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COLLEGE OF POLITICAL, ADMINISTRATIVE AND COMMUNICATION SCIENCES
DOCTORAL SCHOOL OF ADMINISTRATION AND PUBLIC POLICIES

DOCTORAL THESIS

SUMMARY

The Second Victim Phenomenon in Healthcare: Implications for Public Health Policy and Management

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Cluj-Napoca
2026

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Keywords

second victim, second victim phenomenon, adverse event, medical error, near miss, patient safety, safety culture, just culture, nurses, peer support, bibliometric analysis, health policy, Romania

List of abbreviations

Abbreviation	Meaning
AE	Adverse event
ANMCS	National Authority for Quality Management in Health (Romania)
CI	Confidence interval
CNSP	National Patient Safety Council (Romania)
ERNST	European Researchers' Network Working on Second Victims (COST Action CA19113)
GCS / LCS	Global Citation Score / Local Citation Score
HELP	Healing Emotional Lives of Peers – peer support programme (Mayo Clinic)
OAMGMAMR	Order of Nurses, Midwives, and Medical Assistants in Romania
OR	Odds ratio
PTSD	Post-traumatic stress disorder
RISE	Resilience In Stressful Events – peer support programme (Johns Hopkins Hospital)
SEIPS	Systems Engineering Initiative for Patient Safety
SV	Second victim
SVEST	Second Victim Experience and Support Tool
SVP	Second victim phenomenon
VOS	Visualization of Similarities
WHO	World Health Organization
WoS	Web of Science Core Collection (Clarivate Analytics)

1. Introduction

1.1. Research problem

Patient safety is one of the core functions of any healthcare system. Nevertheless, the complexity of clinical work, the fragmentation of care, and time pressure mean that adverse events (AEs) remain a persistent reality: internationally, approximately one in ten hospitalised patients is estimated to be harmed during care, and about half of these events are considered preventable (Zegers et al., 2016; Slawomirski et al., 2017). For a long time, the literature approached the adverse event almost exclusively from the perspective of the patient, regarded

as the “first victim”. Only in the early 2000s did attention extend to the healthcare professional involved in the event, who may in turn be deeply affected.

The term “second victim” was introduced by Albert Wu (2000) to describe the emotional and physical consequences experienced by healthcare professionals after involvement in an unanticipated adverse event or a medical error. The definition was later refined by Scott et al. (2009) and, more recently, by the European ERNST network, which includes any healthcare worker directly or indirectly involved in an unanticipated adverse patient event, unintentional healthcare error, or patient injury who is also negatively impacted (Vanhaecht et al., 2022). In this logic, the patient and their family are the first victim, the healthcare professional is the second victim, and the healthcare institution may become the third victim (Seys et al., 2013).

International research shows that a large proportion of healthcare professionals go through the second victim experience during their careers, with symptoms ranging from low-intensity reactions to severe manifestations, including depression and post-traumatic stress disorder (Sachs & Wheaton, 2025; Martins et al., 2025). The COVID-19 pandemic further showed that the delivery of safe care depends not only on the size of the health workforce, but also on its emotional, psychological, and physical health (López-Pineda et al., 2022).

In Romania, research on adverse events and second victims is very limited. The health system faces substantial workforce migration, underfunding and heavy workloads, the absence of a standardised error reporting system, and an organisational culture often perceived as punitive (Tereanu et al., 2017; Paduraru et al., 2024a). To the author’s knowledge, prior to this thesis there were no data on the prevalence, impact, and factors associated with the second victim phenomenon (SVP) in the Romanian healthcare system. This gap hinders the development of evidence-based guidelines, policies, and support programmes.

1.2. The thesis’s position on the terminological controversy

The term “second victim” has attracted criticism: it has been argued that it shifts attention away from the patient, may diminish professional accountability, and may lead hospital leadership to address the real causes of adverse events superficially (Vanhaecht et al., 2022). The thesis takes an explicit stance in this debate: recognising the professional as a potential second victim does not contradict the principle of accountability. The term is used as an analytical and policy-relevant concept that draws attention to the professional and psychological consequences of adverse events for clinical performance, well-being, and staff retention, without diminishing the gravity of patient harm or the ethical obligations of

professionals. From this perspective, the phenomenon underscores the need for structured organisational support and learning-oriented safety cultures.

1.3. Aim and objectives

The general aim of the thesis is to contribute to the research and understanding of the Second Victim Phenomenon in the healthcare system by exploring the evolution of the concept in peer-reviewed literature and investigating the perceptions of Romanian nurses regarding adverse events and patient safety. The aim was operationalised into three specific objectives, each corresponding to an original study:

- **Study 1** – "Bibliometric analysis of peer-reviewed literature on second victims in healthcare": to assess the development of research on the second victim in healthcare as reflected in peer-reviewed academic papers, and to offer a picture of the main areas of research using bibliometric analysis and visualisation methods.
- **Study 2** – "Assessing Safety Culture and Second Victim Experience Following Adverse Events Among Romanian Nurses": to explore nurses' perceptions of patient safety, adverse events, and second victims, and to suggest solutions to the shortcomings revealed by the data.
- **Study 3** – "Differences between surgical and medical nurses' experiences with adverse events in Romania": to identify whether nurses working in medical departments responded differently from nurses in surgical departments to questions about AEs, safety culture, use of disclosure procedures, and the effects of AEs on their personal and professional lives.

1.4. Structure of the thesis

The thesis is organised into seven chapters. Chapter 1 presents the literature review: conceptual foundations, the context in which medical errors occur, risk factors, prevalence, multilevel consequences, organisational response and just culture frameworks, the Romanian context, and coping mechanisms. Chapters 2, 3, and 4 present the three original studies. Chapter 5 discusses the implications for research and public policy and proposes a set of recommendations for Romanian hospitals. Chapter 6 addresses the limitations and future research directions, and Chapter 7 summarises the conclusions and the integrated contribution of the thesis. Two of the studies have been published: Study 1 as a book chapter (C. O. Baba, C. E. Hințea & B. Neamțu (Eds.), Evoluții și tendințe în studiul administrației publice din România. Viziunea tinerilor cercetători (pp. 155–171). Cluj-Napoca: Accent, 2021) and Study

2 in *BMC Nursing* (Istrate et al., 2025, Assessing safety culture and second victim experience following adverse events among Romanian nurses: a cross-sectional study. BMC nursing, 2025 Jan 28;24(1):102. doi: 10.1186/s12912-025-02745-2. PMID: 39875993; PMCID: PMC11773947).

2. Theoretical framework

2.1. Medical errors, near misses, and adverse events

Medical errors are defined as preventable accidents occurring in a clinical setting that may or may not lead to patient harm (Hosseinzadegan et al., 2025). They may consist of performing an incorrect action (errors of commission) or failing to perform a necessary action (errors of omission) (Domer et al., 2021). According to the World Health Organization, an adverse event is an incident that results in harm to a patient and constitutes an unexpected and unintentional clinical outcome of healthcare, which may or may not be related to a clinical error (WHO, 2009). Near misses are serious errors that could have caused harm but were intercepted in time; their prevalence is difficult to estimate because they are underreported or no reporting system exists (Willis et al., 2019).

The scale of the problem is considerable. In Massachusetts hospitals, at least one adverse event was identified in 23.6% of a random sample of 2,809 admissions, the most common being medication-related, surgical, and patient care events (Bates et al., 2023); in British hospitals, 10.8% of patients experienced an adverse event (Vincent et al., 2001). In low- and middle-income countries, approximately 134 million adverse events occur annually, resulting in 2.6 million deaths (Kumah, 2025).

2.2. A systems perspective on error

The thesis adopts a systems perspective, according to which a large share of adverse events originate in organisational and systemic deficiencies beyond the control of the individual. The “Swiss cheese” model (Reason, 2000) describes a serious adverse event as the result of the alignment of several minor failures at different levels: management, work environment, team, patient, and task. The SEIPS model (Systems Engineering Initiative for Patient Safety) analyses the collective contribution of technological, organisational, personnel, and environmental factors and emphasises the need to evaluate patient and employee outcomes simultaneously (Carayon et al., 2006). Risk factors identified in the literature include poor communication, complex cases, insufficient training, time pressure, frequent interruptions and multitasking, failures of computerised systems, and inadequate staffing (Domer et al., 2021;

Jones & Treiber, 2012). Nurses are particularly exposed: they administer large numbers of medications daily in a dynamic environment with numerous interruptions.

2.3. Prevalence of the Second Victim Phenomenon

International studies indicate a high prevalence of the phenomenon across all professional groups, with variation driven by measurement tools and context. Nurses report the highest prevalence, being the largest professional group and the closest to the patient (Kappes et al., 2023; Potura et al., 2024). Table 1 summarises the main prevalence data presented in the thesis.

Table 1. Prevalence of the Second Victim Phenomenon by professional category and region

Professional category	Country	Prevalence / dimensions of SVP	Source
Nurses (intensive care)	Chile	67% psychological burden; 53% physical distress; 40% reduced professional self-efficacy (SVEST)	Kappes et al., 2023
Nurses	Germany	60% experienced SVP at least once in their career; 24% recovery time over one year (SeViD)	Strametz et al., 2021a
Physicians (internal medicine)	Germany	59% at least one SVP episode in their career; 35% in the last 12 months (SeViD)	Strametz et al., 2021b
Midwives	Austria	94.3% at least one SVP experience; guilt 47%, flashbacks 41.8%, self-doubt 52.5%	Klemm et al., 2025
Paediatricians	Austria	74% more than once in their career; almost 60% in the last 12 months (SeViD)	Potura et al., 2023
Physicians and nurses	Italy (Puglia)	23.5% psychological distress; 9.9% physical distress (IT-SVEST)	Sedile et al., 2024

Source: doctoral thesis, Chapter 1, Table 1.

Among medical residents involved in an adverse event, 86.5% reported psychological distress, with women twice as likely as men to report intense distress (Waterman et al., 2007), and between 34% and 72% of residents experienced the phenomenon at least once, more often in high-intensity specialties such as surgery and emergency medicine (Mira et al., 2025). The reference measurement instrument is the SVEST (Second Victim Experience and Support Tool), which assesses physical and psychological distress, institutional, colleague, supervisor, and non-work-related support, professional self-efficacy, turnover intentions, and absenteeism (Burlison et al., 2017).

2.4. Multilevel consequences of the phenomenon

The thesis analyses the consequences at four levels. **At the individual level**, second victims experience guilt, shame, anxiety, self-doubt, a sense of professional incompetence, sleep disturbances, fatigue, and somatic symptoms; without support, they may develop depression, PTSD, problematic alcohol or substance use, and even suicidal ideation (Burlison

et al., 2017; McDaniel & Morris, 2020; Alishaq et al., 2025). The literature also describes "disenfranchised grief", i.e. grief that is not publicly validated, given that medical training teaches professionals to suppress their emotions (Sachs & Wheaton, 2025).

At the professional level, professionals question their knowledge, become hypervigilant, may disengage from patients, and experience lower job satisfaction and productivity, which in turn increases the risk of further errors (Kable et al., 2018; Wade et al., 2022). Scott et al. (2009) describe three possible career trajectories: dropping out (leaving the institution, the specialty, or the profession), surviving (continuing to work with persistent symptoms), and thriving (turning the experience into a driver of organisational change). The cost of losing a single professional may reach USD 500,000 (Han et al., 2019). Fear of legal consequences and reputational damage amplifies the emotional burden (Mira et al., 2025).

At the organisational level, the phenomenon affects quality of care, organisational culture, team dynamics, and staff turnover, with loss of accumulated clinical experience and higher recruitment costs (Roesner et al., 2024; Hall et al., 2016). **At the system level**, against a global shortfall estimated at up to 18 million health workers, supporting second victims becomes a matter of workforce sustainability (Darzi & Evans, 2016). A German study estimated annual costs of EUR 3.43 billion due to absenteeism among nurses and physicians, of which approximately EUR 1.55 billion could be saved through support interventions (Roesner & Strametz, 2025).

2.5. Reporting, safety culture, and just culture

Voluntary reporting remains the main means of identifying errors, but it is limited by lack of time, absence of suitable mechanisms, fear of litigation, reluctance to disclose one's own errors, and lack of feedback after reporting (Garrouste-Orgeas et al., 2012). Safety culture is defined as the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine an organisation's commitment to health and safety management (Mahsoon & Dolansky, 2021). The report *To Err is Human* defined safety as freedom from accidental injury and error as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim (Institute of Medicine, 2000).

The concept of safety culture, borrowed from aviation and other high-risk industries, starts from the recognition that events are seldom the fault of a single person and balances individual accountability with organisational fairness. A safety culture involves a fair process for determining accountability, learning from errors, supporting staff well-being, and open,

non-judgemental dialogue (Eng & Schweikart, 2020; Murray et al., 2023b). The thesis presents the Yorkshire assessment framework with four domains (institutional commitment, learning-oriented investigations, implementation of recommendations, and fair and compassionate behaviour), as well as the validated Just Culture Assessment Tool (JCAT) (Petschonek et al., 2013). Leadership plays a decisive role: leaders must be visible, accessible, provide resources, and take responsibility for their own errors, thereby encouraging reporting (Rogers et al., 2017; Tamburri, 2017). At policy level, open disclosure has been embedded in national standards in Canada, the United Kingdom, and Australia (Edrees et al., 2016).

2.6. The Romanian healthcare context

The analysis of the Romanian context highlights several factors that amplify the impact of adverse events on professionals. Migration of health workers to the United Kingdom, France, and Germany is driven by underfunding, low wages, heavy workloads, and low job satisfaction (Stancu et al., 2025); 84.7% of medical students intended to work abroad (Suciu et al., 2017). Approximately 70% of Romanian healthcare professionals report burnout symptoms (Ciuciuc et al., 2025). In 2022, Romania had the highest rate of deaths from treatable causes in the European Union (210 per 100,000 inhabitants, compared with an EU average of 91), with medical errors making a significant contribution (Rebeleanu et al., 2023).

The number of healthcare-associated adverse events reported to ANMCS rose from 2,324 in 2017 to 5,879 in 2019, the most frequent causes being non-compliance with guidelines for the prevention of healthcare-associated infections (50.08%), medication errors (19.34%), and falls (14.17%) (ANMCS, 2020). Malpractice cases reaching the courts rose from 7 in 2007 to 115 in 2018, with surgery the most frequently involved specialty (Voroneanu-Popa et al., 2025). A Romanian study found that 63.63% of professionals perceive error reporting as an opportunity for colleagues to criticise them (Dimcea et al., 2021), while the dimensions “event reporting” and “non-punitive response to error” obtained the lowest scores in a safety culture assessment (Tereanu et al., 2017). Romania lacks a standardised error reporting system (Paduraru et al., 2024a). Important institutional steps were the establishment of ANMCS in 2015 and of the National Patient Safety Council in 2021.

2.7. Coping mechanisms and support systems

At the individual level, coping strategies include mindfulness-based stress reduction (MBSR), reflective practice, cognitive behavioural therapy, self-compassion, and moral resilience; avoidance strategies provide only temporary relief, and formal and informal social

support is essential, provided that trust and early intervention are in place (Busch et al., 2020a; Coughlan et al., 2017). At the organisational level, structured peer support programmes have shown value: RISE (Johns Hopkins Hospital), the "forYOU" model based on Scott's three-tiered framework (informal support, trained peer support, referral to mental health professionals), and the HELP programme (Mayo Clinic) (Scott et al., 2009; Edrees et al., 2016). Institutions perceived as non-punitive and supportive report less severe second victim experiences than blame-oriented environments (Quillivan et al., 2016).

2.8. Research gap

The literature review leads to three observations that justify the thesis: international research is geographically concentrated in high-income countries; evidence on support mechanisms and their integration into policy is far less developed than descriptive evidence; and data on the phenomenon are lacking in Romania, although systemic conditions suggest heightened vulnerability. Nurses, the most exposed group, are at the same time underrepresented in national research.

3. Research methodology

The thesis combines three complementary methodological approaches, organised sequentially: a bibliometric analysis of the international literature (describing the global architecture of research), a national cross-sectional study (documenting the experiences and perceptions of Romanian nurses), and a comparative secondary analysis (identifying differences between medical and surgical clinical contexts). The design follows a progressive logic: from mapping the scientific field and identifying gaps, to generating empirical evidence in the Romanian context, and then refining this evidence for subgroups relevant to intervention design.

Table 2. Overview of the design of the three original studies

Study	Design and data source	Sample	Methods of analysis
Study 1 (Chapter 2)	Bibliometric analysis; Web of Science Core Collection, search run on 7 October 2020	97 articles, 355 authors, 70 journals, 1,833 cited references	Results Analysis Tool (Clarivate), HistCite, VOSviewer (keyword co-occurrence, co-authorship)
Study 2 (Chapter 3)	National cross-sectional study, online and onsite survey, April–June 2022, via the OAMGMAMR network	995 nurses from all 42 counties (out of 1,085 responses)	Descriptive statistics, chi-square, Student's t-test, ANOVA, logistic regression (SPSS 29.0)
Study 3 (Chapter 4)	Secondary analysis of the Study 2 dataset	510 nurses: 296 from medical and 214 from surgical departments	Cross-tabulations, chi-square, independent-samples t-test

Study 2 used the questionnaire developed by Mira et al. (2015) to measure adverse events among professionals in the Spanish healthcare system, constructed by consensus on the basis of the literature and of instruments used in North America and Norway. The instrument was translated and adapted following WHO guidelines through forward translation by two native-speaker translators, expert panel discussions, back-translation by a researcher unaware of the survey content, pre-testing with cognitive debriefing, and consensus on the final version. The questionnaire has three sections: the impact of safety culture on AEs, the experience of informing patients about AEs, and the frequency and intensity of personal and work-related problems among second victims. The brief safety culture subscale comprises five items, with a maximum composite score of 25 points.

For the logistic regression, ordinal responses on emotional reactions (1 = never, 4 = always) were dichotomised as absent (never) versus present (any frequency), and age, sex, professional experience, and the safety culture score were entered simultaneously as predictors. Item-level non-response ranged from 3.1% to 19.1% for the safety culture items; comparisons between respondents and non-respondents by age, sex, and department type revealed no significant differences (all $p > 0.10$).

The research protocol was approved by the Scientific Council of Babeș-Bolyai University (approval no. 1075 of 4 February 2022), and the research was conducted in accordance with the Declaration of Helsinki. Participation was voluntary, anonymous, and confidential; completing the survey constituted consent to participate. The Scientific Council confirmed that the original approval also covers the subgroup secondary analysis in Study 3.

4. Study 1. Bibliometric analysis of peer-reviewed literature on second victims in healthcare

4.1. Objective and methods

The study aimed to assess the development of research on the second victim in healthcare as reflected in peer-reviewed academic papers, and to offer a picture of the main research areas using bibliometric analysis and visualisation methods. Data were retrieved from the Web of Science Core Collection on 7 October 2020 using the query ((“second victim*”) AND (“health*” OR “doctor*” OR “nurse*”)), with no time restriction, limited to English-language articles. After duplicate removal, 102 unique articles were screened by title and abstract in CADIMA;

screening consistency was checked by a second independent reviewer on a random 10% sample, yielding a kappa coefficient of 1 (perfect agreement). The final analysis included 97 articles.

The analysis covered publication year, country, journal, research area, authors, institutional affiliations, and cited references, using the Clarivate Results Analysis Tool, HistCite, and VOSviewer. The visualisation of similarities (VOS) method was used for network analysis of keyword co-occurrence and co-authorship, based on association strength.

4.2. Results

The 97 articles were written by 355 authors, published in 70 journals, and contain 1,833 cited references. The number of publications increased over the preceding 11 years, with a clear acceleration from 2015; more than 60% of the articles appeared between 2017 and 2020 (20 articles in 2018, 20 in 2019, and 16 in 2020). Of the 33 countries identified, the United States contributed almost half of the publications (47.4%), followed by Belgium (9.3%) and the United Kingdom (8.2%). The journals with the most articles were the *Journal of Nursing Management* and the *Journal of Patient Safety* (5.2% each), followed by *BMJ Open* and *Revista de Calidad Asistencial* (4.1% each). Of the 27 research areas, the best represented were Health Care Sciences & Services and Nursing (27.8%), General Internal Medicine (20.6%), and Public, Environmental & Occupational Health (6.1%).

Keyword analysis identified 55 terms occurring more than twice, grouped into four clusters. The dominant terms were “patient safety” (14 occurrences) and “second victim” (11 occurrences), followed by “adverse events”, “medical errors”, “health personnel”, and “social support”. The most prolific author was Kris Vanhaecht (KU Leuven, 8 articles), followed by Massimiliano Panella (7) and Martin Euwema (5), and KU Leuven was the institution with the most publications (8.2%). Co-authorship analysis (56 authors with at least two articles) revealed 13 clusters, the largest connected set comprising 14 authors in three national clusters: Belgium, the United States, and Italy. The most cited works were Scott et al. (2009), cited in 73.2% of the articles, and Wu (2000), cited in 66%.

Table 3. Main bibliometric indicators (Web of Science, 7 October 2020)

Indicator	Result
Corpus analysed	97 articles; 355 authors; 70 journals; 1,833 cited references
Temporal trend	Sharp growth after 2015; over 60% of articles published in 2017–2020
Countries	33 countries; USA 47.4%, Belgium 9.3%, UK 8.2%; no Eastern European country among leading contributors
Leading journals	Journal of Nursing Management and Journal of Patient Safety (5.2% each)

Indicator	Result
Research areas	Health Care Sciences & Services and Nursing 27.8%; General Internal Medicine 20.6%
Dominant keywords	“patient safety” (14), “second victim” (11); intervention- and support-related terms poorly represented
Authors and institutions	Vanhaecht (8 articles), Panella (7), Euwema (5); KU Leuven (8.2%)
Landmark works	Scott et al. (2009) – 73.2%; Wu (2000) – 66% of articles

4.3. Discussion and conclusions

The close association between “patient safety” and “second victim” shows that the literature treats the phenomenon as a patient safety concern, not merely an individual psychological issue. Three operationally significant conclusions emerge. First, international collaboration is almost absent, with co-authorship clusters confined to Belgium, the United States, and Italy, which signals a fragmented field with limited cross-cultural transferability; transnational consortia such as ERNST represent the model to follow. Second, the imbalance between descriptive and intervention-related terms shows that, by 2020, the field had reached descriptive maturity before building an evidence base for solutions; research effort should be redirected towards the design and rigorous evaluation of support programmes. Third, the complete absence of Eastern European countries from both the geographic distribution and the co-authorship network constitutes the direct empirical justification for the present thesis.

The study’s limitations include the restriction to English-language articles (other languages accounted for about 9% of the total) and the partly subjective nature of the number and labelling of clusters. Since the data reflect the state of the literature in October 2020, the thesis includes a narrative update for 2020–2026. This update shows sustained growth in publications, a shift from conceptual clarification towards the evaluation of structured support programmes (especially those based on the three-tiered model), the extension of study populations to students and trainees, and the emergence of research on post-traumatic growth (Ong et al., 2025; Costeira et al., 2026; Busch et al., 2021). Significant gaps remain, however, regarding the long-term effectiveness of programmes and their integration into national patient safety regulations.

5. Study 2. Assessing safety culture and second victim experience following adverse events among Romanian nurses

5.1. Background and objective

The study, published in *BMC Nursing* (Istrate et al., 2025), addresses the lack of data on patient safety, adverse events, and second victims in Romania. Its objective was to explore nurses' perceptions of patient safety, adverse events, and second victims, and to suggest solutions to the shortcomings identified. The study was originally designed for all categories of healthcare professionals; as participation was dominated by nurses, the analysis focused exclusively on them.

5.2. Methods

This cross-sectional study targeted nurses from all 42 counties of Romania. A convenience sample was used, leveraging the OAMGMAMR network, which disseminated the online and onsite survey between April and June 2022. Of the 1,085 responses, the 995 from nurses were analysed, excluding responses from doctors (26), nursing assistants (21), porters (4), other categories (28), and 11 missing responses. Serious AEs were classified using the typology proposed by Field et al. (2007). Participants were grouped into three categories by department type: medical departments, surgical departments, and other departments (e.g. radiology, laboratory, or mixed units).

5.3. Results

Sample profile. Most respondents were aged 31–50 (67.8%), followed by those aged 51–70 (24.7%) and those aged 30 or under (7.0%). The sample was predominantly female (89.2%), and 92.6% had more than three years of professional experience. "Other departments" was the largest category (47.4%), followed by medical (29.7%) and surgical departments (21.5%).

Exposure to safety incidents. Over the previous five years, 57.9% (N = 576) of nurses knew of near-miss cases in their hospital, and 30.8% (N = 306) knew of adverse events with serious consequences for one or more patients. Nevertheless, 66.5% rated the probability of a serious AE in their hospital over the next 12 months as low or very low, and 72.7% held the same view about their own department, with no differences by department type, age, sex, or experience.

Safety culture. The mean score on the safety culture subscale was 20.59 out of 25 (SD = 2.64; 95% CI: 20.39–20.80), indicating an overall positive perception. Nurses over 50 scored higher than younger nurses (20.98 vs 20.45; p = 0.024), with no differences by department type,

sex, or experience. At item level, surgical departments scored higher than “other departments” on the existence of an anonymous reporting system (M = 4.33 vs 4.13; p = 0.021), and medical departments more often reported systematic cause analysis after a serious AE (M = 4.42 vs 4.29; p = 0.035). About 79% of respondents stated that professionals involved in an AE have access to psychological help from the hospital, and 55.6% attributed most errors to organisational faults rather than human mistakes, while 35.0% remained neutral.

Safety culture and reporting. A higher safety culture score was associated with a lower likelihood of knowing of near misses (OR = 0.90; 95% CI: 0.85–0.96; p < 0.001) and of serious AEs (OR = 0.91; 95% CI: 0.86–0.97), while more than three years of experience increased the likelihood of knowing of serious AEs (OR = 2.16; 95% CI: 1.29–3.63). About 12.5% of nurses had personally been involved in informing a patient about an AE. Between one quarter and one third of nurses, regardless of department, indicated that patients may react negatively to being informed and that their relationship with professionals may deteriorate; formal complaints were reported more often in “other departments” (17.7%; p = 0.041).

Second victim experience. Over the previous five years, 20.6% of nurses in medical, 21.0% in surgical, and 23.8% in other departments reported at least one second victim experience (personally or through colleagues), the difference between departments being significant (p = 0.038). Almost one fifth reported that second victims required time off work after the event (16.7%, 21.4%, and 24.5%, respectively; p = 0.041), some requested a transfer to another unit (p = 0.043), and about 2.3% reported that the second victim left the profession. Emotional reactions and their association with safety culture are shown in Table 4.

Table 4. Nurses’ emotional responses after adverse events and association with safety culture

Emotional response	Prevalence (any frequency)	Association with safety culture score, OR (95% CI); p
Tiredness	68.5% (n = 682)	0.874 (0.811–0.941); p < 0.001
Feelings of guilt	59.2% (n = 589)	0.895 (0.839–0.956); p = 0.001
Anxiety	53.3% (n = 530)	0.898 (0.843–0.957); p = 0.001
Insomnia, difficulty sleeping	53.0% (n = 527)	0.875 (0.819–0.934); p < 0.001
Bewilderment, confusion, difficulty concentrating	52.1% (n = 506)	0.931 (0.876–0.989); p = 0.020
Pessimism, sadness	45.7% (n = 455)	–

Note: Multivariate logistic regression adjusted for age, sex, and professional experience; OR < 1 indicates a lower likelihood of the response at higher safety culture scores.

The proportion of emotional responses did not differ significantly by sex, experience, or age. Between departments, differences were found for guilt, more intense in medical

departments (M = 2.02; p = 0.032), and for insomnia, more frequent in surgical departments (M = 1.83; p = 0.015). On a 0–10 scale, the most likely professional reactions after an error were apologising to and informing the patient or relatives, followed by fear of losing professional reputation. Fear of legal consequences differed significantly across departments (p < 0.001) and was highest in medical departments (M = 6.51), while fear of losing reputation was highest in surgical departments (M = 6.67; p = 0.018).

A stronger safety culture was associated with fewer conflicts with other professionals (OR = 0.905; p = 0.002), less uncertainty about how to report the error to clinical management (OR = 0.872; p < 0.001), lower fear of losing professional prestige (OR = 0.910; p = 0.014) and of legal consequences (OR = 0.852; p < 0.001), and a higher likelihood of apologising to patients or families (OR = 1.231; p < 0.001). Finally, 88.9% of nurses expressed interest in specific training on coping with the consequences of AEs, and 89.3% in training on how to tell patients about AEs, with no differences across departments.

5.4. Discussion

The symptoms identified are consistent with those reported in other European studies (Scott et al., 2009; Seys et al., 2013; Ullström et al., 2014; Busch et al., 2020b), pointing to the universality of the impact of adverse events on professionals. However, the specific conditions of the Romanian health system amplify this impact in distinctive ways. The thesis identifies three factors that constitute the specifically Romanian contribution of the research: (1) a safety culture with a weak non-punitive response to errors, which attributes events to individual failure and fuels underreporting and defensive practice; (2) the depletion of the nursing workforce following EU accession, which places nurses in understaffed environments with heavy workloads; and (3) the absence of a standardised national incident reporting framework with explicit legal protection for self-reporting professionals. Together, these factors explain why the second victim experience in Romania cannot be fully understood through Western European frameworks alone, and why nationally tailored support mechanisms and regulatory reform are preconditions for sustainable improvement in patient safety.

The inverse relationship between safety culture and knowledge of near misses suggests a potential protective role, consistent with studies showing that a positive safety culture predicts reporting intentions, with communication openness and teamwork as significant predictors (Toren et al., 2021; Yang & Liu, 2021; Kim & Lee, 2020). The near-universal interest in training confirms the need for programmes that strengthen communication skills and self-efficacy (Umpiérrez et al., 2015; Goniewicz et al., 2021).

5.5. Conclusions

The data point to three courses of action: (1) strengthening initial and continuing education, including for open disclosure to patients; (2) developing and implementing policies that uphold the quality of care and patient safety (clinical practice guidelines, medication safety, infection control, incident reporting); and (3) developing a legal framework for adverse events and second victims that clarifies responsibilities, protects both professionals and patients, standardises reporting and investigation procedures, and ensures appropriate support for second victims.

6. Study 3. Differences between surgical and medical nurses' experiences with adverse events

6.1. Rationale and objective

Surgical and medical settings differ in workflow, severity of illness, time constraints, technical requirements, and involvement in invasive procedures. Surgery has the highest incidence of adverse events (16.1%, compared with 3.6% in medical specialties) (Ruiz-López et al., 2024), and perfectionism, emotional control, and impaired awareness of one's own distress are common among surgical professionals (Bryan et al., 2026). In Study 2, the "other departments" category (47.4%) was heterogeneous and could affect the internal validity of comparisons. Study 3 therefore aimed to identify whether nurses in medical and surgical departments responded differently to questions about AEs, safety culture, use of disclosure procedures, and the effects of AEs on their personal and professional lives.

6.2. Methods

The study is a secondary analysis of the Study 2 dataset; no new data were collected. The sample was restricted to nurses from medical (n = 296) and surgical departments (n = 214), totalling 510 participants. Comparisons were made using cross-tabulations and chi-square tests for categorical variables and independent-samples t-tests for continuous variables. The advantages of this approach include making the most of existing data without additional burden on participants, the use of the same instrument for all respondents, and the possibility of a focused analysis of departmental differences.

6.3. Results

Most associations between department type and questionnaire items were not statistically significant. Perceptions of safety culture were similar and predominantly positive in both settings: the existence of an annual training plan ($p = 0.454$), an anonymous reporting system

(p = 0.511), cause analysis after serious AEs (p = 0.535), access to psychological support (p = 0.288), training on informing patients (p = 0.438), and team support (p = 0.543). There were also no differences in the likelihood of informing the patient (p = 0.949), apologising (p = 0.858), fear of legal consequences (p = 0.423), fear of losing prestige (p = 0.692), or conflicts with colleagues (p = 0.436). Significant differences concerned the emotional dimension and attitudes towards error disclosure (Table 5).

Table 5. Statistically significant differences between medical and surgical nurses

Variable	Medical departments	Surgical departments	Test
Informing patients about minor errors causes unnecessary alarm (agree + totally agree)	73.6%; disagree 9.9%	83.0%; disagree 4.0%	$\chi^2(4) = 11.52$; p = 0.021
Awareness of colleagues with severe emotional distress after an AE	36.0%	45.1%	$\chi^2(1) = 4.27$; p = 0.039
Awareness of colleagues' work-related problems after an AE	21.8%	31.3%	$\chi^2(1) = 5.89$; p = 0.015
Tiredness after an AE ("almost always" / "always")	17.5% / 4.3%	11.2% / 7.9%	$\chi^2(3) = 8.84$; p = 0.031

Note: AE – adverse event. For pessimism and sadness, the difference approached significance (p = 0.056).

6.4. Discussion and conclusions

Surgical nurses were more inclined to consider that informing patients about minor errors causes unnecessary alarm, indicating greater reluctance towards open disclosure. This finding may be partly explained by the perfectionism and pressure specific to the surgical environment, where most adverse events are considered preventable (Martins et al., 2025; Bryan et al., 2026). Surgical nurses were also more aware of severe emotional distress and work-related problems among affected colleagues, consistent with high workloads, coordination with numerous specialists, and responsibility for managing patients' emotions in the pre- and post-operative phases (Şahin & Özhanlı, 2025). The distribution of tiredness was more polarised in surgical departments, with a larger share both of nurses who never feel tired and of those who always do, a result compatible with the higher emotional exhaustion documented among operating room nurses (L. Li et al., 2025).

The main conclusion is that the differences between medical and surgical nurses lie not in the institutional elements of safety culture, but in the emotional and professional interpretation of adverse events. This supports the case for specialty-tailored support interventions. Since most descriptive differences did not reach statistical significance, the results should be interpreted with caution. The thesis also emphasises the need for root cause

analysis not only of adverse events but also of near misses, which occur 7 to 300 times more frequently (Stucky et al., 2024).

7. Implications for public health policy and management

Chapter 5 of the thesis integrates the results of the three studies into a discussion of implications for research and policy. Bibliometric analysis is presented as a useful tool for policymakers, enabling them to identify the strengths and gaps of a field and to guide resource allocation (Hussain, 2024; Cheng et al., 2024). The frequent co-occurrence of "patient safety" and "second victim" supports addressing the phenomenon as a patient safety issue and justifies policies that promote a non-punitive culture and the recovery and professional reintegration of second victims (Quillivan et al., 2016).

7.1. The gap between exposure and risk perception

The empirical data reveal an important mismatch: although more than half of nurses know of near misses and almost one third know of serious AEs, most rate the risk of a serious event in the near future as low. This may reflect an underestimation of risk or a normalisation of unsafe situations. The literature shows that risk perception significantly influences the incidence of errors and the use of preventive strategies, and that the involvement of leaders (e.g. the head nurse) in creating a non-punitive culture improves the anticipation and prevention of AEs (L. Li et al., 2024; Zhao et al., 2023). The thesis also draws attention to the "normalisation of deviance" from protocols, which, in the absence of immediate consequences, turns deviations into routine practice (Carvalho et al., 2023), and to the culture of perfectionism, which fuels distress and burnout (Rallis et al., 2022; Martin et al., 2022).

7.2. Staying in the profession does not mean recovery

Although about one fifth of nurses reported second victim experiences, only a small share reported leaving the profession. Given workforce shortages, the decision to continue working should not be read as resolution: the professional may remain in the same institution while facing blame, isolation, and a sense of failure (Robertson & Long, 2018). The institution's priority should be to investigate the circumstances of the event and to provide long-term support, including validation of clinical decisions and reaffirmation of skills and personal worth.

7.3. Implications for medical and nursing education

The phenomenon affects professionals at every career stage, including students, who may experience distress comparable to that of certified professionals even as observers (Krogh et al., 2023). The thesis argues for integrating modules on patient safety, the second victim phenomenon, resilience, and systems thinking into medical and nursing curricula, complemented by tailored support mechanisms (Srulovici et al., 2025; Lee & Dahinten, 2023). The Romanian context, marked by a shortage of bachelor-level nursing graduates and teams with varying educational backgrounds, makes continuing education all the more important (Păduraru et al., 2024b).

7.4. Policy recommendations for Romanian hospitals

Based on the findings, the thesis proposes a set of recommendations structured around five areas, with responsible actors, implementation steps, monitoring indicators, and timelines (Table 6). The recommendations are based on the premise that policies should not be limited to individual resilience but should create safer systems and supportive organisational cultures that are practical and trusted by healthcare professionals.

Table 6. SVP-focused policy recommendations for Romanian hospital settings

Area	Recommendation	Level of implementation	Monitoring indicators (examples)	Timeline
Support systems	Formal peer support and counselling programmes in hospitals, with confidentiality protocols	Ministry of Health; hospitals	% of hospitals with an active programme; trained peer supporters per 100 staff; annual utilisation rate	12–24 months
Monitoring and evaluation	National SVP and safety culture indicators, embedded in accreditation	Ministry of Health; ANMCS; hospitals	Hospitals reporting SVP indicators to ANMCS; % of hospitals with a safety culture assessment in the past 12 months	24 months
Reporting systems	Quick, anonymous, non-punitive reporting systems; education on reporting near misses	Ministry of Health; ANMCS; hospitals	Near misses reported per 1,000 admissions; % of incidents with non-punitive feedback within 30 days	12–24 months
Patient safety	National second victim support framework embedded in patient safety strategies, piloted before scale-up	Ministry of Health	Adopted policy document (yes/no); number of pilot hospitals; % of accredited hospitals compliant	24–36 months
Training and curriculum	Modules on SVP, resilience, systems thinking, and patient safety; just culture training for managers	Ministry of Health; universities; hospitals	% of curricula with at least one module; managers trained per year; SVEST scores before and after training	24–36 months

Source: adapted from the doctoral thesis, Chapter 5, Table 90.

8. Conclusions and original contribution of the thesis

8.1. Summary of findings

The three studies were not designed as isolated inquiries. The bibliometric analysis mapped the global architecture of research and showed that, by 2020, the literature had extensively documented the phenomenon but produced little evidence on solutions, and that Eastern Europe was entirely absent from the field. The national study documented Romanian nurses' frequent exposure to safety incidents, the substantial emotional burden of adverse events, and the consistent association between a stronger safety culture and fewer emotional and relational consequences. The comparative analysis showed that experiences differ between medical and surgical settings mainly at the emotional and attitudinal level, rather than in the institutional elements of safety culture.

8.2. Integrated contribution of the thesis

Read together, the three studies generate four integrative insights that none could produce alone.

The paradox of reported support and persistent distress. Although a large proportion of nurses report access to psychological support after AEs (49.8% agree, 29.2% totally agree), emotional reactions remain frequent (guilt 59.2%, anxiety 53.3%, insomnia 53.0%, tiredness 68.5%). Combined with the global research gap on interventions, this suggests that existing support in Romanian hospitals does not translate into effective recovery: it may be insufficiently structured, insufficiently targeted, or perceived as unsafe to use in a punitive environment. Provision of resources is not equivalent to their therapeutic uptake.

Safety culture is a necessary lever, but its effects are not uniform. Safety culture was associated with fewer negative emotional reactions, yet surgical nurses form a distinct subgroup, with greater reluctance to disclose errors and heightened awareness of colleagues' distress. Generic interventions risk failing precisely the professionals with the most acute needs, which supports specialty-stratified support frameworks (Ong et al., 2025; Mira et al., 2025).

The value of methodological triangulation. The thesis combines descriptive evidence (what is happening and to what extent), inferential evidence (under which conditions impact is amplified or attenuated), and comparative evidence (where differences emerge across clinical contexts). Their convergence shows that the phenomenon in Romania is prevalent, contextually differentiated, and potentially amenable to targeted intervention, provided that interventions start from the structural, cultural, and specialty-based conditions of the Romanian system.

The training paradox. Most nurses confirmed the existence of an annual training plan and of training on informing patients, yet 89.1% and 89.4% expressed a need for training on coping with the consequences of AEs and on informing patients, respectively. The formal existence of a programme is not evidence of its effectiveness; training should be evaluated in terms of perceived competency gain and practical transferability, not only coverage and completion.

The central conclusion of the thesis is that the Second Victim Phenomenon is prevalent in Romania yet remains institutionally invisible. This invisibility reflects the combined effect of an under-researched field, a blame-oriented safety culture, the absence of standardised support frameworks, and a professional context in which healthcare professionals are expected to absorb the consequences of adverse events in silence. The 88.9% interest in training shows that the human capital for change is present; what remains to be built is the institutional infrastructure to sustain it.

8.3. Original contributions

- **Theoretical contribution:** a literature synthesis integrating the systems perspective (Reason's model, SEIPS), just culture frameworks, and the multilevel consequences of the phenomenon, together with a reasoned position in the terminological controversy.
- **Bibliometric contribution:** one of the first bibliometric analyses of the second victim literature, documenting geographic concentration, fragmented collaboration, and the imbalance between descriptive and intervention-oriented research.
- **Empirical contribution:** the first systematic data from Romania on the second victim experience and safety culture among nurses, based on 995 participants from all 42 counties, from an Eastern European health system absent from the international literature.
- **Methodological contribution:** the cross-cultural adaptation into Romanian, following WHO guidelines, of the questionnaire developed by Mira et al. (2015), and the further use of the dataset through subgroup secondary analysis.
- **Applied contribution:** a set of policy recommendations for Romanian hospitals, with responsible actors, implementation steps, monitoring indicators, and timelines.

9. Limitations

The interpretation of the results should be tempered by several explicitly acknowledged limitations. The bibliometric analysis reflects the literature up to October 2020 and includes only English-language articles; the 2020–2026 narrative update does not replace a full replication of the search. The empirical studies are cross-sectional and do not allow causal inference. Convenience sampling through the OAMGMAMR network may limit representativeness: nurses working in rural and vulnerable areas, high-intensity units, and private facilities may be underrepresented, and place of residence was not collected. The sample was dominated by women and by professionals with more than three years of experience (92.6%), so the perspective of early-career professionals is poorly represented. Self-reporting may be affected by recall and social desirability bias, and item-level non-response reached 19.1%.

An important methodological limitation concerns the low familiarity with the term "second victim" in Romania. The 20–23% rate of self-reported second victim experience may be an underestimate, if affected professionals did not identify with an unfamiliar term, or an overestimate, if the label was applied to any professionally distressing event. The inability to resolve this tension with the current data is itself a relevant finding: the figure should be read as an indicative range rather than a precise prevalence estimate. Time constraints of healthcare professionals also limited the inclusion of additional validated scales. In Study 3, most descriptive differences were not statistically significant, and the results should be interpreted with caution.

10. Future research directions

The thesis proposes several directions for future research:

- extending research to other professional groups and specialties in the public and private sectors, including early-career professionals;
- using validated instruments such as the SVEST and assessing respondents' prior familiarity with the second victim concept; developing and validating a screening tool for identifying second victims in healthcare institutions (Martins et al., 2025);
- qualitative studies (interviews, focus groups) on nurses' beliefs, attitudes, and experiences, to design interventions tailored to real needs;

- investigating why professionals choose to use or avoid reporting systems, and monitoring near misses and adverse events annually;
- assessing the potential of online support, which offers anonymity and confidentiality when face-to-face support is limited (Q. Li et al., 2025);
- longitudinal studies on the duration of consequences and the long-term effectiveness of peer support programmes beyond immediate relief (Ong et al., 2025);
- analyses of the economic burden of the phenomenon and the cost-effectiveness of support programmes in Romania, following the German evaluations (Roesner & Strametz, 2025).

Through these directions, the thesis seeks to contribute to the shift from documenting the phenomenon to building resilient healthcare organisations, capable of learning from adverse events, protecting their professionals, and thereby providing safer care for patients.

Selected bibliography

The list includes the sources cited in this summary and the reference works of the field. The full bibliography of the thesis is available in the main document, starting on page 163.

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