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Coping and Recovery in Surgical Residents after Adverse Events: The Second Victim Phenomenon

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Background: The second victim phenomenon is the distress felt by healthcare providers after a medical error. Although the phenomenon is a significant risk factor for burnout, little has been written about it in surgery, especially among residents.
Methods: After institutional review board approval, a 27-question anonymous online survey was sent to plastic surgery residents throughout the United States, and to residents from all surgical specialties at our institution, for a total of 435 residents. Residents were asked to describe any adverse events they had experienced, and subsequent emotional sequelae.
Results: The survey was returned by 125 residents (response rate 28.7%), of whom 53 were plastic surgery residents (42.4%) and 72 were from other surgical specialties (57.6%). In total, 110 (88%) described having been part of a medical error. An estimated 74 residents (34 from plastic surgery, 40 from other surgical specialties) provided a detailed description of the event. Sixty-four of them (86.5%) had subsequent emotional sequelae, most commonly guilt, anxiety, and insomnia. Only 24.3% of residents received emotional support. They rated other residents as the most important source of support, followed by faculty members and then family/friends.
Conclusions: The second victim phenomenon seems to be common among surgical residents. The most important source of support for affected residents in our cohort was other residents. Given these findings, institutions should focus on fostering camaraderie among residents, building effective second victim response teams and training peer support specialists. *(Plast Reconstr Surg Glob Open 2022;10:e4203; doi: 10.1097/GOX.0000000000004203; Published online 22 March 2022.)*

INTRODUCTION

Despite physicians' best efforts, adverse medical events sometimes occur, and may in certain circumstances cause harm to the patient.[1] Physicians may suffer some amount of emotional or physical sequelae after an adverse event, but many are afraid or reluctant to talk about them. A recent study found that most physicians do not seek counseling after adverse events, for reasons ranging from difficulty finding the time for counseling, to concern about loss of confidentiality in case of legal action, and fear of being judged negatively by colleagues.[2]

After an adverse event, the physician may have feelings of guilt, fear, anxiety, and depression.[3] The physician therefore becomes a "second victim." Physicians who commit medical errors may subsequently feel incompetent,[3] even though multiple studies have shown that most errors result from system flaws, rather than negligence or incompetence on the part of a single individual.[3,4] In a recent study, 60% of providers reported having been a "second victim," and two-thirds of these providers felt anxious, depressed, and unable to perform their job after the adverse event.[5]

Support to providers who suffer the "second victim" phenomenon is lacking at many healthcare organizations,[6] although there is improving awareness on the part of hospital administrators toward the phenomenon.[7] Helping providers cope with the sequelae of medical errors can improve the quality of care that those providers are able to provide.[8] Providers who are able to cope well with the sequelae of the medical error can also gain new insight/perspective, and even become advocates for patient safety.

There are few studies examining the second victim phenomenon in residents. While residents are, from a medicolegal perspective, in a relatively protected position,

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they also may have a limited experience dealing with medical errors, and a limited array of coping mechanisms. The purpose of this study was to examine the second victim phenomenon in surgery residents in the United States.

METHODS

After approval by the institutional review board, an anonymous online survey was sent to plastic surgery residents throughout the United States, and to all surgical residents at an Academic Medical Center. (**See survey, Supplemental Digital Content 1,** which displays the survey that was sent to residents. **http://links.lww.com/PRSGO/B972**.) The total number of residents to whom the survey was sent was 435. The survey was sent electronically through the SurveyMonkey platform (Momentive Inc., San Mateo, Calif.). Plastic surgery residency coordinators throughout the United States were emailed and asked to forward the survey to their residents.

The survey asked residents about their background (training, level, gender, age range), their experience with a prior adverse medical event/error, whether and how that event affected them emotionally and physically, and how they were able to cope with that event. After responses were collected, descriptive statistical analyses were conducted to measure the emotional and physical effects of errors on the respondents. All analyses were performed using Minitab 16 (Minitab LLC, State College, Pa.).

RESULTS

An estimated 125 residents returned the survey (overall response rate 28.7%, plastic surgery response rate 29.2%, other specialty response rate 28.3%). This included 53 plastic surgery residents (42.4%) and 72 surgical residents from other specialties (57.6%). The full characteristics of the respondents are shown in Table 1.

Of the 125 residents who returned the survey, 110 (88%) endorsed having experienced an error during their training that caused actual or potential harm to a patient. Of those, 74 respondents (34 from plastic surgery, 40 from other specialties) went on to provide details of the event and its sequelae.

Among the 74 respondents who described their event, 50% described it as a technical error, and 50% described as an error of clinical decision-making (Table 2). The errors resulted in harm to the patient in 44.6% of cases. Emotional sequelae occurred in 64 respondents (86.5%), most commonly guilt, anxiety, and insomnia. In the vast majority of respondents, those emotional sequelae lasted less than 1 month, but 12.5% reported ongoing symptoms. Physical sequelae were less common, occurring in 12.2% of respondents, and consisting most commonly of weight gain and headaches. Most physical sequelae were short-lived. The error was reported to the patient in 62.2% of cases.

Coping and recovery are delineated in Table 3. In total, 8.1% of residents expressed that they needed time off after the event, but none of the respondents in the study actually took time off. The majority of respondents (75.7%) did not receive any emotional support. Among those who did, emotional support was most likely to be provided by other residents, followed by faculty members, family, and then friends. All those who received emotional support felt that it was helpful. Only one respondent received formal counseling. The vast majority (85.1%) of respondents reported that the event overall had a positive impact on them, mostly by improving their vigilance in the future, and helping them gain new insight.

When performing comparisons between various demographic groups, we found that plastic surgery residents were significantly more likely to report emotional

Takeaways

Question: Our goal was to determine the key predictors of the second victim phenomenon in surgical residents, and how the emotional effects of the phenomenon can be alleviated.

Findings: The second victim phenomenon is common in surgical residents. The top resource for residents going through the second victim phenomenon was other residents.

Meaning: Healthcare institutions should maintain programs to address the second victim phenomenon among workers. In particular, camaraderie should be fostered among surgical residents.

Table 1. Baseline Characteristics of the Survey Respondents

Characteristic	n (%)
Total respondents	125
Training level	
PGY-1	26 (20.8%)
PGY-2	32 (25.6%)
PGY-3	23 (18.4%)
PGY-4	19 (15.2%)
PGY-5	8 (6.4%)
PGY-6	6 (4.8%)
PGY-7	7 (5.6%)
PGY-8	2 (1.6%)
PGY-9	2 (1.6%)
Training type	
Plastic surgery	53 (42.4%)
Other surgical specialty	72 (57.6%)
Gender	
Women	70 (56%)
Men	55 (44%)
Age	
<30	59 (47.2%)
30–35	57 (45.6%)
>35	9 (7.2%)
Error during training with actual or potential harm to patient	
All residents	
No	15 (12%)
Yes	110 (88%)
Plastic surgery residents	53
No	6 (11.3%)
Yes	47 (88.7%)
Other surgical residents	72
No	9 (12.5%)
Yes	63 (87.5%)
Residents who had an error and provided details of event	
Among all residents	74
Among plastic surgery residents	34
Among other surgical residents	40

Table 2. Sequelae of Adverse Medical Events on Residents

Characteristic	n (%)
Made an error and provided details of the event	74
Type of error	
Technical	37 (50%)
Clinical decision-making	37 (50%)
Emotional sequelae	
No	10 (13.5%)
Yes	64 (86.5%)
Type	
Guilt	57 (89.1%)
Anxiety	37 (57.8%)
Insomnia	13 (20.3%)
Decreased job performance	10 (15.6%)
Depression	7 (10.9%)
Other	9 (14.1%)
Duration	
<1 week	21 (32.8%)
1 week–1 month	28 (43.8%)
1 month–6 months	3 (4.7%)
6 months–12 months	3 (4.7%)
1–2 years	1 (1.6%)
Ongoing	8 (12.5%)
Physical sequelae	
No	65 (87.8%)
Yes	9 (12.2%)
Type	
Weight gain	4 (44.4%)
Headache	4 (44.4%)
Nausea	2 (22.2%)
Abdominal pain	2 (22.2%)
Weight loss	1 (11.1%)
Other	2 (22.2%)
Duration	
<1 week	6 (66.7%)
1 week–1 month	2 (22.2%)
1 month–6 months	0
6 months–12 months	0
1–2 years	0
Ongoing	1 (11.1%)
Serious consequences	
None	40 (54.1%)
Harm to the patient	33 (44.6%)
Disciplinary action	3 (4.1%)
Legal action	2 (2.7%)
Other	8 (10.8%)
Was error disclosed to patient?	
No	23 (31.1%)
Yes	46 (62.2%)
No response	5 (6.8%)

Table 3. Mechanisms for Coping with Adverse Medical Events

Characteristic	n (%)
Respondents who made an error and provided details of the event	74
Needed time off to recover	
No	68 (91.9%)
Yes	6 (8.1%)
Took time off	
No	74 (100%)
Yes	0
Received emotional support	
No	56 (75.7%)
Yes	18 (24.3%)
From whom?	
Other residents	14 (77.8%)
Faculty	11 (61.1%)
Family	8 (44.4%)
Friends	6 (33.3%)
Hospital employees	1 (5.6%)
The patient involved	1 (5.6%
Was it helpful?	
Yes	18 (100%)
No	0
Received counseling?	
No	73 (98.6%)
Yes	1 (1.4%)
Where?	
Through institutional assistance program	1 (100%)
Was it helpful?	
Yes	1 (100%)
No	0
Did event have positive effects on you?	
No	11 (14.9%)
Yes	63 (85.1%)
Improved vigilance in the future	55 (87.3%)
Gain new insight/perspective	39 (61.9%)
Better advocate for patient safety	15 (23.8%)

sequelae after an adverse event than other surgical residents (94.1% versus 80%, $P = 0.05$). Similarly, female residents were more likely to report emotional sequelae after an event than male residents (92.9% versus 78.1%, $P = 0.05$). Fewer plastic surgery residents described the event as having had a positive impact on them, compared with other surgical residents (76.5% versus 92.5%, $P = 0.05$).

DISCUSSION

No physician is immune to medical errors.[3,9] When an error occurs, the first victim is the patient. This is the victim on whom morbidity and mortality conferences focus. Those conferences, however, usually ignore the consequences of the event on the physician involved.[7] This physician is the second victim.[10] This term implies vulnerability on the part of the physician. The culture of medicine, especially surgery, has historically discouraged any display of vulnerability.[8,11] This does not, however, change the fact that physicians are subject to human emotions. Over the past decades, medicine has started to understand the vulnerability of physicians, and physician burnout is now being studied more extensively. We now know that burnout is prevalent in plastic surgery,[12,13] especially among residents.[14,15] Residents are especially vulnerable to shaming, which occurs after an adverse event.[15,16] As a result, residents may be at a greater risk of the second victim phenomenon than attending physicians.[17]

The second victim phenomenon is common, occurring in up to two-thirds of healthcare practitioners.[4] Scott et al delineated the typical chronologic response to adverse events,[18] in a manner reminiscent of the five stages of grief (Fig. 1).[19] The first three stages of the Scott progression are immediate, and may occur simultaneously. Stage 1 is characterized by chaos, both internally and externally. The provider may be too busy attending to the patient to perform any self-reflection. Stage 2 consists of intrusive reflections, self-doubt, and feelings of inadequacy. In stage 3, the provider begins to wonder about others' view of them. During this stage, anxiety about gossip begins to creep in. In stage 4, which Scott calls "enduring the inquisition," the institution begins to investigate the event, and the provider begins to wonder about repercussions for their career. In stage 5, the provider seeks support from peers, supervisors, family, or friends. These initial stages partially determine what occurs in stage 6. In that final stage, as the provider seeks to move on, they may choose to escape their environment by changing career or changing job location (drop out), they may continue to perform their job at an adequate level while being plagued by memories

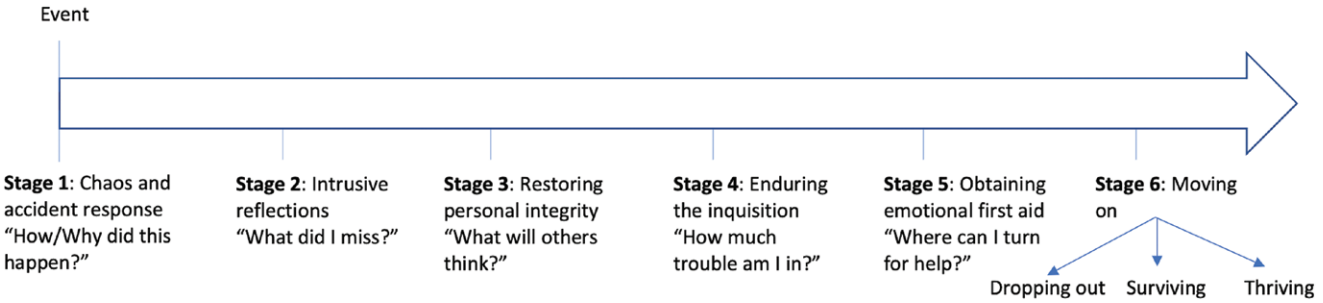

Fig. 1. The six stages of the second victim phenomenon. Adapted with permission from *Qual Saf Health Care* 2009;18:325–330.

of the event (survive), or they may use the event to create a positive change, by learning a valuable lesson, or becoming a patient safety advocate, for example (thrive).

In this study, among the residents who experienced an adverse event and provided details of that event, 86.5% experienced emotional sequelae. Importantly, not all residents were equally affected. Female surgical residents were more likely to report emotional sequelae after an adverse event, compared with male residents. Similarly, Waterman et al found that female physicians were twice as likely to experience significant stress after an adverse event compared with male physicians.[2]

Problematically, the majority of residents involved in an adverse event did not receive any emotional support. This is consistent with a prior large survey, in which 90% of physician said they did not feel that healthcare organizations help them cope after adverse events.[2] In addition, although 82% of them said they would be interested in counseling, few actually sought counseling after encountering an adverse event, due to factors ranging from time constraints to concern about stigma and rising malpractice insurance costs. Although the vast majority of residents felt the event ended up having a positive effect on them (thriving in stage 6 of Scott's chronology), there was a minority of residents who did not feel that way (surviving in stage 6 of Scott's chronology). The residents who thrived were more likely than the residents who survived to have received emotional support during the early phases of their ordeal.

Interestingly, among residents who did receive emotional support, the most important resource was other residents, even more important than family and friends. This is consistent with previous studies that showed that most distressed providers seek support from peers rather than from family and friends.[17] Residents who are experiencing the second victim phenomenon consistently rank talking to other residents as the most important coping mechanism, and talking to faculty as the second most important coping mechanism.[20] Engel et al also found that talking to nonmedical friends and family members was not as helpful, and in certain circumstances those nonmedical friends expressed such shock at the medical error that it actually made the medical provider feel worse about their error.[17] This highlights the importance of fostering a culture of camaraderie and trust among residents, as they are often each other's primary emotional support.

Healthcare organizations are starting to realize that the second victim phenomenon can impact the quality of patient care by decreasing physician job performance.[5] As a result, institutions are building their own second victim response teams. Scott et al describe their institutional response team to second victim crises as a three-tier system[19]: The first (most immediate) tier is local support, and consists of immediate reassurance and comfort from colleagues and supervisors. The second (intermediate) tier consists of trained volunteers providing counseling, debriefing, and "emotional first-aid."[3] The third tier is an expedited referral network of professional counselors who can provide longer-term support, when needed.

Second victim programs are often underutilized due to stigma.[21] To overcome this stigma, medicine needs to change its culture from a culture of blame to a "just culture," which is defined by the Agency for Quality Healthcare and Research as a culture that "focuses on identifying and addressing systems issues that lead individuals to engage in unsafe behaviors, while maintaining individual accountability by establishing zero tolerance for reckless behavior."[8,22] Perhaps this shift from the culture of blame to the "just culture" is most needed at morbidity and mortality conferences. Institutions should strive to minimize guilt and shame at these conferences, and instead promote an objective, nonaccusatory discussion focused on patient wellbeing and quality improvement.

In this study, the error was disclosed to the patient 62.2% of the time. There was no significant difference in emotional distress between residents who disclosed the error to the patient, and those who did not. Wu notes that, after an adverse event or a medical error, patients expect a disclosure, an acknowledgement of responsibility without defensiveness or elusiveness, a sincere expression of regret, and a commitment to take steps to prevent such events from occurring again to other patients.[9] Mistruths and elusiveness can erode the patient–physician trust, and may increase the likelihood of legal action. However, many physicians worry that disclosing the error to the patient constitutes an admission of guilt, and exposes them to liability.[23] In the majority of states, an apology from a physician to a patient for a medical error is not legally admissible as evidence.[3] A more imposing barrier to disclosure may actually be the fact that most clinicians are not trained in how to effectively disclose errors to patients and their families.[22] Importantly, Waterman et al found that physicians experiencing the second victim phenomenon were

four times more likely to be distressed when disclosure to the patient was insufficient, making this the most significant predictor of distress after a medical error.[2] Therefore, an honest disclosure to the patient after an adverse event protects patient–physician trust and reduces physician emotional distress.

This study has several limitations. Despite the anonymity of the survey, many of the respondents may not have disclosed their involvement in an adverse medical event due to concern for repercussions. Therefore, the actual proportion of residents who were involved in an adverse medical event may be higher than reported in this study. To ensure anonymity of the survey, we did not collect data on which program each resident belonged to. The survey that we used is unvalidated because there are currently no validated surveys on the topic of the second victim phenomenon. In addition, even though this study found that female residents and plastic surgery residents were most likely to report emotional sequelae after an adverse medical event, this may simply represent an increased willingness on the part of these two groups to report their sequelae, rather than a truly higher rate of sequelae. This requires further study. For the same reason, we did not perform a multivariate analysis of the predictors of the second victim phenomenon. Our numbers were small, with a relatively low response rate. Finally, our study did not use the two-step method for gender collection. Nevertheless, this study provides new and important data that can guide providers and institutions as solutions for the second victim phenomenon are sought.

The field of plastic surgery is becoming more aware of the issue of mental wellness. There are an increasing number of resources available to surgeons and residents suffering from burnout, whether due to the second victim phenomenon or another cause. The American Society of Plastic Surgeons has compiled many resources related to physician wellness.[24] In addition, most healthcare institutions now have their own programs dedicated to provider wellness.

CONCLUSIONS

The second victim phenomenon seems to be common among surgical residents. It may result in long-lasting emotional sequelae, especially in female residents. Emotional support can help those residents survive, or even thrive, after the event. Institutions can alleviate the emotional sequelae by fostering camaraderie among residents and establishing second victim response teams.

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