struggles with providing adequate treatment to patients with mental health issues, the impact of isolation on those with mental illness, and the toll it took on the morale of their patients. One facility lost over one-half of their resident population to COVID deaths, and the interviewees reported that this impacted the morale and mental well-being of those patients who remained, as well as the staff who had been providing them care. Further, nearly all those interviewed reported a decrease in employee morale. In one case, a whole department was accused of stealing supplies. This required explaining to a senior leader how supplies are issued in the department and the impact of supply shortages. Although this specific issue with supplies only lasted a few weeks, the impact of that accusation and the search are still talked about 2 years later.

DISCUSSION

This study describes the COVID pandemic experiences of health care personnel in five US facilities, both qualitatively and quantitatively. We have demonstrated a prospective association between prepandemic, generic organizational safety measures and working conditions more than 1 year after the start of the pandemic. In the qualitative data, interviews with employees in the same facilities highlighted the importance of preparing a crisis management plan and executing it while also being flexible enough to make changes as the situation evolves. Before the pandemic, communication had been identified as a weakness in all five organizations.[30] The pandemic highlighted the continued need to strengthen channels of communication. For the interviewees, communication was a key component in their overall feeling of support and safety.

In terms of the predictive ability of generic safety assessments, obtained 1 to 2 years before the pandemic, low organizational support for safety was associated with worse pandemic work experiences, including lack of testing, insufficient staffing, and inability to take sick leave for COVID-19 illness or vaccine-related health effects. Those who reported less transparent communication within the organization at baseline also perceived more confusion around policies related to testing, the vaccine, and use of sick time. This suggests that less successful safety management practices represented a set of starting conditions that were subsequently exacerbated by the pandemic. Although health care facilities around the globe had difficulties maintaining adequate staffing and providing sufficient personal protective equipment, those with stronger organizational policies to manage staff safety may have had slightly less negative impacts than others. The work environment problems highlighted in Table 2 predated the pandemic; the pandemic both exposed and intensified these weaknesses.[38]

The relationship between organizational climate and workplace outcomes in healthcare workers—particularly in relation to workplace safety—had been studied earlier cross-sectionally.[39,40] These findings are generally in accordance with our results; of particular note, Smith et al[24] found a dose-response relationship between working conditions (inadequate PPE and infection control practices) and staff mental health, concluding that organizational safety policies for reducing infection hazard were integral for improving worker mental health. We have expanded on that by documenting a longitudinal association between high OSS and positive working conditions during the pandemic.

Weaknesses and Strengths

The results of this study may have limited generalizability, in the sense that they were all employed at public sector facilities. While both the public and private sectors were dramatically impacted by the global pandemic, especially in the short term, we cannot say whether the results might have been different with a broader sample.

Another weakness of the qualitative interviews was a predominantly White subject pool, despite equal participation opportunity. This left a large gap in characterizing the experiences of staff members of color,[41] who faced many employment disparities during the pandemic.[42]

Use of the management safety empowerment dimension of NOSACQ adapted for use in this study is a particular strength; this is the first study that we know of to use a validated scale for this purpose. There was no evidence of any non-representativeness or selection bias between either the baseline or the follow-up survey population and the subgroup participating in both.

The questionnaire respondents who participated in both surveys were only 40% of the entire baseline group and 28% of the follow-up group. However, it was reassuring that their demographic characteristics and assessments of the work environment were largely similar to those in each complete group. The only exception was a small increase in perceived OSS. We cannot judge whether this represented a generally favorable improvement of organizational efforts to meet the pandemic challenges, or the effect of newly hired employees having different standards during the pandemic, or some other reason.

For us as researchers in the healthcare sector, the ability to conduct these surveys highlighted the importance of our success in building effective relationships with the study partners. In the years before the pandemic, a great deal of time had been dedicated to developing relationships that emphasized transparent communication and trust. It is those very relationships that allowed study activities to resume and survey and interview participants to be recruited, despite these healthcare workers being exhausted and burnt-out from the ongoing pandemic.

Conclusions

These combined findings speak to the ongoing struggle which healthcare workers face as the pandemic fades from public discussion but remains present in their daily lives. To our knowledge, this is the

first study to establish a prospective association between prepandemic safety measures in healthcare institutions and pandemic-era working conditions. Certainly, at higher levels, national and state policy uncertainties endangered employee and patient health, but institutional responses were described as chaotic. Although virtually all health care facilities were unprepared for the global COVID-19 pandemic, data from these five institutions suggest that higher proactive safety measures preceding the pandemic supported a more effective response during the first year of the crisis.

We can postulate that more attention to strengthening organizational safety policies and ensuring their implementation might have helped healthcare workers to be better supported by their organizations during the onset of the COVID-19 pandemic. Stronger organizational policies for employee safety generally, in addition to pandemic preparedness planning and communication, could have improved these healthcare institutions' ability to provide a safe work environment for employees, even during a global crisis.[43] It is not new to recommend strengthening of job resources (decision latitude, good leadership, social support, team cohesion, and rewards) for healthcare workers, both to enhance personal development and to promote health and reduce burnout.[44] However, the implications for pandemic preparedness—in the future and the past—have received less attention to date and are critical for both individual and institutional effectiveness.

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