

Second Victim Experience in Last Year Medical Students: A Cross-sectional Study

Son Yıl Tıp Öğrencilerinde İkincil Mağdur Deneyimi: Kesitsel Bir Çalışma

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¹Ankara University Faculty of Medicine, Department of Emergency Medicine, Ankara, Türkiye

²Hacettepe University Faculty of Medicine, Department of Emergency Medicine, Ankara, Türkiye

³Kayseri State Hospital, Clinic of Emergency Medicine, Kayseri, Türkiye

⁴University of Health Sciences Türkiye, Fatih Sultan Mehmet Training and Research Hospital, Clinic of Emergency Medicine, İstanbul, Türkiye

Abstract

Objectives: Patient safety incidents and medical errors are inevitable components during the medical career. Recent studies have suggested that medical students may also experience patient safety incidents. The aim of this study is to investigate the prevalence of the second victim experience in last year medical students.

Materials and Methods: This cross-sectional study was conducted at Ankara University Faculty of Medicine, from January to May 2023. Last year medical students were included in the study. A total of four institutions were contacted. Last year medical students were asked to fill the Turkish-second victim syndrome experience and support tool (T-SVEST) questionnaire.

Results: A total of 334 last year medical students were included in the study. Among the participants, 59.6% (n=199) reported to have experienced a patient safety incident (PSI), while 40.4% (n=135) did not experienced a PSI. Among participants who were involved in a PSI, only 28.8% felt very or extremely affected by the event, respectively 21.1% and 7.6%; 32.1% (n=64) felt moderately affected from the event whereas 15.1% (n=30) did not feel affected by the event at all. The mean score was 2.93 [standard deviation (SD): 1.13]. The most current department where the students experienced a PSI was the emergency department followed by general surgery, internal medicine and pediatric departments. The mean score for the T-SVEST for the sample size was 2.84 (SD=0.63).

Conclusion: Second victim experience among last year medical students remains unexplored. Therefore, medical education should allocate time to raise awareness of this phenomenon among students to prevent it.

Key Words: Medical Students, Patient Safety Incident, Second Victim

Öz

Amaç: Hasta güvenliği olayları ve tıbbi hatalar, tıp kariyeri boyunca kaçınılmaz bileşenlerdir. Son çalışmalar, tıp öğrencilerinin de hasta güvenliği olayları yaşayabileceğini öne sürmektedir. Bu çalışmanın amacı, tıp fakültesi son sınıf öğrencilerinde ikincil mağdur deneyimi yaygınlığının araştırılmasıdır.

Gereç ve Yöntem: Bu kesitsel çalışma, Ankara Üniversitesi Tıp Fakültesi'nde Ocak-Mayıs 2023 tarihleri arasında gerçekleştirildi. Çalışmaya son sınıf tıp öğrencileri dahil edildi. Toplam dört kurumla temasa geçildi. Dönem 6 tıp öğrencilerinden Türkçe-ikincil mağdur sendromu deneyim ve destek aracı (T-SVEST) anketini doldurmaları istendi.

Bulgular: Çalışmaya toplam 334 tıp öğrencisi dahil edildi. Katılımcıların %59,6'sı (n=199) bir hasta güvenliği olayı (yaşadığını bildirirken, %40,4'ü (n=135) bir hasta güvenliği olayı yaşamadığını bildirdi. Hasta güvenliği olayına dahil olan katılımcılar arasında yalnızca %28,8'i olaydan çok veya aşırı derecede etkilendiğini ifade etti, sırasıyla %21,1 ve %7,6; %32,1 (n=64) olaydan orta derecede etkilendiğini hissederken, %15,1 (n=30) olaydan hiç etkilendiğini belirtti; ortalama skor 2,93 [standart sapma (SS): 1,13] idi. Tıp öğrencilerinin en çok hasta güvenlik olay yaşadığı bölüm acil servis olup, bunu genel cerrahi, dahiliye ve pediatri bölümleri izlemiştir. Örnek büyüklüğü için T-SVEST için ortalama puan 2,84'tür (SS=0,63).

Yazışma Adresi/Address for Correspondence: Ayça Koca, Ankara University Faculty of Medicine, Department of Emergency Medicine, Ankara, Türkiye

Tel.: +90 541 326 14 65 E-posta: aycakoca@hotmail.com ORCID ID: orcid.org/0000-0002-1546-3150

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Öz

Sonuç: Tıp öğrencileri arasındaki ikincil mağdur deneyimi araştırılmamış bir konudur. Bu nedenle tıp eğitimi, bunu önlemek için öğrencilerde bu fenomen hakkında farkındalık yaratmaya zaman ayırmalıdır.

Anahtar Kelimeler: Hasta Güvenlik Olayı, İkincil Mağdur, Tıp Öğrencileri

Introduction

Patient safety incidents and medical errors are inevitable components of the medical career. Medical mistakes are a major source of morbidity and mortality and are reported as the third leading cause of death in the United States (1). This simple and critical concept is rarely discussed during medical school or postgraduate education. In 2000, the "To Err Is Human" report established by the institute of medicine, drew international attention to the issues of medical error and patient safety (2). As modern healthcare becomes more complicated, the likelihood of being involved in a patient safety incident increase. Patient safety incidents or medical errors include incorrect medication treatment and dosage, incorrect diagnosis, and accidental harm during a therapeutic action (3). After a patient safety incident, the patient is identified as the first victim and takes priority. However, health personnel who may have been affected by this situation physically and mentally are defined as "second victims". The "second victim" concept was defined in 2000 by drawing attention to the psychological ramifications of doctors who made mistakes (4). The number of potential secondary victims was expanded in 2007 with other health personnel such as nurses and pharmacists (5). After patient safety incidents, second victims suffer from anxiety, fear, guilt, anger, and sleep disturbance. They may experience emotional distress including loss of confidence or decreased job satisfaction in their clinical practice (6,7). Most of the studies on unexpected or preventable medical errors indicate the requirement of supplementary support services for the healthcare professional affected by symptoms related to this undesirable condition (8). Apart from physicians and healthcare professionals, last-year medical students are actively involved in the healthcare chain. Recent studies have suggested that medical students may also experience patient safety incidents. Especially last-year students of medical schools, the experiences they may encounter during this critical year when they are yet stepping into medicine can leave permanent traces in their medical lives. In a systematic review, 27.2% of medical students reported depressive symptoms and 11.2% had suicidal ideation (9). Therefore, any patient safety event they would experience may worsen these symptoms. Those who experience second victim experience can negatively affect the care of future patients, leading to a form of defense mechanism and lowering the quality of care. This quite common phenomenon is estimated to affect half of all hospital workers,

becoming at least once a second victim in their medical career (10). Studies have found that 28-30% of nursing students have been involved in medical incidents during their practice (11).

Therefore, such as healthcare professionals, students may also be implicated, directly or indirectly, in undesirable patient safety incidents, during their clinical practice. Lack of adequate support can have a destructive effect on their expectations and professional identity. In addition, understanding medical students' psychological and physical responses to patient safety incidents could increase interest and awareness in the second victim syndrome (SVS) This can be used to improve coping skills by helping them adapt to the clinical field when they become healthcare professionals. Also, in medicine, preventing future errors from occurring starts from determining the root cause of errors. In terms of systems, patient safety measures are often implemented after a reported adverse event through developed protocols and other interventions.

The first tool developed to measure the impact of patient safety incidents on healthcare professionals and to test the effectiveness of support activities is the second victim experience and support tool (SVEST) validated by Burlison et al. (8).

This study aims to investigate the prevalence of the second victim experience in last-year medical students and to collect directive data on behalf of the future evaluation of perceptions.

Materials and Methods

Study Design and Participants

This cross-sectional study was conducted at Ankara University Faculty of Medicine, from January to May 2023. The study complied with the Declaration of Helsinki and was approved by the Institutional Review Board of Ankara University Faculty of Medicine, Ethical Committee (IRB no: 102-96-23, date: 02.03.2023). The inclusion criteria of the participants were willingness to participate in the study and being a last-year medical student. In Türkiye, medical school lasts for six years. The first five years consist of theoretical and clinical courses, during the last year of medical school, students must complete several clerkships in different departments in a period of twelve months (general surgery, internal medicine, emergency medicine, pediatrics, obstetrics and gynecology, public health, psychiatry, elective clerkship) as a part of an active participant of the healthcare team.

A total of four institutions (Ankara University, Hacettepe University, Ankara Yıldırım Beyazıt University, Gazi University) were contacted. Last-year medical students were asked to fill out the Turkish-second victim syndrome experience and support tool (T-SVEST) questionnaire. The survey was conducted online and the questionnaire link was sent via e-mails, social groups, and internal communications (online messaging platform). The purpose of the study was explained at the beginning of the survey, then informed consent had to be completed to access the whole survey.

The SVEST Questionnaire

The SVEST originally developed by Burlison et al. (8) aims to track HCPs' second victim experience and implement desired support resources. The Turkish version of the SVEST previously validated was used to establish the impact of SVS on medical students (12). The online questionnaire consisted of two parts, the first part collected the socio-demographic variables of respondents, and the second part collected the T-SVEST. The questions of the questionnaire include 7 dimensions (psychological distress, physical distress, colleague support, supervisor support, corporate support, non-work support, and professional self-efficacy) and 2 outcome variables (turn-over intentions and absenteeism). A five-point Likert scale was used to assess the second victim experience, the severity of the second victim experience was assessed with higher scores. The agreement was calculated according to the original tool as a number of responders (%) with a mean score of 4 or higher.

Statistical Analysis

Data were analyzed using R version 4.2.0. The sample size required for the study was calculated based on the primary outcome variable, that is, the prevalence of SVS. A sample size of 320 produces a two-sided 95% confidence interval with a width equal to $\pm 5\%$ when assuming a prevalence of the SVS as 30%. The prevalence of 30% was taken from the study conducted by Scott et al. (13).

Difference between two groups for ordinal or non-normally distributed continuous variables was assessed by Mann-Whitney U test. The differences in proportions between groups were compared by using chi-squared test or Fisher's Exact test, where appropriate. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 334 last-year medical students were included in the study: 138 students from Ankara University, 109 from Hacettepe University, 67 from Yıldırım Beyazıt University, and 20 from Gazi University. Among the participants, 55% were female (n=182) and 45% were male (n=152), the overall mean age of

the study population was 24. Ninety-eight students (29.3%) already completed the EM clerkship, 218 students (65.3%) were actively working in the EM at the time of the study, and only 18 students (5.4%) did not complete their EM clerkship. Most of the responders (n=289/86.5%) never heard about SVS before, whereas only 13.5% (n=45) had heard about SVS. Among the participants, 59.6% (n=199) reported having experienced a PSI, while 40.4% (n=135) did not experience a PSI. Demographic characteristics of the study population are given in Table 1. Among participants who were involved in a PSI, only 28.8% felt very or extremely affected by the event, respectively 21.1% and 7.6%; 32.1% (n=64) felt moderately affected by the event whereas 15.1% (n=30) did not feel affected by the event at all. The mean score was 2.93 [standard deviation (SD): 1.13]. The distribution of feeling of being affected by the PSI is presented in Figure 1.

Table 1: Characteristics of the study group

Gender n (%)	
Male	152 (45.5)
Female	182 (54.5)
Age mean (SD)	24 (1.32)
Training month mean (SD)	9.42 (1.91)
Medical school	
Ankara University	138 (41.3)
Hacettepe University	109 (32.6)
Ankara Yıldırım Beyazıt University	67 (20.1%)
Gazi University	20 (6)
Awareness of SVS n (%)	
Yes	45 (13.5)
No	289 (86.5)
Involvement in a PSI n (%)	
Yes	199 (59.6)
No	135 (40.4)

SVS: Second victim syndrome, PSI: Patient safety incident, SD: Standard deviation

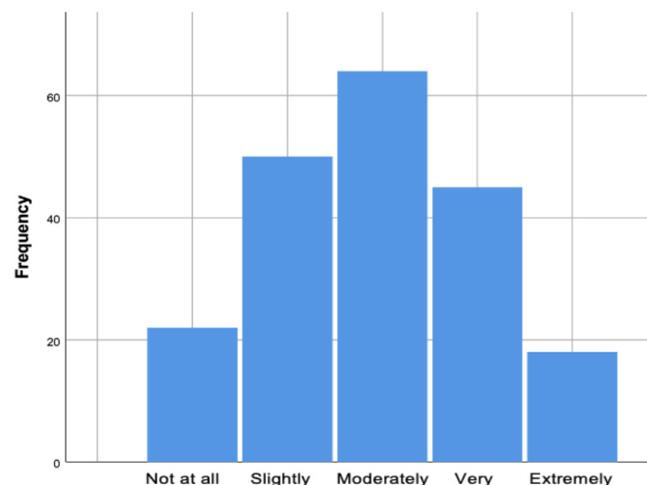


Figure 1: Distribution of feeling of being affected from the experienced patient safety incident

The most current department where the students experienced a PSI was the emergency department followed by general surgery, internal medicine, and pediatric departments. The mean score for the T-SVEST for the sample size was 2.84 (SD=0.63). The highest score was obtained in the colleague support dimension [3.53 (SD=0.99)] and the lowest in the absenteeism dimension 1.99 (SD=1.03) (Table 2). The distribution of responses for each item of the T-SVEST is presented in Figure 2. The prevalence rate of SVS among students was low at 2.1%.

The most desired support was item D3 (A respected peer to discuss the details of what happened). The least desired support was item D7 (A confidential way to get in touch with someone 24 hours a day to discuss how my experience may be affecting me). The distribution of responses for each item of the desired support for the T-SVEST is presented in Figure 3. Involvement in a PSI did not statistically change the percentage of agreement between 8 dimensions; only the "physical distress" dimension was significantly different in those who experienced a PSI with 11.1% versus 4.5% in those who were not involved in a PSI (p=0.030) (Table 3).

Discussion

This study provides insights into the prevalence of SVS and the desired supports of medical students. Students' involvement in a PSI remains underestimated. As a major finding, our study showed that more than half of the participants (59.6%) declared to have been involved in a PSI, however only 2.1% were identified as a second victim according to the survey tool.

Similarly, in their study, Rinaldi et al. (14) reported a low PSI prevalence rate (4.6%) among medical students and a higher one in residents (31.76%). This could be due to self-loaded responsibilities during clerkships. Medical students' training is most of the time observational and they may not feel fully responsible for patient care when compared with residents.

Among participants who were involved in a PSI, only 28.8% felt very or extremely affected by the event. Similarly, this is probably due to the responsibility felt towards the patient.

Even if they may have encountered PSIs, they may not be yet aware of future impact on patient care. Last-year medical students reported to have experienced a PSI mostly in the emergency department. Emergency medicine setting exposes healthcare professionals to stressful situations and potential

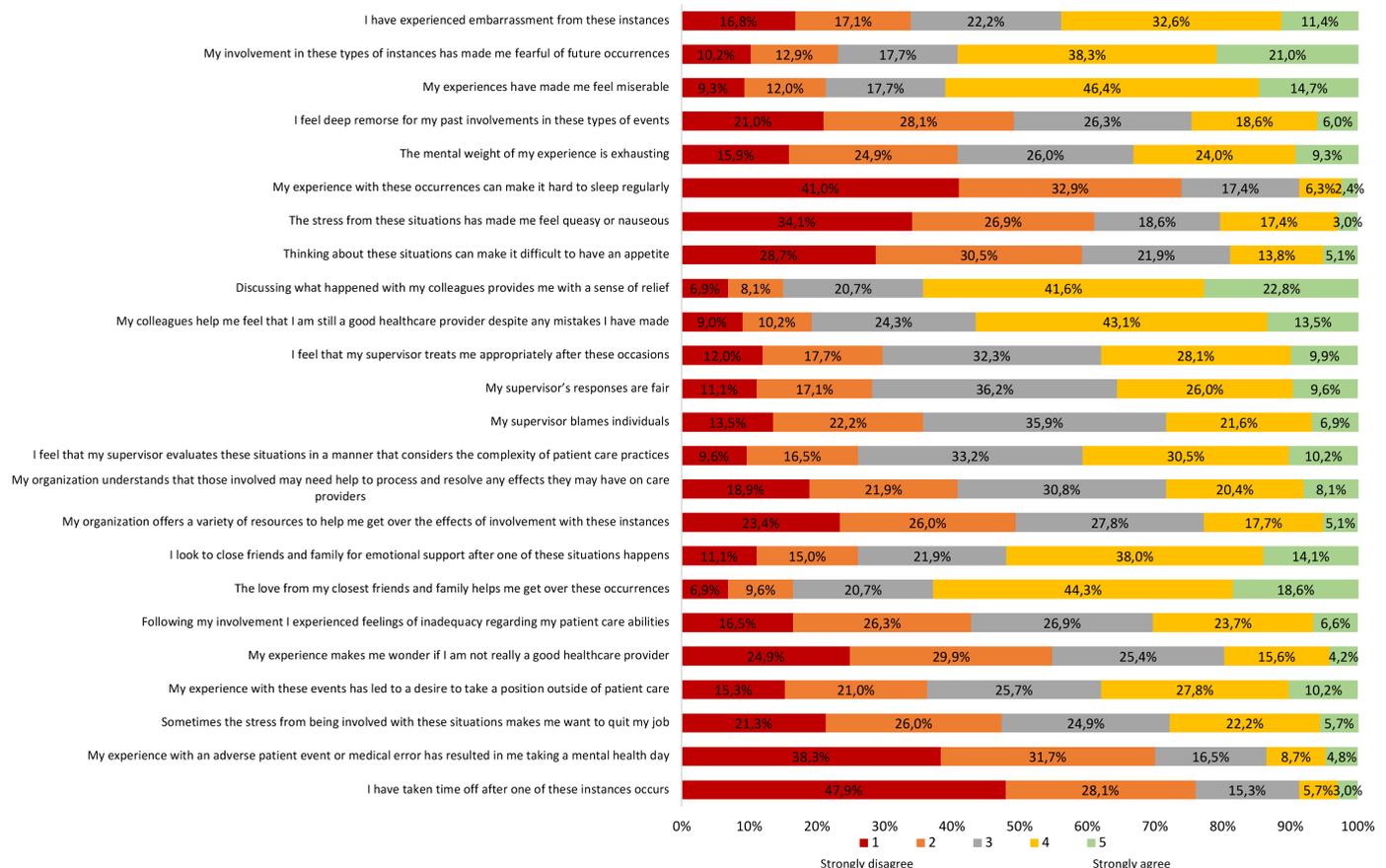


Figure 2: Second victim experience and support tool

traumatic stimulus because of its nature therefore being involved in PSI is more likely in the emergency department (3).

Clinical experience is a critical and challenging component of medical students. Involvement in a PSI in the early steps of medical career can have negative outcomes for the care of future patients. Moreover, the extent of such trauma may have a further impact on the mental health of students, resulting in burnout and/or persisting depression. Discussion with peers was the most desired form of support by medical students. This result is consistent with findings among healthcare professionals of other specialties (8,12,13,15,16). Implementing formal peer support programs for second victims is already advocated by the Joint Commission, which encourages institutional systems to proactively reach out to affected HCPs (17). However, the second victim phenomenon is rarely discussed during medical school.

Creating a strong support network within medical school can help to diminish the effects of SVS. Encouragement of supportive discussion about patient safety incidents and medical errors has also been shown to ameliorate the effects of SVS.

Study Limitations

The questionnaire was deployed online via e-mail and online messaging platforms. Considering the lack of verbal and one-way communication, the participants may have encountered difficulty in understanding the purpose of the study, especially knowing that 86.5% of the respondents had never heard of the second victim phenomenon.

Conclusion

Developing strategies to recognize and support SVS is necessary. Time and focus should be allocated to this rarely mentioned phenomenon not only in hospitals but also in medical schools. Therefore, medical education should allocate

time to raise awareness on this phenomenon among students to avoid second victims to widespread. The T-SVEST can demonstrate the burden of SVS among medical students and also help identify the desired specific resources.

Table 2: Agreement, means, SDs of the survey tool and desirability of support options

	Mean (SD)	% of agreement	
1. Psychological distress	3.14 (0.99)	24	
2. Physical distress	2.36 (0.97)	7.2	
3. Colleague support	3.53 (0.99)	50.9	
4. Supervisor support	3.03 (0.94)	19.8	
5. Institutional support	2.66 (1.13)	21	
6. Non-work-related support	3.43 (1.08)	51.2	
7. Professional self-efficacy	2.61 (1.08)	18	
8. Turnover intentions	12.80 (1.12)	24.9	
9. Absenteeism	1.98 (1.03)	7.2	
Total	2.84 (0.63)	2.1	
	Not desired %	Neutral %	Desired %
1. The ability to take time away	20.7	13.2	66.2
2. A specified peaceful location	17.4	6.9	75.7
3. A respected peer to discuss	10.5	11.1	78.4
4. An employee assistance program	16.2	16.2	67.7
5. A discussion with manager or supervisor	13.5	15	71.6
6. The opportunity to schedule a counselor	16.5	18.3	65.3
7. A confidential discussion available 24 h/day	27.8	22.2	50

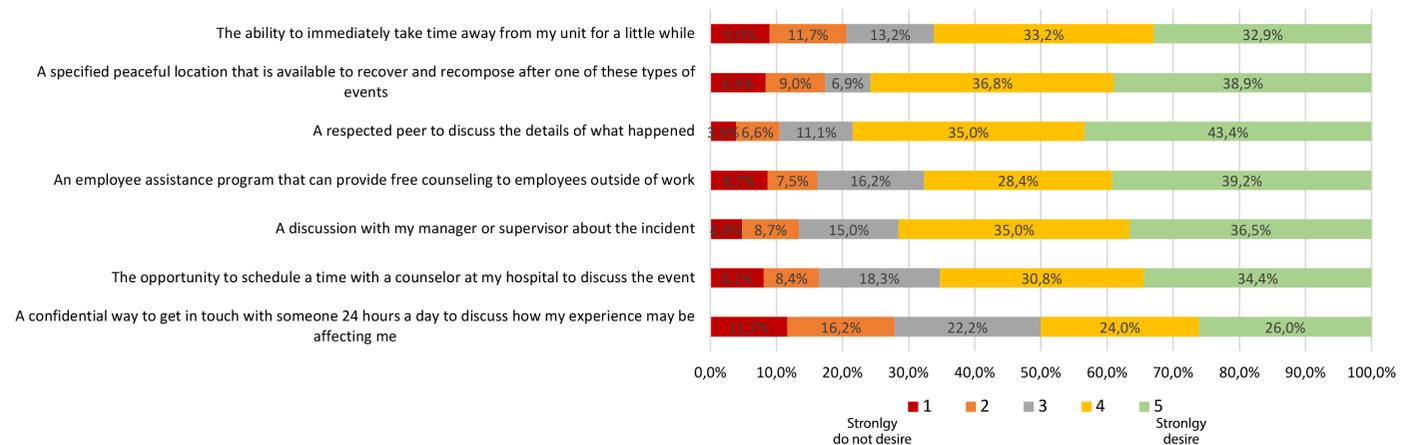


Figure 3: Second victim experience and support tool desired support

Table 3: Agreement between students according to involvement in a patient safety incident

	Involved in a PSI % of agreement (n=199)	Not involved in a PSI % of agreement (n=135)	p-value
1. Psychological distress	25.1	22.2	0.602
2. Physical distress	4.5	11.1	0.030
3. Colleague support	52.3	48.9	0.578
4. Supervisor support	19.1	20.7	0.780
5. Institutional support	18.6	24.4	0.219
6. Non-work-related support	54.6	46.7	0.182
7. Professional self-efficacy	16.1	20.7	0.310
8. Turnover intentions	26.6	22.2	0.370
9. Absenteeism	6.5	8.1	0.667
Total	1	3.7	0.124

PSI: Patient safety incident

Acknowledgments

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Ethics

Ethics Committee Approval: The study complied with the Declaration of Helsinki and was approved by the Institutional Review Board of Ankara University Faculty of Medicine, Ethical Committee (IRB no: I02-96-23, date: 02.03.2023).

Informed Consent: Informed consent was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: A.K., M.E., Design: A.K., Y.Ç., S.G., A.B.O., O.P., Data Collection or Processing: A.K., A.B., S.G., A.B.O., M.G.E., Analysis or Interpretation: A.K., A.B., M.E., M.G.E., O.P., Literature Search: A.K., Y.Ç., S.G., Writing: A.K., Y.Ç., M.E., S.G.

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References

- Makary MA, Daniel M. Medical error—the third leading cause of death in the US. *BMJ*. 2016;353:i2139.
- Institute of Medicine (US) Committee on Quality of Health Care in America. *To Err is Human: Building a Safer Health System*. Kohn LT, Corrigan JM, Donaldson MS, editors. Washington (DC): National Academies Press (US); 2000.
- Amanian S, Faldaas BO, Logan PA, et al. Learning from Patient Safety Incidents in the Emergency Department: A Systematic Review. *J Emerg Med*. 2020;58:234-244.
- Wu AW. Medical error: the second victim. The doctor who makes the mistake needs help too. *BMJ*. 2000;320:726-727.
- Denham, CR. TRUST: The 5 Rights of the Second Victim. *Journal of Patient Safety*. 2007;3:107-119.
- Quillivan RR, Burlison JD, Browne EK, et al. Patient Safety Culture and the Second Victim Phenomenon: Connecting Culture to Staff Distress in Nurses. *Jt Comm J Qual Patient Saf*. 2016;42:377-386.
- Busch IM, Moretti F, Purgato M, et al. Psychological and Psychosomatic Symptoms of Second Victims of Adverse Events: a Systematic Review and Meta-Analysis. *J Patient Saf*. 2020;16:e61-e74.
- Burlison JD, Scott SD, Browne EK, et al. The Second Victim Experience and Support Tool: Validation of an Organizational Resource for Assessing Second Victim Effects and the Quality of Support Resources. *J Patient Saf*. 2017;13:93-102.
- Rotenstein LS, Ramos MA, Torre M, et al. Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students: A Systematic Review and Meta-Analysis. *JAMA*. 2016;316:2214-2236.
- Ozeke O, Ozeke V, Coskun O, et al. Second victims in health care: current perspectives. *Adv Med Educ Pract*. 2019;10:593-603.
- Asensi-Vicente J, Jiménez-Ruiz I, Vizcaya-Moreno MF. Medication Errors Involving Nursing Students: A Systematic Review. *Nurse Educ*. 2018;43:E1-E5.
- Koca A, Elhan AH, Genç S, et al. Validation of the Turkish version of the second victim experience and Support Tool (T-SVEST). *Heliyon*. 2022;8:e10553.
- Scott SD, Hirschinger LE, Cox KR, et al. Caring for our own: deploying a systemwide second victim rapid response team. *Jt Comm J Qual Patient Saf*. 2010;36:233-240.
- Rinaldi C, Ratti M, Russotto S, et al. Healthcare Students and Medical Residents as Second Victims: A Cross-Sectional Study. *Int J Environ Res Public Health*. 2022;19:12218.
- Finney RE, Torbenson VE, Riggan KA, et al. Second victim experiences of nurses in obstetrics and gynaecology: A Second Victim Experience and Support Tool Survey. *J Nurs Manag*. 2021;29:642-652.
- Seys D, Wu AW, Van Gerven E, et al. Health care professionals as second victims after adverse events: a systematic review. *Eval Health Prof*. 2013;36:135-162.
- Commission, J. Quick safety issue 39: Supporting second victims. 2018. <https://www.jointcommission.org/-/media/tjc/documents/newsletters/quick-safety-issue-39-2017-second-victim-final3rev.pdf>