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Identification of processes that mediate the impact of workplace violence on healthcare workers: Results from a qualitative study

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ABSTRACT

Objectives: Violence toward emergency department healthcare workers is pervasive and directly linked provider wellness, productivity, and job satisfaction. This qualitative study aims to identify the cognitive and behavioral processes impacted by workplace violence to further our understanding of why workplace violence has a variable impact on individual healthcare workers.

Design: Qualitative interview study using a phenomenological approach to initial content analysis and secondary thematic analysis

Setting: 3 different emergency departments

Participants: We recruited 23 emergency department healthcare workers who experienced a workplace violence event to participate in an interview conducted within 24 hours of the event. Participants included nurses (n=9; 39%), medical assistants (n=5; 22%), security guards (n=5; 22%), attending physicians (n=2; 9%), advanced practitioners (n=1; 4%), and social workers (n=1; 4%).

Results: Our data confirmed existing reports that workplace violence is pervasive and contributes to burnout in healthcare. Three novel themes emerged from the data related to the objectives of this study: (1) variability in primary cognitive appraisals of workplace violence, (2) variability in secondary cognitive appraisals of workplace violence, and (3) reported use of both avoidant and approach coping mechanisms.

Conclusion: Healthcare workers identified workplace violence as pervasive. Variability in reported cognitive appraisal and coping strategies may partially explain why workplace violence negatively impacts some healthcare workers more than others. These cognitive and behavioral processes could serve as targets for decreasing the negative effect of workplace violence, thereby improving healthcare worker wellbeing and patient safety. Further research is needed to develop interventions that reduce burnout resulting from workplace violence.

SUMMARY BOX

Strengths of this study

- Prospective study of healthcare workplace violence across multiple different healthcare professionals
- Addresses a limitation of current literature by collecting data immediately following workplace violence events, thus limiting recall bias
- Identifies possible targets to ameliorate the negative impact of workplace violence on healthcare workers
- Proposes a conceptual model of healthcare workplace violence and burnout

Limitations

- Sample was limited to a purposive sample of 23 HCWs practicing within a single US city

INTRODUCTION

Healthcare worker (HCW) safety and well-being are cornerstones of safe, effective patient care.[1] The link between patient care and HCW safety is now recognized by patient safety experts, with recent reports suggesting that the "Triple Aim" of high-value healthcare now include a fourth Aim reflecting the need to support HCW well-being. Workplace violence (WPV) in healthcare directly leads to HCW burnout and threatens the delivery of high quality patient care.[2,3] Despite efforts to address WPV and HCW burnout and well-being, violence against HCWs remains a pervasive, recognized threat to patient safety.[4]

The emergency department (ED) setting has been specifically recognized as an area of high risk for WPV. Violence in the ED impacts more than 1 million individuals with over 78% of ED HCWs identifying at least one incident of physical assault by a patient or patient's visitor during their career.[5] According to a 2006 study, 67% of nurses, 63% of medical assistants, and 51% of physicians had been assaulted by an ED patient at least once in the prior six-month period.[6] Patient factors (e.g., psychiatric comorbidities, cognitive impairment) and institutional/environmental factors (e.g., high censuses, long waiting room times) make EDs particularly susceptible to WPV.[7-9]

Most published research and quality improvement programs have focused on interventions to decrease the incidence of WPV.[10-13] Despite these efforts, a recent report by the American College of Emergency Physicians notes an alarming increase in ED WPV. Since some amount of ED WPV seems inevitable regardless of training or security measures,[9,14,15] it is important to also focus on mitigating the negative impact of WPV on HCWs.[16] Surveys suggest a connection between WPV and burnout,[17,18] yet do not offer an understanding of the processes that lead to burnout, nor do they explain why some HCWs are less affected than others. Specifically, there is a paucity of work focused on identifying the cognitive and behavioral processes that could assist HCWs in recovering from WPV events.

We conducted a prospective qualitative study to understand (1) how ED HCWs appraise WPV events, (2) what coping mechanisms ED HCWs use in response to WPV, and (3) the relationship between WPV and burnout. This work supports our overall goal of developing and implementing interventions to mitigate the negative impact of acute and chronic exposure to WPV.

METHODS

Study Design and Setting

We executed a qualitative study with semi-structured interviews of ED HCWs and analyzed transcripts using a phenomenological approach. One-on-one interviews involved ED HCWs from three EDs representing urban, academic, and community hospitals within the State of Washington (Table 1). We conducted all interviews within 24 hours of a WPV event. The study protocol was approved by the University of Washington Institutional Review Board (STUDY00000502).

Table 1. Hospital characteristics of enrolling sites

	Site 1	Site 2	Site 3
Setting	Urban, academic safety net hospital	Tertiary referral center	Community
Inpatient beds (n)	413	450	303
ED beds (n)	48	23	55
ED visits per year (n)	63,000	29,000	82,000
Admitted patients (% total)	21	24	14
Average length of stay (hr)	4.5	4.9	3.0

ED = emergency department

Participants and Sampling

Participants were ED HCWs selected through purposive sampling. A trained research coordinator present in the ED weekdays from 2pm until 10pm identified employees who experienced verbal or physical aggression as defined by the National Institute of Occupational Safety and Health (Table 2).[19] Following an observed WPV event, the research coordinator approached the employees involved. Employees were considered eligible if they were available for an interview within the following 24 hours. All participants provided consent for both participation and audio recording. The research coordinator collected demographic information from each consented participant. At 2 sites participants were compensated with a $10 gift card. The 3rd site required voluntary participation based on institutional bylaws.

Interview Guide Development

Using an iterative process supported by a literature review, we developed an interview guide to elicit the participant's perspective of the WPV event and how he/she was impacted. We first reviewed the WPV literature both within and outside of healthcare to guide question development. A multidisciplinary ED safety board at the University of Washington reviewed questions. This revised interview guide was pilot tested with 2

ED employees who had experienced a recent WPV event. Two members of the study team reviewed the interview transcript and refined the interview guide. The interview guide underwent another round of testing, revision, and re-testing prior to being finalized (Supplemental File 1).

A non-clinical, female research coordinator with prior experience conducting interviews and focus groups conducted the interviews. The research coordinator was purposely unfamiliar to the participants, had no personal interest in WPV or ED safety, and had no relationship with clinical leadership or human resources at the institution. This was important to preserving participant privacy and to maximizing honest and open reflections. The research coordinator received specific training relevant to the project, followed by direct observation with feedback from the investigators. The interview format was semi-structured, with follow-up or probative questions for clarification. Interviews ranged from 6 to 24 minutes in length, with a mean length of 13 minutes. All interviews were conducted in a private, closed room adjacent to, but separated from, clinical space. Interviews were audio recorded and transcribed verbatim. The research coordinator reviewed each transcript for accuracy and removed any identifying information.

Qualitative Analysis

Researchers utilized inductive and deductive qualitative phenomenological approach.[20,21] The primary coding team consisted of three Board-certified emergency physicians and a social worker with extensive ED and qualitative research experience. Codes were derived from a close reading of transcripts to capture key concepts. Codes were then sorted into higher order categories based on how they were related or linked.[22] The first four transcripts were reviewed by all coders. The research team met periodically to develop and refine the codebook and discuss the coding process. All transcripts were then coded in duplicate using Dedoose version 8.2.14 software (SocioCultural Research Consultants, LLC; Los Angeles, CA). Codes were compared and disagreements were discussed. If the initial coders could not reach consensus a third person provided adjudication. Two members of the team reviewed data collection and analysis until saturation was reached and no additional themes were identified. After all transcripts were analyzed, the research team met to identify themes and subthemes that accurately summarized coded statements.

Table 2. Definitions Relevant to the Analysis

Construct	Definition and Significance
Occupational Safety and Health Administration definition of WPV	"Workplace violence is any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site. It ranges from threats and verbal abuse to physical assaults and even homicide."[23]
Cognitive appraisal	The process of an individual evaluating the personal significance or relevance of a stressful event and its related components to his/her wellbeing.[24] Cognitive appraisals then drive the individual's selection of coping mechanism and partially mediate stressor impact and work-related outcomes.[25,26]
Primary Cognitive Appraisal	Process of an individual evaluating whether s/he has anything at stake during a stressful encounter; i.e., harm to physical self, loss of self-esteem, ability to learn or improve, etc.[24] Primary appraisals can be categorized as harmful, threatening, or challenging.
Secondary Cognitive Appraisal	Process of evaluating the ability to respond to the situation; i.e., having the necessary resources or skills to deal with the stressful event.[27] This relates to the individual's assessment that they can (1) directly address the stressor and (2) cope with the event.[24]
Coping	Conscious use of cognitive and/or behavioral strategies that is intended to decrease perceived stress or increase resources available to deal with stress. Can be further delineated into those efforts directed at processing the stressful event to improve understanding or foster resourcefulness (approach coping) and those directed at physically or mentally avoiding unpleasant thoughts related to the stressful event (avoidance coping).[28,29]
Burnout	A psychological syndrome consisting of three components: emotional exhaustion, a tendency to depersonalize client encounters, and a reduced sense of personal accomplishment[30]

RESULTS

Interviews were conducted from January, 2017 to May, 2017. We obtained thematic saturation with 23 participants. No events involved physical abuse only. Participants included nurses (n=9; 39%), medical assistants (n=5; 22%), security guards (n=5; 22%), attending physicians (n=2; 9%), advanced practitioners (n=1; 4%), and social workers (n=1; 4%). Basic demographic information pertaining to participants is provided in Table 3.

Table 3. Participant demographics

Demographic	Participants (n = 23)
Age, year; mean (SD)	35 (9)
Male, n(%)	13 (57)
Profession, n(%)	
Nurse	9(39)
Advanced nurse practitioner	1(4)
Physician	2(9)
Social worker	1(4)
Security guard	5(22)
Medical assistant	5(22)
Institution of primary employment, n(%)*	
Urban academic safety net hospital	15(65)
Tertiary referral center	4(17)
Community hospital	4(17)
Experience in healthcare, years; mean (SD)	10(7)
Experience working in an emergency department, years; mean (SD)	6(5)

*for physicians who work at more than one institution, listing reflects where they were working at the time of enrollment

Consistent with other studies, WPV was identified as a frequent, inevitable occupational hazard[31] associated with manifestations of burnout[17,18] including emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment. These findings (see Supplemental File 2) were important to the overall objective of the project and helped shape the approach to our analysis. Three themes emerged from the data related to the experience of WPV and subsequent development of burnout: (1) variability in primary cognitive appraisals of WPV, (2) variability in secondary cognitive appraisals of WPV, and (3) reported use of both avoidant and approach coping mechanisms. Key definitions of terms are provided in Table 2. Quotes illustrating themes appear in the text below and in Table 4.

Variability in primary cognitive appraisals of WPV amongst participants

The Transactional Model of Stress and Coping is a framework for evaluating the processes of coping with stressful events.[24] Stressful experiences are conceptualized as person-environment transactions that depend on the impact of the external stressor. The level of stress experienced depends on appraisals of the situation. When an individual encounters a stressor or stressful event, they engage in a two-step process of cognitive appraisal during which they first interpret the personal significance of the event (primary cognitive appraisal) and subsequently determine whether they have the resources available to overcome or address the event (secondary appraisal).[24,27] In this study, HCWs' primary cognitive appraisals of WPV events varied, with participants describing harm and threat appraisals as well as challenge appraisals.

Negative Primary Appraisals: Harm and Threat Appraisals

Harm appraisals manifested as HCWs describing negative emotions such as sadness and anger. This was often accompanied by the recognition that it was their job to help the patient, yet frustrating that they had to put themselves in harm's way to do so.

> *"Just generally, it makes you feel crappy. And you can only be … take so much and try to help people and try to help, and then to get that behavior returned, get violent behaviors, it does wear on you physically and emotionally." (Nurse, 9)*

Threat appraisals were expressed through description of negative emotions and interpretations characterized by fear and anxiety. Participants described a real threat to their safety, and this was not a part of the job they were expecting. Participants also reported an underlying sense of uncertainty surrounding a situation, suggesting that safety threats could be hidden and unexpected.

> "*You know any day that you could get hurt. But then a lot of jobs have that risk. But it's … you didn't go into it thinking that. When people became nurses they didn't anticipate that … I don't know … I never anticipated that I would be used and abused as I have been." (Nurse, 17)*

Positive Primary Appraisals: Challenge Appraisals

In contrast to more negative interpretations, some ED HCWs described challenge appraisals, viewing WPV events as an opportunity to grow or gain due to a stressful event. HCWs would cite the opportunity to improve performance the next time they encountered a violent patient, and described seeking input from their colleagues to identify areas of improvement. As one nurse stated:

"I feel like the way I deal with it is just trying to look at a situation and see how it can maybe better improve . . . It's like okay, I can improve here or here." (Nurse, 10)

In these challenge appraisals WPV events were seen as both an educational experience to prepare them for the next encounter with WPV, and as a way to build a sense of professional confidence.

Variability in secondary cognitive appraisals of WPV amongst participants

In contrast to primary appraisals that reflect the meaning an individual attributes to an event, secondary appraisals reflect an individual's belief that they have (or do not have) the resources necessary to cope with the situation and its aftermath.[24] HCWs in this study demonstrated significant variability in their secondary appraisals of WPV events, with some participants indicating that they possessed adequate resources to overcome WPV, and other indicating that they did not.

Secondary appraisals indicating adequate resources to address WPV events:

Participants who viewed themselves as having adequate resources to address WPV events described factors that enabled their ability to handle violent events better than their colleagues. This is sometimes attributed to past experiences in similarly stressful jobs, personal traits, physical stature, or specialized training (e.g., military or martial arts). Several note that, in their view, they don't need to cope.

" Well from a physical stand … the confrontation standpoint, yes. I did kick boxing for 15 years and so I, I'm not worried about that, but from de-escalation, I just leave the room. It's not a big deal. So either way, yes, it's fine." (Physician, 14)

"I mean, it just is what it is. I don't know that I need to cope with it." (Advanced Practitioner, 22)

Some HCWs reported a belief that they are less susceptible to the negative impact of WPV and are able to tolerate more violence without experiencing any negative impact.

"… I can tolerate I think a little bit more than maybe somebody else in a different emergency room just because we just have people that are just out of control and we know what to do with them and we handle it." (Nurse, 13)

Secondary appraisals indicating inadequate resources to address WPV events:

In contrast to those who felt they were adequately resourced to deal with WPV events, another subset of participants described feeling under-resourced and therefore incapable of successfully managing WPV events. This often was couched in terms of a lack of control over patient behavior.

"I mean I can say … he wasn't safe at all. For him and for me, because if I could be close, he could do anything. He has one hand is unrestrained, he can punch me, he could do anything." (Medical Assistant, 3)

Likewise, HCWs reported a sense of uncertainty or lack of control in their healthcare system's response mechanisms or protection measures currently in place. This included a perceived lack of response or concern from leadership and a sense that HCW well-being was not a priority.

"We don't have resources available, especially out in the front waiting room, I can't hear overhead pages. In order to call for help I have to overhead page something and I can't see any response, or I have to radio and pray somebody comes. We have a silent alarm, but that doesn't necessarily mean a lot of things. And if it's something like that where you want to not get

a phone out and say, can security come to the front, and really escalate the patient in front of you just because it's really difficult to manage those situations." (Nurse, 6)

"And I just keep thinking, it's going to take something really bad happening before they put security in the back. Or do something to make us feel safer." (Nurse, 17)

Reported use of both avoidant and approach coping mechanisms amongst participants

Coping is defined as the cognitive and behavioral efforts to master, reduce, or tolerate the internal and/or external demands that are created by a stressful event.[32] Coping strategies can be categorized as avoidant or approach-oriented (Table 2).[28,29] Just as the participants in this study described significant variability in their cognitive appraisals of WPV events, so too did they report a variety of coping strategies.

Avoidant Coping Strategies

Participants described multiple different coping strategies to avoid or decrease the negative emotions associated with the WPV event. Participants often described taking a few minutes to separate themselves from the situation both physically and emotionally.

"I think I … you do sometimes need to like take some time, like away. Like sometimes it's a great time to take your 15-minute break and, like, sit down and, like chill." (Nurse, 12)

This was described as a way to allow individuals to continue their work. In some cases, HCWs described physical separation. This distance was perceived as creating a separation between work events and home life, supporting an emotional separation.

"So I intentionally don't live near the hospital, because I like to have that physical separation from work." (Advanced Practitioner,22)

Immediately following a WPV event, avoidant strategies may help HCWs adapt. More chronic avoidant behavior, however was also described. For example, a number of participants acknowledged using alcohol as a coping strategy.

> *"Alcohol. Probably. More than anything, you go home and you're like . . . nobody would believe me. There's nobody at home to tell." (Nurse, 17)*

Approach-oriented Coping Strategies

Unlike avoidant coping strategies, approach coping strategies involve directly managing or ameliorating the cause of stress.[28] Approach strategies generally manifested as a rationalization of the patient's behavior. Several HCWs justified patient behavior in terms of their mental illness.

> *"He is not pointedly violent towards individuals. I think just because he is just … he is out his … out of what I believe (is) his normal mental state. I don't think he knows … he really knows a lot of what's going on around him. He has a very limited grasp of his reality at this time. And that's okay and we're here to help him out*." (Security, 4)

Reviewing a situation and creating strategies for the next event is another example of approach coping. HCWs reported reviewing events with co-workers, both as a way to learn from others' perceptions of the event, and as a way to discuss their feelings with others that had similar experiences. The sense of support and the ability to "depend on" and "look to" other staff for support was almost universal.

> *"But I think taking time away and then if it is something that's violent that really bothered you, I think talking like to a co-worker, which I think everybody is really good about here. I think there's always somebody checking on you, like, are you okay?" (Nurse, 11)*

Table 4. Identified themes about workplace violence appraisals and coping processes

Themes	Subthemes	Quotes
Variability in primary cognitive appraisals of WPV	Negative primary appraisals – Harm and threat appraisals	"If it gets really personal, people get up in my face, somebody tries to like actually get physical, then I get a lot more upset." (Nurse, 6) "And so I was typing a note. And I didn't even realize it and I turned around and she was like behind me and over me. And I felt physically threatened. And realized that not only did I feel physically threatened but there was nobody to call to help me." (Advanced Practitioner, 22)
	Positive primary appraisals – Challenge appraisals	"It helps me … kind of builds my, I guess, confidence in future incidences. Kind of you get tools from everything. You get new ways to do certain things with each person." (Security, 15) "You get a little perspective and you realize, look, no one got hurt, surprisingly, it turned out fine. The patient got the care the patient needed. I think the important part is to reflect and say, gosh, how should I handle that differently? What am I going to do going forward differently? And then kind of with some resilience, move on." (Physician, 23)
Variability in secondary cognitive appraisals of WPV	Secondary appraisals indicating adequate resources to address WPV events	"Like I do see that certain events do impact other staff members more than it impacts me and I think that for people who do get into those situations, sometimes the social resources may not be available for them to process." (Nurse, 11) "I've always had that mentality where I can kind of just destress and cope with things a lot easier than some people would, like a … or just normal visitors here." (Security, 7)
	Secondary appraisals indicating inadequate resources to address WPV events	"I was happy to see three officers come towards me when this event occurred, but none of them were in arm's reach that would've stopped it. They would've been able to help after, but they wouldn't have been able to stop it. Nobody would've stopped it. But I just … I don't know. I just … this is not … doesn't feel like a safe place." (Nurse, 17)
Reported use of both avoidant and approach coping mechanisms	Avoidant coping strategies	"Once the patient is either calmed down or they're placed in the restraints and everyone's safe in their rooms, then I usually just like, I'll sit down, kind of just like do some charting and then kind of take like a good five-minute sit-down session. I'm pretty good after that." (Medical Assistant, 16) "Honestly, I think the easiest way to cope with things is just to simply just forget about them, kind of like erase it from your memory bank, because I have other patients I've got to take care of." (Nurse, 10)
	Approach coping strategies	"I just … I depend a lot on my co-workers and making sure, was there anything that I missed? Was there anything I did? Do you know what I mean? Like that made the situation worse or … I should've moved off? Whatever. You know what I mean? What could I have done? I'm a good talker, so just talking about it and getting it out there and getting feedback from the people I trust on how things went, that's how I deal with it." (Nurse, 9) "And then we have somebody who's obviously not well, is very much struggling with her relationships with her kind of emotional volatility, that kind of very willfully contributes to her crises. And so when you have somebody responding out of that place, a very compromised place, and so I don't take it personally. This person has to walk around in that pain. And so those things I think promote my compassion." (Social worker, 2)

DISCUSSION

Our findings were consistent with other studies, highlighting the perception that WPV is pervasive in EDs and that HCWs connect their WPV experience with manifestations of burnout (Supplemental File 2).[14,17,18] Additionally, we identified three themes not previously discussed in the healthcare WPV literature. These themes highlight the variability in how HCWs appraise WPV events and what coping mechanisms they employ to deal with WPV. In the following discussion, we draw from the stress and violence literature and propose a framework (Figure 1) that is based on the transaction-based stress model.[24,25,33,34] This framework illustrates how the cognitive and behavioral processes of appraisal and coping may mediate the relationship between WPV and burnout, thus highlighting potential targets for intervention.[24,25,33,34]

All occupations, including those within healthcare, have sources of stress; i.e., taxing features or experiences that cause a physical or mental discomfort. While unpleasant, the negative effects of these simple stressors is temporary, with the individual quickly returning to their usual states of happiness and functioning. Burnout, in contrast, is a chronic condition, characterized by a progressive and sustained decline in function and wellbeing.[30,35] Several studies have detailed an association between the experience of WPV and the development of burnout amongst HCW.[17,18,36] Unfortunately, WPV, particularly verbal abuse, is difficult to eliminate from healthcare While we agree that efforts to decrease the incidence of WPV should continue, it is important to note that complete eradication of WPV, especially non-physical violence, is not feasible in certain settings. The goal then becomes mitigating the effects of WPV, and more specifically, understanding and preventing the cognitive and behavioral processes that lead to burnout.

Multiple studies demonstrate that WPV events effect individuals differently, with some experiencing little to no change in their functioning, whereas others suffer significant physical and psychological health symptoms, including burnout.[37] Our work is in line with research in other fields, suggesting that appraisal and coping may at least partially explain this variability (Figure 1).[38,39] Primary and secondary appraisals “converge” for an individual and determine whether the WPV event presents a significant stressor and potential stimulus for burnout.[34]

We heard from multiple HCWs who described negative primary appraisals, reflecting feelings of anger and frustration as well as a sense of threat and uncertainty. While there is no “right” appraisal, negative appraisals are highly stressful and are positively related to burnout.[25] Moreover, when a WPV event is

appraised as harmful or threatening, and their secondary appraisal indicates an inability to meet the demand of the situation or cope with its aftermath, the risk of chronic stress and burnout increases.[25,34]

Not all participants appraised WPV events as harmful or threatening. Several described challenge primary appraisals, seeing opportunity for self-growth and the ability to improve and perform better or differently the next time. Likewise, some secondary appraisals reflected the participant's belief that they were better able to handle WPV because of physical attributes, training, or mental toughness. Having this sense of control over the situation or environment (1) facilitates an individual's ability to appraise WPV events as challenges rather than threats and (2) decreases burnout related to workplace stress.[25] To facilitate the development of challenge appraisals in HCWs, ED and institutional leadership must foster a true sense of HCW control over their environment.

The way an individual appraises a WPV event directly effects the coping strategy employed.[40] Coping strategies that foster avoidance or escape are positively related to burnout, whereas more direct, approach-oriented strategies negatively relate to chronic stress and burnout.[41,42] In our study participants described a number of different coping strategies that could be adaptive and/or maladaptive. Avoidant coping strategies might be useful, and even necessary, immediately following a WPV event, e.g., if a HCW has to emergently switch tasks to provide care to an unstable patient.[29] However, long-term avoidant coping leads to less adaptation as compared with more direct, approach-oriented coping, which is thought to allow individuals to experience high stress situations without experiencing long-term physical and psychological trauma.[43] Healthcare institutions and ED leadership should help employees identify and adopt the cognitive and behavioral processes that support approach-oriented coping strategies.

Both cognitive appraisal and coping are processes as opposed to traits.[34] This is an important distinction. If we assume that the impact of a WPV event is dependent upon fixed personality traits, then we cannot change the outcome. Because cognitive appraisals and coping strategies are processes, they are amenable to change. If we can alter how an individual interprets and chooses to respond to a WPV event, we can potentially decrease or prevent related negative outcomes such as chronic stress and burnout.[44] Research suggests that appraisals and choice of coping strategy can be modified by the use of cognitive behavioral techniques.[45] A meta-analysis demonstrated superiority of cognitive behavioral techniques over multi-modal interventions, relaxation training, and organization-focused interventions when treating work-related stress.[46]

Such an intervention could provide a viable and practical way to decrease the deleterious effects of ED WPV on HCWs. Moreover, cognitive behavioral techniques implemented prior to starting a shift could increase optimistic explanatory style, lower levels of catastrophic thinking, and increase constructive envisioning of the future, all of which can help less resilient individuals who experience WPV cope more effectively.[47] Such interventions warrant further research, as they have the potential to decrease the deleterious effects of WPV, promote HCW well-being, and improve patient safety.

Limitations

This study has several important limitations, primarily related to selection bias. Our sample was limited to a purposive sample of 23 HCWs practicing within a single US city. We did collect data across an interprofessional sample of HCWs practicing in 3 different institutions representing a community hospital, a regional tertiary referral center, and an urban academic safety net hospital. However it is still possible that the themes identified in this study may not generalize to different patient and HCW populations. The largest percentage of participants was recruited at the urban safety net hospital where a disproportionate number of patients have psychiatric comorbidities. This could have caused an overstatement of findings or a heightened focus on mental illness as a primary contributor.

We did not collect race or ethnicity data from our participants, thus we cannot report if there is an imbalance in the sample that could influence our data. Similarly, we did not track the demographics of those individuals that were approached but did not participate. Multiple individuals consented but were then called away for clinical work and were not able to be interviewed. We do not have demographic data for those individuals, and thus cannot guarantee that there wasn't an omission bias. The investigators may have inherent biases that could influence analysis and interpretation of the results. All coders were women and 75% were EM physicians employed at 2 out of 3 data collection sites. While this could be a benefit in terms of interpreting institution-specific terminology, there could also be a reporting bias when interpreting comments.

Finally, interviews were shorter than in other qualitative studies.[48] This was done intentionally to facilitate immediate data collection and thereby reduce recall bias present in other WPV healthcare-related studies. To our knowledge this is the first study to interview HCWs immediately following a WPV event.

CONCLUSION

WPV in healthcare is seen as pervasive and directly impacting the safe, effective delivery of patient care. Healthcare institutions must not only work to decrease the incidence of physical WPV but also include efforts to mitigate the negative impact of both verbal and physical WPV on HCWs. We identify both cognitive appraisals and coping processes as viable targets for interventions aimed at ameliorating the impact of WPV on HCWs. Research in other fields with high levels of WPV may help inform interventions to decrease chronic stress and burnout related to WPV. This important work will require translating such interventions to healthcare as well as identifying appropriate proximal and distal outcomes.

FIGURE LEGENDS

Figure 1. Proposed model for the processes linking workplace violence and burnout

SUPPLEMENTAL FILES

Supplemental File 1. Workplace violence interview guide

Supplemental File 2. Identified themes about inevitability of workplace violence and manifestations of burnout

TRANSPARENCY STATEMENT

As the guarantor of the manuscript, RF affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as originally planned have been explained.

CONTRIBUTORS

MCV and AKC are joint first authors on this manuscript. MCV and RF conceived of the study and analysis plan. All authors participated in developing interview tools. MCV, EDR, AKC, LH, MM, and RF performed analyses. MCV, AKC and RF wrote the first draft of the manuscript. RF and AKC drafted the conceptual model presented in the manuscript. All authors contributed to interpretation of the data, substantially edited the manuscript, and approved of the final version. RF is the guarantor and takes final responsibility for the manuscript as a whole.

DATA SHARING

We will share details of the coding process and methods upon request. The raw data and transcripts from this study cannot be shared as this would violate the agreement made with participants through the informed consent process. Specifically, all participants were guaranteed that their transcripts would only be viewed by the research team.

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COMPETING INTERESTS

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/ coi_disclosure.pdf and declare: RF, MCV, LH, MM, AKC and NJS received funding from the State of Washington, Department of Labor & Industries, Safety and Health Investment Projects. RF, EDR, AC, and MCV received funding from the Department of Defense; RF and EDR received funding from the Agency for Healthcare Research and Quality. No other relationships or activities that could appear to have influenced the submitted work

HUMAN SUBJECTS

This work was approved by the University of Washington Institutional Review Board (STUDY00000502).

RESEARCH REPORTING CHECKLIST

See attached COREQ checklist.

EXCLUSIVE LICENSE STATEMENT

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PATIENT AND PUBLIC INVOLVEMENT

Patients were not the subjects in this study; thus not applicable.

DISSEMINATION DECLARATION

The manuscript will be made available to all healthcare workers at the participating institutions' emergency departments.

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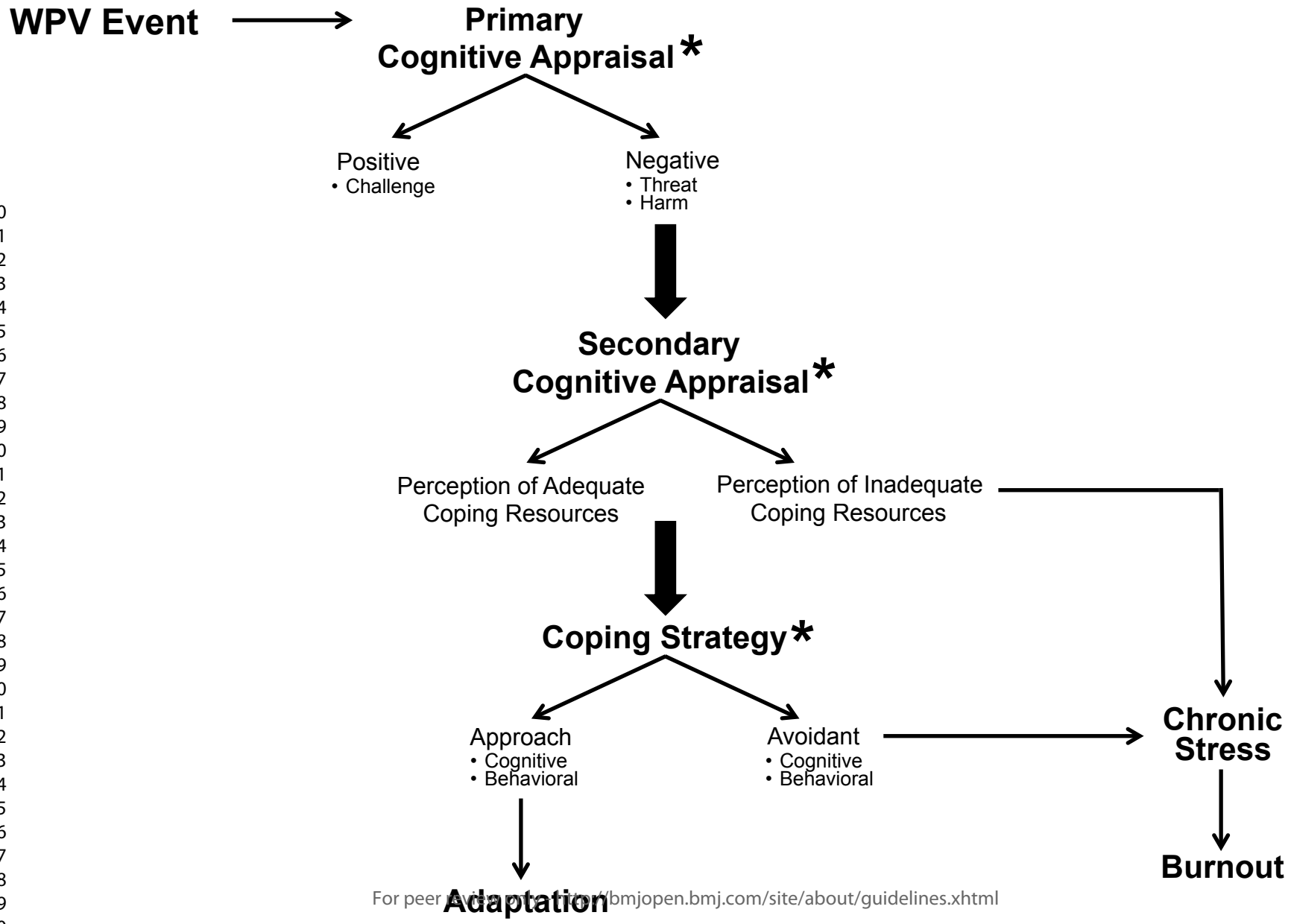
Figure 1. Proposed model for the processes linking WPV and burnout



*indicates possible areas of intervention to mitigate the impact of ED WPV

Supplemental File 1. Workplace Violence Interview Guide*
Date:
Site:

Interviews began with the research coordinator reviewing the objective of the interview: To understand the nature of WPV and understand how people deal with WPV events.

Work history

1. What is your job/role in the emergency department?
2. When did you start your shift today?
3. How many consecutive shifts have you worked leading up to today?
4. How many days have your worked in the past 7 days, including today?

Event description*

5. In your own words, describe what happened today.
6. What was your goal in managing the situation?
7. Before the event began, how concerned were you about this patient's risk of becoming violent? (Use a scale of 1-5, where 1 = not at all concerned, 3 = somewhat concerned, and 5 = extremely concerned.)
8. How safe did you feel when responding to the violent event? (Use a scale of 1-5, where 1 is not at all concerned, 3 is somewhat concerned, and 5 is extremely concerned.)
9. Have you received formal training in aggression management or de-escalation?
10. What aspects of your training were helpful in this event?
11. Could this event have been prevented?
12. How could this event have been prevented?

Dealing with emergency department workplace violence

13. Have you experienced similar workplace violence events in the past?
    a. When did you last experience workplace violence?
    b. How often do these incidents occur?
14. With incidents like the one today, how did you attempt to recover?
15. How have those previous experiences with WPV impacted you?
16. How are you feeling now?
17. Is there anything else you want to tell me?

*this data collection was also used to meet an institutional goal of understanding frequency and nature of WPV; thus, early questions have a different focus than the main study objectives but are included for the sake of transparency. More close-ended questions were also used as ice-breakers as this proved to be an effective way to engage participants early in the interview.

Supplemental File 2, Results. Identified themes about inevitability of workplace violence and manifestations of burnout

Theme. Workplace violence (WPV) as a frequent, inevitable occupational hazard

The HCWs in this study described WPV as common, noting that it was a standard part of their job. Verbal abuse, such as the use of derogatory language and direct or implied threats, in particular, was noted to be a regular, almost daily occurrence. As one participant commented:

> *"(It happens) every day. Yeah, I mean even if someone isn't physically violent, people are definitely very loud and vocal towards you in one way or the other. I don't ever go a work day without being yelled at and called some name."*
> (Medical Assistant, 16)

As implied by the above quote, it isn't only verbal aggression that is common. Participants in this study noted that physical violence, far from being rare and unusual, is a constant, tangible threat to healthcare workers (HCWs) in the emergency department (ED) and a regular feature of their workplace environment. Participants described being kicked, hit, spit at, lunged at, and having objects thrown at them, some on an almost daily basis. Violence was perceived as being the norm, "*an inevitable, occupational hazard*" (Physician, 23) that one simply tolerates and adapts to.

> *"Since it is the norm here… how has it impacted me? Well I just take it as it is. You don't even think about it. You know what I mean? Okay this is just part of the job. Lets go." (Nurse, 12)*

Theme. Manifestations of burnout amongst participants

Participants in this study reported manifestations of burnout due to their frequent exposure to WPV. Burnout as described by Maslach, et al is a psychological phenomenon comprised of emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment that negatively impacts one's ability to provide effective, quality care.[22] Burnout is common amongst HCWs and has been associated with increased medical errors, higher reported rates of sub-optimal patient care, diminished emotional and physical wellbeing, and increased absenteeism and job turnover. [23,24]

Many participants in this study reported violence in the workplace as having a negative impact on them both emotionally and physically. Participants described feeling "fatigued," "worn out," "stressed out," and "tired" as a result of repeatedly being the victim of violence. As one participant noted:

> *"A lot of times I'll come home like pretty stressed out and just really tired, like fatigued from constantly dealing with the verbal and physical abuse that we experience… it does definitely wear on you after a certain point… we're just constantly dealing with it. So it can get pretty hard." (Security Officer, 7)*

For many, these feelings were not limited to the work place or confined to the time period immediately following the violent event. Rather, these participants described the emotional toll of WPV as being chronic, present in and out of their working environment.

> *"You know it [violence] wears you out for sure. You are exhausted. It takes away from a lot when you're at home. You sleep a lot because you're exhausted. It has taken a lot out of you physically or mentally and then it can tax you… I think that's how it affects me at home, in my personal life."(Nurse, 9)*

In addition to emotional exhaustion, a subset of participants made statements consistent with "depersonalization" or "dehumanization." In Maslach's model of burnout, this refers to

"the development of "negative, cynical attitudes and feelings" toward the recipients of one's care.[22] For some, this depersonalization manifested as disapproving or derogatory comments about their patients.

> *"when you're called to serve snakes every now and then one of them is going to bite you." (Physician, 23)*
> *"It [WPV] also changed what I think about people… Yeah, how horrible people really are, or can be. I shouldn't say are, but can be." (Nurse, 13)*

Other participants in this subset more directly acknowledged the impact of WPV on their coworkers and their own perceptions of their work and patients, reflecting that the experience of violence had made them "cold," "jaded," and with less empathy and understanding than they felt they used to have for their patients.

> *"I feel like it has also hardened me a little bit. I think my world-view has shifted a little bit. I find myself being more judgmental and I try to catch myself in that before I let those feelings take over." (Medical Assistant,18)*

The final component of burnout reported by some of the participants was a diminished sense of their own personal, professional accomplishment. Many participants described a sense of helplessness when discussing their ability to adequately address the physical and mental health needs of their patients, particularly their violent patients who often suffer from mental illness. Expressing dissatisfaction both with the few available tools they have to address these behaviors (often chemical or physical restraints) and with the limitations of the larger health care system.

> *"It just makes me sad the way it normally does…. It sucks because I don't think he's fully, I don't think he fully understands all of his actions. And us sending him off to the bus doesn't really help anything. I wish there was a way we could help him through treatment or something. Because that's just going to be somebody else's problem and his problem. Yeah, I just feel kind of depressed that we didn't… That we're a health care facility but we didn't help him. That sucks." (Security Officer, 5)*

Supplemental File 2, Table 1: Additional quotes supporting themes of workplace violence inevitability and link to burnout

Themes	Subthemes	Quotes
WPV as a frequent, inevitable occupational hazard		"It personally, makes me really sad that this is a component. It's not even like a maybe; it's like a when. When it will happen. It's not an if." (Nurse, 6) "I just see it as inevitable, occupational hazard, kind of like many shifts and weekends and holidays, like if you're going to care for the people that no one else wants to care for." (Physician, 23)
		"It happens every day. … I would say pretty much every day, to some extent, someone is out of control and we have to have, you know, some kind of confrontation like this" (Security, 1) "But, yes. I mean and there's physical attempts, but whether or not they actually make contact, that's not always the case. But, yes, verbal abuse on a daily basis, absolutely." (Nurse, 9)
Manifestations of burnout amongst participants	Emotional exhaustion	"Even though I think I'm pretty jaded to it, it probably increases stress levels and makes you feeling well … And you can only take so much and try to help people to get that behavior returned to get violent behaviors it does wear on you physically and emotionally deep down inside." (Nurse, 9) "There are days that it gets me really, really stressed out. And at the end of the day, I just feel really wiped out, and that I don't have anything left to give." (Medical Assistant, 18)
	Depersonalization	"He is literally just an (expletive). And so that's just a bad person. So that doesn't make me feel bad at all." (Physician, 14) "And I've watched over the years I've watched the sweetest nicest people coming to this job and it doesn't take very long and they're jaded and they're changed and it sad." (Nurse, 17)
	Decreased personal efficacy	"I don't know. I think I went into it thinking it was going to be like… Like I was helping people and fixing and adding to their lives and not… It's completely different than what I had thought I was going to do. You still have those moments, but when you're cleaning up the urine and having these people spit you and you're putting people in restraints… That's not what I expected. That's not what I thought I was going to be doing" (Nurse, 17) "I wish there was a way we could help him through treatment or something. Because that's just going to be somebody else's problem and his problem. Yeah, I just feel kind of depressed that we didn't… That we're a health care facility but we didn't help him. That sucks." (Security Officer, 5)
	Diminished job satisfaction	"I think probably a year into my role here as a medical assistant I for sure wanted to be an emergency room nurse and I still want to, but I have lately been definitely thinking about whether or not that it's something I want to do after I get done with nursing school do I want to continue working in emergency department where this is going to be the norm for my life for the next 30 years? Or do I want to maybe work in a cardiac ICU, some original little quieter something where it's a little… Where the environment is a little more control… I sometimes question whether or not this is something I want to do full-time, long-term" (Medical Assistant, 18) "I had a very naïve idea of what the day today actually looks like. And yeah it's been… this ends up being part of the day today and sometimes it can be a little bothersome and you really like wonder whether or not… If you'll be able to do it for as long as you hoped you could" (Nurse, 20)

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	7
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	Title page
Occupation	3	What was their occupation at the time of the study?	7
Gender	4	Was the researcher male or female?	7
Experience and training	5	What experience or training did the researcher have?	7
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	7
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Suppl File 1
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	7
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	6
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	6
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	6
Sample size	12	How many participants were in the study?	9
Non-participation	13	How many people refused to participate or dropped out? Reasons?	*
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	7
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	7
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	8 (Table 3)
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	7, Suppl File 1
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	*
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	7
Field notes	20	Were field notes made during and/or after the interview or focus group?	*
Duration	21	What was the duration of the inter views or focus group?	7
Data saturation	22	Was data saturation discussed?	9
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction?	*

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	7
Description of the coding tree	25	Did authors provide a description of the coding tree?	6-7
Derivation of themes	26	Were themes identified in advance or derived from the data?	7
Software	27	What software, if applicable, was used to manage the data?	7
Participant checking	28	Did participants provide feedback on the findings?	*
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	10-15; Suppl File 2
Data and findings consistent	30	Was there consistency between the data presented and the findings?	10-15; Suppl File 2
Clarity of major themes	31	Were major themes clearly presented in the findings?	10-15; Suppl File 2
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	10-15; Suppl File 2

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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***Responses to queries not provided in manuscript**

(13) The total number of individuals approached was not recorded. Often people would agree to participate but were subsequently called away to complete clinical duties. This is also discussed as a *Limitation* in the *Discussion*.

(18) Repeat interviews were not conducted, we focused on the acute event and purposefully designed our study to capture initial responses, which distinguishes our work from that of others

(20) No field notes were taken during or after the interview

(23) Transcripts were not returned to participants for correction or interpretation

(25) The coding process and method to determine themes and subthemes is explicated in the *Methods*. The resulting themes and subthemes are provided in *Results*, Table 3 and Supplemental File 2.

(28) Participants did not provide feedback on findings

BMJ Open

Identification of processes that mediate the impact of workplace violence on emergency department healthcare workers in the United States: Results from a qualitative study

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Identification of processes that mediate the impact of workplace violence on emergency department healthcare workers in the United States: Results from a qualitative study

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Contributors: MCV and AKC contributed equally to this manuscript and are joint first authors on this manuscript. MCV and RF conceived of the study and analysis plan. All authors (MCV, EDR, AKC, LH, MM, NJS, and RF) participated in developing interview tools. MCV, EDR, AKC, LH, MM, and RF performed analyses. MCV, AKC and RF wrote the first draft of the manuscript. RF and AKC drafted the conceptual model presented in the manuscript. All authors (MCV, EDR, AKC, LH, MM, NJS, and RF) contributed to interpretation of the data, substantially edited the manuscript, and approved of the final version. RF takes final responsibility for the manuscript as a whole.

ABSTRACT

Objectives: Violence toward emergency department healthcare workers is pervasive and directly linked to provider wellness, productivity, and job satisfaction. This qualitative study aimed to identify the cognitive and behavioral processes impacted by workplace violence to further understand why workplace violence has a variable impact on individual healthcare workers.

Design: Qualitative interview study using a phenomenological approach to initial content analysis and secondary thematic analysis

Setting: Three different emergency departments

Participants: We recruited 23 emergency department healthcare workers who experienced a workplace violence event to participate in an interview conducted within 24 hours of the event. Participants included nurses (n=9; 39%), medical assistants (n=5; 22%), security guards (n=5; 22%), attending physicians (n=2; 9%), advanced practitioners (n=1; 4%), and social workers (n=1; 4%).

Results: Five themes emerged from the data. The first two supported existing reports that workplace violence in healthcare is pervasive and contributes to burnout in healthcare. Three novel themes emerged from the data related to the objectives of this study: (a) variability in primary cognitive appraisals of workplace violence, (b) variability in secondary cognitive appraisals of workplace violence, and (c) reported use of both avoidant and approach coping mechanisms.

Conclusion: Healthcare workers identified workplace violence as pervasive. Variability in reported cognitive appraisal and coping strategies may partially explain why workplace violence negatively impacts some healthcare workers more than others. These cognitive and behavioral processes could serve as targets for decreasing the negative effect of workplace violence, thereby improving healthcare worker wellbeing. Further research is needed to develop interventions that mitigate the negative impact of workplace violence.

SUMMARY BOX

Strengths of this study

- Prospective study of healthcare workplace violence across multiple different healthcare professionals
- Addresses a limitation of current literature by collecting data immediately following workplace violence events, thus limiting recall bias
- Identifies possible targets to ameliorate the negative impact of workplace violence on healthcare workers
- Proposes a conceptual model of healthcare workplace violence and burnout

Limitations

- Sample was limited to a purposive sample of 23 HCWs practicing within a single US city

INTRODUCTION

Healthcare worker (HCW) safety and well-being are cornerstones of safe, effective patient care.[1] The link between patient care and HCW safety is now recognized by patient safety experts, with recent reports suggesting that the "Triple Aim" of high-value healthcare include a fourth Aim reflecting the need to support HCW well-being.[2] Workplace violence (WPV) in healthcare is linked to HCW burnout.[3,4] While the prevalence of WPV is most commonly described in North America and the United Kingdom, recent studies report similar violence rates and characteristics in other parts of Europe, Asia, Africa, and Australia.[5-10] Despite efforts to address WPV and HCW burnout and well-being, violence against HCWs remains a pervasive, recognized threat to patient safety.[2]

The emergency department (ED) setting has been specifically recognized as an area of high risk for WPV. Violence in the ED impacts more than 1 million individuals with over 78% of ED HCWs identifying at least one incident of physical assault by a patient or patient's visitor during their career.[11] According to a 2006 study, 67% of nurses, 63% of medical assistants, and 51% of physicians had been assaulted by an ED patient at least once in the prior six-month period.[12] Patient factors (e.g., psychiatric comorbidities, cognitive impairment) and institutional/environmental factors (e.g., high censuses, long waiting room times) make EDs particularly susceptible to WPV.[13-15]

Most published research and quality improvement programs have focused on interventions to decrease the incidence of WPV.[16-19] Despite these efforts, a recent report by the American College of Emergency Physicians notes that over a one-year period greater than 60% of physicians report being assaulted.[20] Since some amount of ED WPV seems inevitable regardless of training or security measures,[15,21,22] it is important to also focus on mitigating the negative impact of WPV on HCWs.[23] Surveys conducted in several countries suggest a connection between WPV and burnout,[3,4] yet do not offer an understanding of the processes that lead to burnout, nor do they explain why some HCWs are less affected than others. Specifically, there is a paucity of work focused on identifying the cognitive and behavioral processes that could assist HCWs in recovering from WPV events.

We conducted a prospective qualitative study to understand (1) how ED HCWs appraise WPV events, (2) what coping mechanisms ED HCWs use in response to WPV, and (3) the relationship between WPV and

burnout. This work supports our overall goal of mitigating the negative impact of acute and chronic exposure to WPV.

METHODS

Study Design and Setting

We executed a qualitative study with semi-structured interviews of ED HCWs and analyzed transcripts using a phenomenological approach. One-on-one interviews involved ED HCWs from three EDs representing urban, academic, and community hospitals within the State of Washington (Table 1). We conducted all interviews within 24 hours of a WPV event. The study protocol was approved by the University of Washington Institutional Review Board (STUDY00000502).

Table 1. Hospital characteristics of enrolling sites

	Site 1	Site 2	Site 3
Setting	Urban, academic safety net hospital	Tertiary referral center	Community
Inpatient beds (n)	413	450	303
ED beds (n)	48	23	55
ED visits per year (n)	63,000	29,000	82,000
Admitted patients (% total)	21	24	14
Average length of stay (hr)	4.5	4.9	3.0

ED = emergency department

Participants and Sampling

Participants were ED HCWs selected through purposive sampling. A trained research coordinator present in the ED weekdays from 2pm until 10pm identified employees who experienced verbal or physical aggression as defined by the National Institute of Occupational Safety and Health (Table 2).[24] Following an observed WPV event, the research coordinator approached the employees involved. Employees were considered eligible if they were available for an interview within the following 24 hours. All participants provided consent for both participation and audio recording. The research coordinator collected demographic information from each consented participant. At two sites participants were compensated with a $10 gift card. The third site required voluntary participation based on institutional bylaws.

Interview Guide Development

Using an iterative process supported by a literature review, we developed an interview guide to elicit the participant's perspective of the WPV event and how he/she was impacted. We first reviewed the WPV literature both within and outside of healthcare to guide question development. A multidisciplinary ED safety board at the University of Washington reviewed questions. This revised interview guide was pilot tested with two ED employees (one nurse, one medical assistant) who had experienced a recent WPV event. Two members of the study team reviewed the interview transcript and refined the interview guide. The interview guide underwent another round of testing with a social worker and medical assistant to evaluate new changes (Supplemental File 1).

A non-clinical, female research coordinator with prior experience conducting interviews and focus groups conducted the interviews. The research coordinator was purposely unfamiliar to the participants, had no personal interest in WPV or ED safety, and had no relationship with clinical leadership or human resources at the institution. This was important to preserve participant privacy and to maximize honest and open reflections. The research coordinator received specific training relevant to the project, followed by direct observation with feedback from the investigators. The interview format was semi-structured, with follow-up or probative questions for clarification. Interviews ranged from 6 to 24 minutes in length, with a mean length of 13 minutes. All interviews were conducted in a private, closed room adjacent to, but separated from, clinical space. Interviews were audio recorded and transcribed verbatim. The research coordinator reviewed each transcript for accuracy and removed any identifying information.

Qualitative Analysis

Researchers utilized inductive and deductive qualitative phenomenological approach.[25,26] The primary coding team consisted of three board-certified emergency physicians and a social worker with extensive ED and qualitative research experience. Codes were derived from a close reading of transcripts to capture key concepts. Codes were then sorted into higher order categories based on how they were related or linked.[27] The first four transcripts were reviewed by all coders. The research team met periodically to develop and refine the codebook and discuss the coding process. All transcripts were then coded in duplicate using Dedoose version 8.2.14 software (SocioCultural Research Consultants, LLC; Los Angeles, CA). Codes were compared

and disagreements were discussed. If the initial coders could not reach consensus a third person provided adjudication. Two members of the team reviewed data collection and analysis until saturation was reached and no additional themes were identified. After all transcripts were analyzed, the research team met to identify themes and subthemes that accurately summarized coded statements.

Table 2. Definitions Relevant to the Analysis

Construct	Definition and Significance
Occupational Safety and Health Administration definition of WPV	"Workplace violence is any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site. It ranges from threats and verbal abuse to physical assaults and even homicide."[28]
Cognitive appraisal	The process of an individual evaluating the personal significance or relevance of a stressful event and its related components to his/her wellbeing.[29] Cognitive appraisals then drive the individual's selection of coping mechanism and partially mediate stressor impact and work-related outcomes.[30,31]
Primary Cognitive Appraisal	Process of an individual evaluating whether s/he has anything at stake during a stressful encounter; i.e., harm to physical self, loss of self-esteem, ability to learn or improve, etc.[29] Primary appraisals can be categorized as harmful, threatening, or challenging.
Secondary Cognitive Appraisal	Process of evaluating the ability to respond to the situation; i.e., having the necessary resources or skills to deal with the stressful event.[32] This relates to the individual's assessment that they can (1) directly address the stressor and (2) cope with the event.[29]
Coping	Conscious use of cognitive and/or behavioral strategies that is intended to decrease perceived stress or increase resources available to deal with stress. Can be further delineated into those efforts directed at processing the stressful event to improve understanding or foster resourcefulness (approach coping) and those directed at physically or mentally avoiding unpleasant thoughts related to the stressful event (avoidance coping).[33,34]
Burnout	A psychological syndrome consisting of three components: emotional exhaustion, a tendency to depersonalize client encounters, and a reduced sense of personal accomplishment[35]

RESULTS

Interviews were conducted from January 2017 to May 2017. We obtained thematic saturation with 23 participants. No events involved physical abuse only. Participants included nurses (n=9; 39%), medical assistants (n=5; 22%), security guards (n=5; 22%), attending physicians (n=2; 9%), advanced practitioners (n=1; 4%), and social workers (n=1; 4%). Basic demographic information pertaining to participants is provided in Table 3.

Table 3. Participant demographics

Demographic	Participants (n = 23)
Age, year; mean (SD)	35 (9)
Male, n(%)	13 (57)
Profession, n(%)	
Nurse	9(39)
Advanced nurse practitioner	1(4)
Physician	2(9)
Social worker	1(4)
Security guard	5(22)
Medical assistant	5(22)
Institution of primary employment, n(%)*	
Urban academic safety net hospital	15(65)
Tertiary referral center	4(17)
Community hospital	4(17)
Experience in healthcare, years; mean (SD)	10(7)
Experience working in an emergency department, years; mean (SD)	6(5)

*for physicians who work at more than one institution, listing reflects where they were working at the time of enrollment

Five themes emerged from the data related to the experience of WPV: (1) WPV as a frequent, inevitable occupational hazard, (2) manifestations of burnout amongst participants, (3) variability in primary cognitive appraisals of WPV, (4) variability in secondary cognitive appraisals of WPV, and (5) reported use of both avoidant and approach coping mechanisms. Themes one and two are consistent with findings in other studies, identifying WPV as pervasive[36] and associating WPV experiences with indicators of burnout.[3,4] We

include these confirmatory themes as they were important to the overall objective of the project and helped shape the approach to our analysis. Key definitions of terms are provided in Table 2. Quotes illustrating themes appear in the text below, with additional quotes provided in Table 4.

Workplace violence (WPV) as a frequent, inevitable occupational hazard

The HCWs in this study described WPV as common, noting that it was a standard part of their job. Verbal abuse, such as the use of derogatory language and direct or implied threats, in particular, was noted to be a regular, almost daily occurrence. As one participant commented:

> *"(It happens) every day. Yeah, I mean even if someone isn't physically violent, people are definitely very loud and vocal towards you in one way or the other. I don't ever go a work day without being yelled at and called some name."*
> *(Medical Assistant, 16)*

As implied by the above quote, it isn't only verbal aggression that is common. Participants in this study noted that physical violence, far from being rare and unusual, is a constant, tangible threat to healthcare workers (HCWs) in the emergency department (ED) and a regular feature of their workplace environment. Participants described being kicked, hit, spit at, lunged at, and having objects thrown at them, some on an almost daily basis. Violence was perceived as being the norm, "*an inevitable, occupational hazard*" (Physician, 23) that one simply tolerates and adapts to.

> *"Since it is the norm here… how has it impacted me? Well I just take it as it is. You don't even think about it. You know what I mean? Okay this is just part of the job. Lets go." (Nurse, 12)*

Manifestations of burnout amongst participants

Participants in this study reported manifestations of burnout due to their frequent exposure to WPV. Burnout as described by Maslach, et al is a psychological phenomenon comprised of emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment that negatively impacts one's ability to

provide effective, quality care.[37] Burnout is common amongst HCWs and has been associated with increased medical errors, higher reported rates of sub-optimal patient care, diminished emotional and physical wellbeing, and increased absenteeism and job turnover. [38,39]

Many participants in this study reported violence in the workplace as having a negative impact on them both emotionally and physically. Participants described feeling "fatigued," "worn out," "stressed out," and "tired" as a result of repeatedly being the victim of violence. As one participant noted:

> *"A lot of times I'll come home like pretty stressed out and just really tired, like fatigued from constantly dealing with the verbal and physical abuse that we experience… it does definitely wear on you after a certain point… we're just constantly dealing with it. So it can get pretty hard." (Security Officer, 7)*

For many, these feelings were not limited to the work place or confined to the time period immediately following the violent event. Rather, these participants described the emotional toll of WPV as being chronic, present in and out of their working environment.

> *"You know it [violence] wears you out for sure. You are exhausted. It takes away from a lot when you're at home. You sleep a lot because you're exhausted. It has taken a lot out of you physically or mentally and then it can tax you… I think that's how it affects me at home, in my personal life."(Nurse, 9)*

In addition to emotional exhaustion, a subset of participants made statements consistent with "depersonalization" or "dehumanization." In Maslach's model of burnout, this refers to "the development of 'negative, cynical attitudes and feelings' toward the recipients of one's care.[37] For some, this depersonalization manifested as disapproving or derogatory comments about their patients.

"When you're called to serve snakes every now and then one of them is going to bite you." (Physician, 23)

"It [WPV] also changed what I think about people… Yeah, how horrible people really are, or can be. I shouldn't say are, but can be." (Nurse, 13)

Other participants in this subset directly acknowledged the impact of WPV on their coworkers and their own perceptions of their work and patients, reflecting that the experience of violence made them "cold," "jaded," and less empathic and understanding.

"I feel like it has also hardened me a little bit. I think my world-view has shifted a little bit. I find myself being more judgmental and I try to catch myself in that before I let those feelings take over." (Medical Assistant,18)

The final component of burnout reported by some of the participants was a diminished sense of their own personal, professional accomplishment. Many participants described a sense of helplessness when discussing their ability to adequately address the physical and mental health needs of their patients, particularly their violent patients who often suffer from mental illness. Expressing dissatisfaction both with the few available tools they have to address these behaviors (often chemical or physical restraints) and with the limitations of the larger health care system.

"It just makes me sad the way it normally does…. It sucks because I don't think he's fully, I don't think he fully understands all of his actions. And us sending him off to the bus doesn't really help anything. I wish there was a way we could help him through treatment or something. Because that's just going to be somebody else's problem and his problem. Yeah, I just feel kind of depressed that we didn't… That we're a health care facility but we didn't help him. That sucks." (Security Officer, 5)

Variability in primary cognitive appraisals of WPV amongst participants

The Transactional Model of Stress and Coping is a framework for evaluating the processes of coping with stressful events.[29] Stressful experiences are conceptualized as person-environment transactions that depend on the impact of the external stressor. The level of stress experienced depends on appraisals of the situation. When an individual encounters a stressor or stressful event, they engage in a two-step process of cognitive appraisal during which they first interpret the personal significance of the event (primary cognitive appraisal) and subsequently determine whether they have the resources available to overcome or address the event (secondary appraisal).[29,32] In this study, HCWs' primary cognitive appraisals of WPV events varied, with participants describing harm and threat appraisals as well as challenge appraisals.

Negative Primary Appraisals: Harm and Threat Appraisals

Harm appraisals manifested as HCWs describing negative emotions such as sadness and anger. This was often accompanied by the recognition that it was their job to help the patient, yet frustrating that they had to put themselves in harm's way to do so.

> *"Just generally, it makes you feel crappy. And you can only be … take so much and try to help people and try to help, and then to get that behavior returned, get violent behaviors, it does wear on you physically and emotionally." (Nurse, 9)*

Threat appraisals were expressed through description of negative emotions and interpretations characterized by fear and anxiety. Participants described a real threat to their safety, and this was not a part of the job they were expecting. Participants also reported an underlying sense of uncertainty surrounding a situation, suggesting that safety threats could be hidden and unexpected.

> "*You know any day that you could get hurt. But then a lot of jobs have that risk. But it's … you didn't go into it thinking that. When people became nurses they didn't anticipate that … I don't know … I never anticipated that I would be used and abused as I have been." (Nurse, 17)*

Positive Primary Appraisals: Challenge Appraisals

In contrast to more negative interpretations, some ED HCWs described challenge appraisals, viewing WPV events as an opportunity to grow or gain due to a stressful event. HCWs would cite the opportunity to improve performance the next time they encountered a violent patient, and described seeking input from their colleagues to identify areas of improvement. As one nurse stated:

"I feel like the way I deal with it is just trying to look at a situation and see how it can maybe better improve . . . It's like okay, I can improve here or here." (Nurse, 10)

In these challenge appraisals WPV events were seen as both an educational experience to prepare them for the next encounter with WPV, and as a way to build a sense of professional confidence.

Variability in secondary cognitive appraisals of WPV amongst participants

In contrast to primary appraisals that reflect the meaning an individual attributes to an event, secondary appraisals reflect an individual's belief that they have (or do not have) the resources necessary to cope with the situation and its aftermath.[29] HCWs in this study demonstrated significant variability in their secondary appraisals of WPV events, with some participants indicating that they possessed adequate resources to overcome WPV, and other indicating that they did not.

Secondary appraisals indicating adequate resources to address WPV events:

Participants who viewed themselves as having adequate resources to address WPV events described factors that enabled their ability to handle violent events better than their colleagues. This is sometimes attributed to past experiences in similarly stressful jobs, personal traits, physical stature, or specialized training (e.g., military or martial arts). Several note that, in their view, they don't need to cope.

" Well from a physical stand … the confrontation standpoint, yes. I did kick boxing for 15 years and so I, I'm not worried about that, but from de-escalation, I just leave the room. It's not a big deal. So either way, yes, it's fine." (Physician, 14)

"I mean, it just is what it is. I don't know that I need to cope with it." (Advanced Practitioner, 22)

Some HCWs reported a belief that they are less susceptible to the negative impact of WPV and are able to tolerate more violence without experiencing any negative impact.

"… I can tolerate I think a little bit more than maybe somebody else in a different emergency room just because we just have people that are just out of control and we know what to do with them and we handle it." (Nurse, 13)

Secondary appraisals indicating inadequate resources to address WPV events:

In contrast to those who felt they were adequately resourced to deal with WPV events, another subset of participants described feeling under-resourced and therefore incapable of successfully managing WPV events. This often was couched in terms of a lack of control over patient behavior.

"I mean I can say … he wasn't safe at all. For him and for me, because if I could be close, he could do anything. He has one hand is unrestrained, he can punch me, he could do anything." (Medical Assistant, 3)

Likewise, HCWs reported a sense of uncertainty or lack of control in their healthcare system's response mechanisms or protection measures currently in place. This included a perceived lack of response or concern from leadership and a sense that HCW well-being was not a priority.

"We don't have resources available, especially out in the front waiting room, I can't hear overhead pages. In order to call for help I have to overhead page something and I can't see any response, or I have to radio and pray somebody comes. We have a silent alarm, but that doesn't necessarily mean a lot of things. And if it's something like that where you want to not get

a phone out and say, can security come to the front, and really escalate the patient in front of you just because it's really difficult to manage those situations." (Nurse, 6)

"And I just keep thinking, it's going to take something really bad happening before they put security in the back. Or do something to make us feel safer." (Nurse, 17)

Reported use of both avoidant and approach coping mechanisms amongst participants

Coping is defined as the cognitive and behavioral efforts to master, reduce, or tolerate the internal and/or external demands that are created by a stressful event.[40] Coping strategies can be categorized as avoidant or approach-oriented (Table 2).[33,34] Just as the participants in this study described significant variability in their cognitive appraisals of WPV events, so too did they report a variety of coping strategies.

Avoidant Coping Strategies

Participants described multiple different coping strategies to avoid or decrease the negative emotions associated with the WPV event. Participants often described taking a few minutes to separate themselves from the situation both physically and emotionally.

"I think I … you do sometimes need to like take some time, like away. Like sometimes it's a great time to take your 15-minute break and, like, sit down and, like chill." (Nurse, 12)

This was described as a way to allow individuals to continue their work. In some cases, HCWs described physical separation. This distance was perceived as creating a separation between work events and home life, supporting an emotional separation.

"So I intentionally don't live near the hospital, because I like to have that physical separation from work." (Advanced Practitioner,22)

Immediately following a WPV event, avoidant strategies may help HCWs adapt. More chronic avoidant behavior, however was also described. For example, a number of participants acknowledged using alcohol as a coping strategy.

> *"Alcohol. Probably. More than anything, you go home and you're like . . . nobody would believe me. There's nobody at home to tell." (Nurse, 17)*

Approach-oriented Coping Strategies

Unlike avoidant coping strategies, approach coping strategies involve directly managing or ameliorating the cause of stress.[33] Approach strategies generally manifested as a rationalization of the patient's behavior. Several HCWs justified patient behavior in terms of their mental illness.

> *"He is not pointedly violent towards individuals. I think just because he is just … he is out his … out of what I believe (is) his normal mental state. I don't think he knows … he really knows a lot of what's going on around him. He has a very limited grasp of his reality at this time. And that's okay and we're here to help him out." (Security, 4)*

Reviewing a situation and creating strategies for the next event is another example of approach coping. HCWs reported reviewing events with co-workers, both as a way to learn from others' perceptions of the event, and as a way to discuss their feelings with others that had similar experiences. The sense of support and the ability to "depend on" and "look to" other staff for support was almost universal.

> *"But I think taking time away and then if it is something that's violent that really bothered you, I think talking like to a co-worker, which I think everybody is really good about here. I think there's always somebody checking on you, like, are you okay?" (Nurse, 11)*

Table 4. Additional quotes to support identified themes about workplace violence appraisals and coping processes

Themes	Subthemes	Quotes
WPV as a frequent, inevitable occupational hazard		"It personally, makes me really sad that this is a component. It's not even like a maybe; it's like a when. When it will happen. It's not an if." (Nurse, 6) "I just see it as inevitable, occupational hazard, kind of like many shifts and weekends and holidays, like if you're going to care for the people that no one else wants to care for." (Physician, 23) "It happens every day. … I would say pretty much every day, to some extent, someone is out of control and we have to have, you know, some kind of confrontation like this" (Security, 1)
Manifestations of burnout amongst participants	Emotional exhaustion	"Even though I think I'm pretty jaded to it, it probably increases stress levels and makes you feeling well … And you can only take so much and try to help people to get that behavior returned to get violent behaviors it does wear on you physically and emotionally deep down inside." (Nurse, 9) "There are days that it gets me really, really stressed out. And at the end of the day, I just feel really wiped out, and that I don't have anything left to give." (Medical Assistant, 18)
	Depersonalization	"He is literally just an (expletive). And so that's just a bad person. So that doesn't make me feel bad at all." (Physician, 14) "And I've watched over the years I've watched the sweetest nicest people coming to this job and it doesn't take very long and they're jaded and they're changed and it sad." (Nurse, 17)
	Decreased personal efficacy	"I don't know. I think I went into it thinking it was going to be like… Like I was helping people and fixing and adding to their lives and not… It's completely different than what I had thought I was going to do. You still have those moments, but when you're cleaning up the urine and having these people spit at you and you're putting people in restraints… That's not what I expected. That's not what I thought I was going to be doing" (Nurse, 17)
	Diminished job satisfaction	"I think probably a year into my role here as a medical assistant I for sure wanted to be an emergency room nurse and I still want to, but I have lately been definitely thinking about whether or not that it's something I want to do after I get done with nursing school do I want to continue working in emergency department where this is going to be the norm for my life for the next 30 years? Or do I want to maybe work in a cardiac ICU, somewhere a little quieter something where it's a little… Where the environment is a little more control… I sometimes question whether or not this is something I want to do full-time, long-term" (Medical Assistant, 18) "I had a very naïve idea of what the day today actually looks like. And yeah it's been… this ends up being part of the day today and sometimes it can be a little bothersome and you really like wonder whether or not… If you'll be able to do it for as long as you hoped you could" (Nurse, 20)

Themes	Subthemes	Quotes
Variability in primary cognitive appraisals of WPV	Negative primary appraisals – Harm and threat appraisals	"If it gets really personal, people get up in my face, somebody tries to like actually get physical, then I get a lot more upset." (Nurse, 6) "And so I was typing a note. And I didn't even realize it and I turned around and she was like behind me and over me. And I felt physically threatened. And realized that not only did I feel physically threatened but there was nobody to call to help me." (Advanced Practitioner, 22)
	Positive primary appraisals – Challenge appraisals	"It helps me … kind of builds my, I guess, confidence in future incidences. Kind of you get tools from everything. You get new ways to do certain things with each person." (Security, 15) "You get a little perspective and you realize, look, no one got hurt, surprisingly, it turned out fine. The patient got the care the patient needed. I think the important part is to reflect and say, gosh, how should I handle that differently? What am I going to do going forward differently? And then kind of with some resilience, move on." (Physician, 23)
Variability in secondary cognitive appraisals of WPV	Secondary appraisals indicating adequate resources to address WPV events	"Like I do see that certain events do impact other staff members more than it impacts me and I think that for people who do get into those situations, sometimes the social resources may not be available for them to process." (Nurse, 11) "I've always had that mentality where I can kind of just destress and cope with things a lot easier than some people would, like a … or just normal visitors here." (Security, 7)
	Secondary appraisals indicating inadequate resources to address WPV events	"I was happy to see three officers come towards me when this event occurred, but none of them were in arm's reach that would've stopped it. They would've been able to help after, but they wouldn't have been able to stop it. Nobody would've stopped it. But I just … I don't know. I just … this is not … doesn't feel like a safe place." (Nurse, 17)
Reported use of both avoidant and approach coping mechanisms	Avoidant coping strategies	"Once the patient is either calmed down or they're placed in the restraints and everyone's safe in their rooms, then I usually just like, I'll sit down, kind of just like do some charting and then kind of take like a good five-minute sit-down session. I'm pretty good after that." (Medical Assistant, 16) "Honestly, I think the easiest way to cope with things is just to simply just forget about them, kind of like erase it from your memory bank, because I have other patients I've got to take care of." (Nurse, 10)
	Approach coping strategies	"I just … I depend a lot on my co-workers and making sure, was there anything that I missed? Was there anything I did? Do you know what I mean? Like that made the situation worse or … I should've moved off? Whatever. You know what I mean? What could I have done? I'm a good talker, so just talking about it and getting it out there and getting feedback from the people I trust on how things went, that's how I deal with it." (Nurse, 9) "And then we have somebody who's obviously not well, is very much struggling with her relationships with her kind of emotional volatility, that kind of very willfully contributes to her crises. And so when you have somebody responding out of that place, a very compromised place, and so I don't take it personally. This person has to walk around in that pain. And so those things I think promote my compassion." (Social worker, 2)

DISCUSSION

Our findings were consistent with other studies, highlighting the perception that WPV is pervasive in EDs and that HCWs connect their WPV experience with manifestations of burnout.[3,4,21] We also identified three novel themes not previously discussed in the healthcare WPV literature. These themes highlight the variability in how HCWs appraise WPV events and what coping mechanisms they employ to deal with WPV. In the following discussion, we draw from the stress and violence literature and propose a framework (Figure 1) that is based on the transaction-based stress model.[29,30,41,42] This framework illustrates how the cognitive and behavioral processes of appraisal and coping may mediate the relationship between WPV and burnout, thus highlighting potential targets for intervention.[29,30,41,42]

All occupations, including those within healthcare, have sources of stress; i.e., taxing features or experiences that cause a physical or mental discomfort. While unpleasant, the negative effects of these simple stressors is temporary, with the individual quickly returning to their usual states of happiness and functioning. Burnout, in contrast, is a chronic condition, characterized by a progressive and sustained decline in function and wellbeing.[35,43] Several studies have detailed an association between the experience of WPV and the development of burnout amongst HCW.[3,4,44] Unfortunately, WPV, particularly verbal abuse, is difficult to eliminate from healthcare. While efforts to decrease the incidence of WPV should continue, it is important to note that complete eradication of WPV, especially non-physical violence, is not feasible in certain settings. The goal then becomes mitigating the effects of WPV, and more specifically, understanding and preventing the cognitive and behavioral processes that lead to burnout.

Multiple studies demonstrate that WPV events affect individuals differently, with some experiencing little to no change in their functioning, whereas others suffer significant physical and psychological health symptoms, including burnout.[45] Our work is in line with research in other fields, suggesting that appraisal and coping may at least partially explain this variability (Figure 1).[46,47] Primary and secondary appraisals “converge” for an individual and determine whether the WPV event presents a significant stressor and potential stimulus for burnout.[42]

We heard from multiple HCWs who described negative primary appraisals, reflecting feelings of anger and frustration as well as a sense of threat and uncertainty. While there is no “right” appraisal, negative appraisals are highly stressful and are positively related to burnout.[30] Moreover, when a WPV event is

appraised as harmful or threatening, and their secondary appraisal indicates an inability to meet the demand of the situation or cope with its aftermath, the risk of chronic stress and burnout may increase.[30,42]

Not all participants appraised WPV events as harmful or threatening. Several described challenge primary appraisals, seeing opportunity for self-growth and the ability to improve and perform better or differently the next time. Likewise, some secondary appraisals reflected the participant's belief that they were better able to handle WPV because of physical attributes, training, or mental toughness. Having this sense of control over the situation or environment (1) facilitates an individual's ability to appraise WPV events as challenges rather than threats and (2) may decrease burnout related to workplace stress.[30] To facilitate the development of challenge appraisals in HCWs, ED and institutional leadership should foster a true sense of HCW control over their environment.

The way an individual appraises a WPV event directly affects the coping strategy employed.[48] Coping strategies that foster avoidance or escape are positively related to burnout, whereas more direct, approach-oriented strategies negatively relate to chronic stress and burnout.[49,50] In our study participants described a number of different coping strategies that could be adaptive and/or maladaptive. Avoidant coping strategies might be useful, and even necessary, immediately following a WPV event, e.g., if a HCW has to emergently switch tasks to provide care to an unstable patient.[34] However, long-term avoidant coping leads to less adaptation as compared with more direct, approach-oriented coping, which is thought to allow individuals to experience high stress situations without experiencing long-term physical and psychological trauma.[51] Healthcare institutions and ED leadership should help employees identify and adopt the cognitive and behavioral processes that support approach-oriented coping strategies.

Both cognitive appraisal and coping are processes as opposed to traits.[42] This is an important distinction. If we assume that the impact of a WPV event is dependent upon fixed personality traits, then we cannot change the outcome. Because cognitive appraisals and coping strategies are processes, they are amenable to change. If we can alter how an individual interprets and chooses to respond to a WPV event, we can potentially decrease or prevent related negative outcomes such as chronic stress and burnout.[52] Research suggests that appraisals and choice of coping strategy can be modified by the use of cognitive behavioral techniques.[53] A meta-analysis demonstrated superiority of cognitive behavioral techniques over multi-modal interventions, relaxation training, and organization-focused interventions when treating work-related stress.[54]

Such an intervention could provide a viable and practical way to decrease the deleterious effects of ED WPV on HCWs. Moreover, cognitive behavioral techniques implemented prior to starting a shift could increase optimistic explanatory style, lower levels of catastrophic thinking, and increase constructive envisioning of the future, all of which can help less resilient individuals who experience WPV cope more effectively.[55] Such interventions warrant further research, as they have the potential to decrease the deleterious effects of WPV and promote HCW well-being.

Limitations

This study has several important limitations, primarily related to selection bias. Our sample was limited to a purposive sample of 23 HCWs practicing within a single US city. Existing research recognizes cultural differences in perceptions and reactions to violence.[56,57] Although early work suggests similar links between WPV and burnout, it will still be important to evaluate the mechanisms and models proposed here across multiple countries and healthcare settings.

We did collect data across an interprofessional sample of HCWs practicing in 3 different institutions representing a community hospital, a regional tertiary referral center, and an urban academic safety net hospital. However it is still possible that the themes identified in this study may not generalize to different patient and HCW populations. The largest percentage of participants was recruited at the urban safety net hospital where a disproportionate number of patients have psychiatric comorbidities. This could have caused an overstatement of findings or a heightened focus on mental illness as a primary contributor.

We did not collect race or ethnicity data from our participants, thus we cannot report if there is an imbalance in the sample that could influence our data. Similarly, we did not track the demographics of those individuals that were approached but did not participate. Multiple individuals consented but were then called away for clinical work and were not able to be interviewed. We do not have demographic data for those individuals, and thus cannot guarantee that there wasn't an omission bias. The investigators may have inherent biases that could influence analysis and interpretation of the results. All coders were women and 75% were EM physicians employed at 2 out of 3 data collection sites. While this could be a benefit in terms of interpreting institution-specific terminology, there could also be a reporting bias when interpreting comments.

Finally, interviews were shorter than in other qualitative studies.[58] This was done intentionally to facilitate immediate data collection and thereby reduce recall bias present in other WPV healthcare-related studies. To our knowledge this is the first study to interview HCWs immediately following a WPV event.

CONCLUSION

WPV in healthcare is seen as pervasive and directly impacting the safe, effective delivery of patient care. Healthcare institutions must not only work to decrease the incidence of physical WPV but also include efforts to mitigate the negative impact of both verbal and physical WPV on HCWs. We identify both cognitive appraisals and coping processes as viable targets for interventions aimed at ameliorating the impact of WPV on HCWs. Research in other fields with high levels of WPV may help inform interventions to decrease chronic stress and burnout related to WPV. This important work will require translating such interventions to healthcare as well as identifying appropriate proximal and distal outcomes.

FIGURE LEGENDS

Figure 1. Proposed model for the processes linking workplace violence and burnout

SUPPLEMENTAL FILES

Supplemental File 1. Workplace violence interview guide

TRANSPARENCY STATEMENT

As the guarantor of the manuscript, RF affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as originally planned have been explained.

CONTRIBUTORS

MCV and AKC are joint first authors on this manuscript. MCV and RF conceived of the study and analysis plan. All authors participated in developing interview tools. MCV, EDR, AKC, LH, MM, and RF performed analyses. MCV, AKC and RF wrote the first draft of the manuscript. RF and AKC drafted the conceptual model presented in the manuscript. All authors contributed to interpretation of the data, substantially edited the manuscript, and approved of the final version. RF is the guarantor and takes final responsibility for the manuscript as a whole.

DATA SHARING

We will share details of the coding process and methods upon request. The raw data and transcripts from this study cannot be shared as this would violate the agreement made with participants through the informed consent process. Specifically, all participants were guaranteed that their transcripts would only be viewed by the research team.

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COMPETING INTERESTS

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/ coi_disclosure.pdf and declare: RF, MCV, LH, MM, AKC and NJS received funding from the State of Washington, Department of Labor & Industries, Safety and Health Investment Projects. RF, EDR, AC, and MCV received funding from the Department of Defense; RF and EDR received funding from the Agency for Healthcare Research and Quality. No other relationships or activities that could appear to have influenced the submitted work

HUMAN SUBJECTS

This work was approved by the University of Washington Institutional Review Board (STUDY00000502).

RESEARCH REPORTING CHECKLIST

See attached COREQ checklist.

EXCLUSIVE LICENSE STATEMENT

PATIENT AND PUBLIC INVOLVEMENT

Patients were not the subjects in this study; thus not applicable.

DISSEMINATION DECLARATION

The manuscript will be made available to all healthcare workers at the participating institutions' emergency departments.

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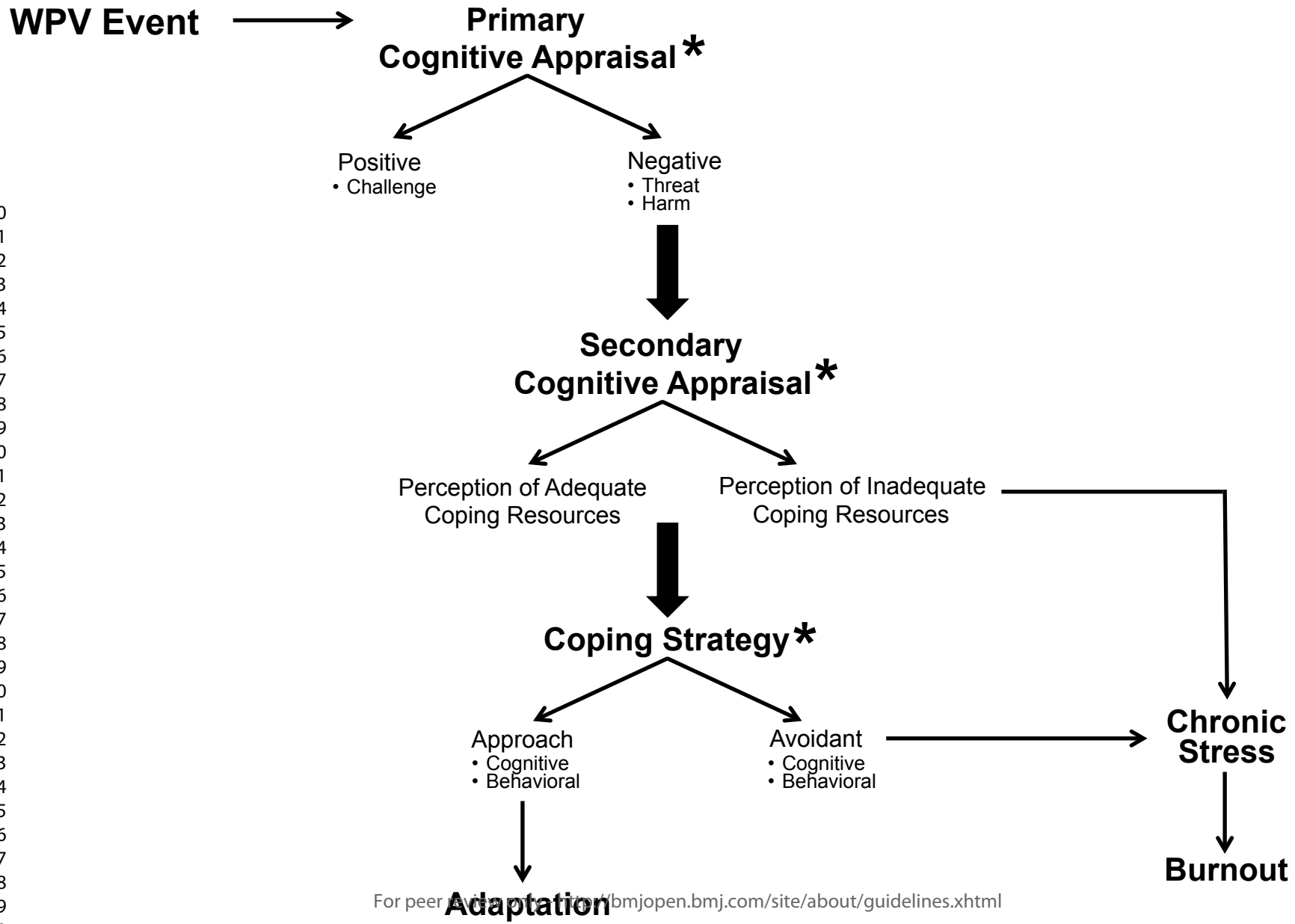
Figure 1. Proposed model for the processes linking WPV and burnout



*indicates possible areas of intervention to mitigate the impact of ED WPV

Supplemental File 1. Workplace Violence Interview Guide*
Date:
Site:

Interviews began with the research coordinator reviewing the objective of the interview: To understand the nature of WPV and understand how people deal with WPV events.

Work history

1. What is your job/role in the emergency department?
2. When did you start your shift today?
3. How many consecutive shifts have you worked leading up to today?
4. How many days have your worked in the past 7 days, including today?

Event description*

5. In your own words, describe what happened today.
6. What was your goal in managing the situation?
7. Before the event began, how concerned were you about this patient's risk of becoming violent? (Use a scale of 1-5, where 1 = not at all concerned, 3 = somewhat concerned, and 5 = extremely concerned.)
8. How safe did you feel when responding to the violent event? (Use a scale of 1-5, where 1 is not at all concerned, 3 is somewhat concerned, and 5 is extremely concerned.)
9. Have you received formal training in aggression management or de-escalation?
10. What aspects of your training were helpful in this event?
11. Could this event have been prevented?
12. How could this event have been prevented?

Dealing with emergency department workplace violence

13. Have you experienced similar workplace violence events in the past?
    a. When did you last experience workplace violence?
    b. How often do these incidents occur?
14. With incidents like the one today, how did you attempt to recover?
15. How have those previous experiences with WPV impacted you?
16. How are you feeling now?
17. Is there anything else you want to tell me?

*this data collection was also used to meet an institutional goal of understanding frequency and nature of WPV; thus, early questions have a different focus than the main study objectives but are included for the sake of transparency. More close-ended questions were also used as ice-breakers as this proved to be an effective way to engage participants early in the interview.

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	5
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	Title page
Occupation	3	What was their occupation at the time of the study?	5
Gender	4	Was the researcher male or female?	5
Experience and training	5	What experience or training did the researcher have?	5
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	5
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Suppl File 1
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	5
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	4
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	4
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	4
Sample size	12	How many participants were in the study?	7
Non-participation	13	How many people refused to participate or dropped out? Reasons?	*
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	5
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	5
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	7 (Table 3)
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	5, Suppl File 1
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	*
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	5
Field notes	20	Were field notes made during and/or after the interview or focus group?	*
Duration	21	What was the duration of the inter views or focus group?	5
Data saturation	22	Was data saturation discussed?	7
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction?	*

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	5
Description of the coding tree	25	Did authors provide a description of the coding tree?	5-6
Derivation of themes	26	Were themes identified in advance or derived from the data?	5-6
Software	27	What software, if applicable, was used to manage the data?	6
Participant checking	28	Did participants provide feedback on the findings?	*
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	8-20
Data and findings consistent	30	Was there consistency between the data presented and the findings?	8-20
Clarity of major themes	31	Were major themes clearly presented in the findings?	8-20
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	8-20

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

***Responses to queries not provided in manuscript**

(13) The total number of individuals approached was not recorded. Often people would agree to participate but were subsequently called away to complete clinical duties. This is also discussed as a *Limitation* in the *Discussion*.

(18) Repeat interviews were not conducted, we focused on the acute event and purposefully designed our study to capture initial responses, which distinguishes our work from that of others

(20) No field notes were taken during or after the interview

(23) Transcripts were not returned to participants for correction or interpretation

(25) The coding process and method to determine themes and subthemes is explicated in the *Methods*. The resulting themes and subthemes are provided in *Results*, Table 3 and Supplemental File 2.

(28) Participants did not provide feedback on findings