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What is This?

Health Care Professionals as Second Victims after Adverse Events: A Systematic Review

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Abstract

Adverse events within health care settings can lead to two victims. The first victim is the patient and family and the second victim is the involved health care professional. The latter is the focus of this review. The objectives are to determine definitions of this concept, research the prevalence and the impact of the adverse event on the second victim, and the used coping strategies. Therefore a literature research was performed by using a three-step search procedure. A total of 32 research articles and 9 nonresearch articles were identified. The second victim phenomenon was first described by Wu in 2000. In 2009, Scott et al. introduced a detailed definition of second victims. The prevalence of second victims after an adverse event varied from 10.4% up to 43.3%. Common reactions can be emotional, cognitive, and behavioral. The coping strategies used by second victims have an impact on their patients, colleagues, and themselves. After the adverse event, defensive as well as constructive changes have been reported in practice. The second victim phenomenon has a significant impact on clinicians, colleagues, and subsequent patients. Because of this broad impact it is important to offer support for second victims. When an adverse event occurs, it is critical that support networks are in place to protect both the patient and involved health care providers.

Keywords

Introduction

In 2000, the Institute of Medicine's report "To Err is Human" estimated that errors cause 44,000 to 98,000 deaths annually in the United States, with a total cost of between $17 and $29 billion each year (Kohn, Corrigan, & Donaldson, 1999). In that same year, Reason explained how medical errors can be caused by active failures and latent conditions (Reason, 2000). Active failures occur at the "sharp end," in direct contact with the patient, whereas latent failures occur at the "blunt end," more distal to the patient (Denham, 2007). Since 2000, there has been a notable increase in the number of publications relating to patient safety and quality improvement but recent findings show that health care is still unsafe (Altman, Clancy, & Blendon, 2004; Classen et al., 2011; Landrigan et al., 2010). In October 2010, the Institute for Healthcare Improvement (IHI) published a white paper on "Respectful Management of Serious Clinical Adverse Events"

(Conway, Federico, Stewart, & Campbell, 2010). This report revealed that many health care organizations do not have a planned response for adverse events. When there is an adverse event, the organization has three specific priorities. The first priority is to care for the patient and his or her family members who are the direct victims of the adverse event. The second priority is to care for frontline clinicians involved in or exposed to the event. These individuals can be referred to as second victims, a term first introduced by Wu in 2000. Often, the health care professional is at the sharp end of an error created elsewhere, and he or she can also suffer from it (Denham, 2007; Parker & Lawton, 2003; Reason, 2000). The third priority of the response plan is to address the needs of the organization, which can also suffer a potential loss from the incident, becoming a third victim (Conway et al., 2010; Denham, 2007). The focus of this review is the second victim. The following research questions are posed: (1) What definitions of second victims have been described in health care literature? (2) What is the prevalence of second victims? (3) What is the impact of the medical error/adverse event on the second victim? and (4) What are individual coping strategies used by second victims?

Method

Data Sources

Searches in Medline, Embase, and Cinahl from the start of each database were conducted through September 2010. Language was restricted to English.

Selection of Articles

This systematic review employed a three-step search strategy. First Medline, Embase, and Cinahl searches were conducted by exploring the following search terms: "second victim," "medical error" OR "adverse event" AND "psychology" OR "emotions" OR "feelings" OR "burnout" OR "depression" OR "empathy" OR "attitude of health personnel," "medical error"[MeSH] AND "Burnout, Professional"[MeSH] OR "Depressive Disorder"[MeSH] OR "Empathy"[MeSH].

The second step was a manual review of reference lists from relevant articles identified in step one. Two of the authors (D.S. and E.V.G.) performed this independently in September and October 2010. If no consensus was reached, a third researcher (K.V.H.) was contacted.

The following inclusion criteria were used:

–   Studies that provided a definition of second victim in health care settings.
–   Studies that assessed prevalence of medical errors/adverse events on health care providers.
–   Studies that reproduced the impact of a medical error/adverse event on the health care provider.

Studies that described coping strategies for health care providers within the context of a medical error/adverse event and identified changes in clinical practice.

We excluded studies not published in English, conference reports, newspaper stories, and personal stories of health care professionals in a scientific journal.

The final step of the search strategy was a detailed review of the identified articles by three experts in the area of second victim phenomenon: S.D.S. who published the definition of second victim and described a six-stage recovery trajectory (Scott et al., 2009), J.C., the first author of the IHI white paper (Conway et al., 2010), and A.W.W. who initially introduced the term second victim in medical literature (Wu, 2000). The expert panel also referred to the Medically Induced Trauma Support Services (MITSS) tool kit of second victim resource materials as an additional resource (MITSS, 2011). All the final included papers are based on a consensus meeting by the authors.

Results

A total of 207 potentially relevant studies were identified and an abstract review was conducted. Of these, 65 studies met at least one of the inclusion criteria. The panel of experts identified an additional 13 articles. The expert panel also suggested a review of the MITSS tool kit of second victim resource materials (MITSS, 2011), and added a case study. Forty-one studies were found to provide a specific answer to one of the research questions. In total 32, research articles, one editorial (Wu, 2000), one commentary (Levinson & Dunn, 1989), two reports (Conway et al., 2010; Wolf, 2005), three systematic reviews (Goldberg, Kuhn, Andrew, & Thomas, 2002, Schwappach & Boluarte, 2009; Sirriyeh, Lawton, Gardner, & Armitage, 2010), one book chapter (Wu, Sexton, & Pham, 2008), and one ethical article (Berlinger & Wu, 2005) were included in this systematic review. An overview is provided in Figure 1. Key characteristics of the reviewed research articles are displayed in Table 1.
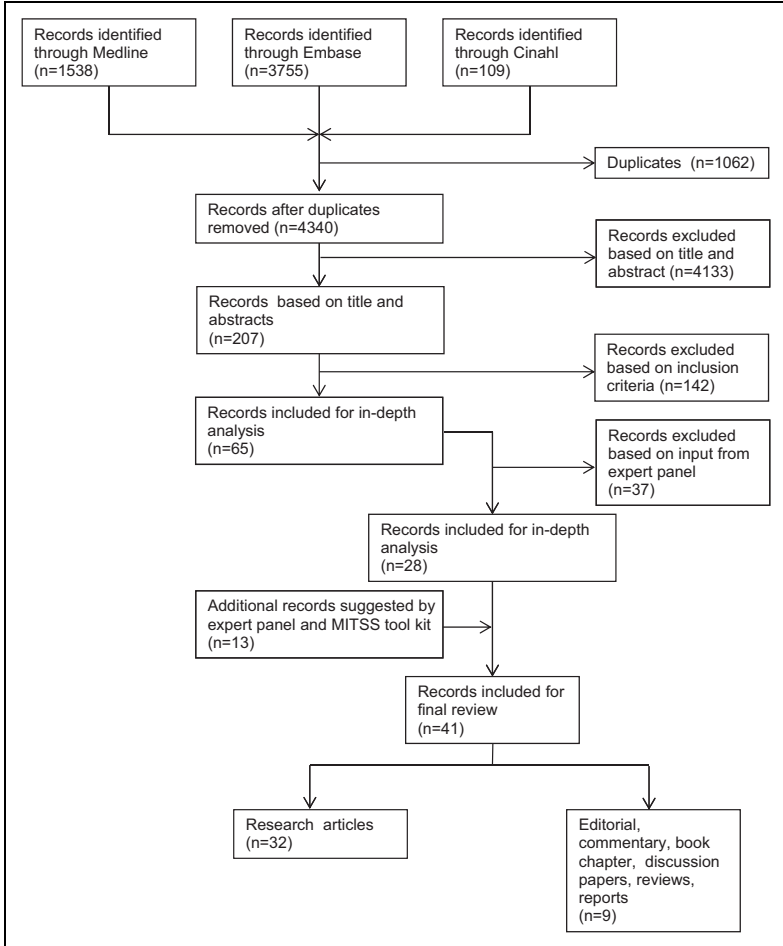
Figure 1. Overview Search Strategy.

Research Question 1: What definitions of second victims have been described in health care literature?

Three descriptions and one definition of second victims found within this search of the literature are shown in Table 2. The descriptions of the second victim experience by Denham (2007) and Vincent (2003) were based on Wu's 2000 publication.

Table 1. Overview of Research Articles

Author	Country	Year of study	Setting	Type of study/design	Participants	Type of event (definition in appendix)
Aaraas, Jones, and Gupta (2004)	Norway and Australia	2002 and 2003	Norway and Australia	Quantitative study Cross-sectional Questionnaires and session of reflective discussion	88 General practitioners, 15 doctors (specialism not specified)	Serious adverse event—not defined
Aasland and Førde (2005)	Norway	2000	Norway	Quantitative study Cross-sectional Postal questionnaires	1,318 Doctor with various specialities	Adverse event leading to serious patient injury not defined
Arndt (1994a)	Germany, England, and Scotland	Not reported	Hospital	Qualitative study Cross-sectional Unstructured interviews, focus groups, written reports, and case proceedings	34 Head nurses and senior nurses	All medication errors—not defined
Arndt (1994b)	Germany, England, and Scotland	Not reported	Hospital	Qualitative study Cross-sectional Unstructured interviews, focus groups, written reports, and case proceedings	32 Head nurses and senior nurses	All medication errors—not defined
Bell, Moorman, and Delbanco (2010)	Not reported	2007-2008	Not reported	Qualitative study Cross-sectional Questionnaires, open discussions	154 Trainees (medical students/residents) specialism not specified and 75 medical educators	Error—not defined

(continued)

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Table 1. (continued)

Author	Country	Year of study	Setting	Type of study/design	Participants	Type of event (definition in appendix)
Chard (2010)	United States (Pennsylvania)	Not reported	Not reported	Quantitative study Cross-sectional Questionnaires	272 Perioperative RN nurses, members of AORN	Intraoperative nursing errors—nurses rated defined by participant—not defined
Christensen, Levinson, and Dunn (1992)	United States (Oregon)	Not reported	Hospital	Qualitative study Cross-sectional Semistructured interviews	11 Physicians of which 4 were internists and 7 medical subspecialists	All perceived medical mistakes—not defined
Denham (2007)	Not reported	2007	Not reported	Qualitative study Cross-sectional Interviews	National experts in quality, safety, teamwork and medication management	Not reported—not defined
Engel, Rosenthal, and Sutcliffe (2006)	United States	Not reported	Hospital	Qualitative study Cross-sectional Semistructured interviews	26 Residents physicians with various specialties	All near-misses and medical error—definition of IOM and definition near-misses
Fahrenkopf et al. (2008)	United States (Massachusetts/ California/ Washington)	2003	Children's hospital	Prospective cohort study Questionnaires	123 Residents in pediatrics and medicine-pediatrics	Medical errors—not defined
Fischer et al. (2006)	United States (Worchester)	2003-2004	Hospital	Qualitative study Cross-sectional Semistructured telephone interviews	59 Trainees (medical students and residents) not specified	All medical errors—not defined

(continued)

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Table 1. (continued)

Author	Country	Year of study	Setting	Type of study/design	Participants	Type of event (definition in appendix)
Gallagher, Waterman, Ebers, Fraser, and Levinson (2003)	United States (Missouri)	2002	Not reported	Qualitative study Cross-sectional Focus group discussion	52 Patients and 46 physicians with various specialities	All medical errors—definition of IOM
Hobgood, Hevia, Tamayo-Sarver, Weiner, and Riviello (2005)	United States	2003	Not reported	Quantitative study Cross-sectional Questionnaires	43 Emergency medicine residents	All medical errors—broad definition of IOM
Kaldjian et al. (2008)	United States	2004-2005	Hospital	Quantitative study Cross-sectional Questionnaires	138 Faculty physicians with various specialities and 200 resident physicians with various specialities	All medical errors—definition of medical error
Lander et al. (2006)	United States	2003	Not reported	Quantitative study Cross-sectional Questionnaires	210 Otolaryngologists	All errors and adverse events—definition study Shah et al., 2004
Martinez and Lo (2008)	Not reported	2001-2002	Hospital	Qualitative study Cross-sectional Written essays	147 Fourth year medical students, specialism not specified	All medical errors—not defined
Meurier, Vincent, and Parmar (1997)	UK	Not reported	Hospital	Quantitative study Cross-sectional Questionnaires	129 NHS nurses	All medical errors—definition of nursing error
Meurier, Vincent, and Parmar (1998)	UK	Not reported	Not reported	Quantitative study Cross-sectional Questionnaires	60 NHS nurses	All medical errors—not defined

(continued)

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Table 1. (continued)

Author	Country	Year of study	Setting	Type of study/design	Participants	Type of event (definition in appendix)
Mizrahi (1984)	United States	Not reported	Hospital	Three-year longitudinal study with cross-sectional elements Observations, semistructured interviews, and questionnaires	290 Internists-in-training (house officers), specialism not specified	All medical mistakes—definition of medical mistake
Muller, and Ornstein (2007)	Not reported	2003-2004	Hospital	Quantitative study Cross-sectional Questionnaires	423 Medical students and house staff, specialism not specified	All medical errors—definition by participants—not defined
Newman (1996)	United States (Philadelphia)	Not reported	Hospital	Qualitative study Cross-sectional Semistructured interviews	30 Family physicians	Most memorable medical mistakes—not defined
Penson, Svendsen, Chabner, Lynch, and Levinson (2001)	Not reported	Not reported	Hospital	Qualitative study Cross-sectional Group discussions	Approximately 90 members of staff	Medical errors—not defined
Rassin, Kanti and Silner (2005)	Israel	Not reported	Hospital	Qualitative study Cross-sectional Semistructured interview	20 Nurses	Made for the first time in their professional life a medication error—not defined

(continued)

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Table 1. (continued)

Author	Country	Year of study	Setting	Type of study/design	Participants	Type of event (definition in appendix)
Schelbred, and Nord (2007)	Norway	2003	ABS in Norway	Qualitative study Cross-sectional Semi-structured interviews	10 Nurses	Serious medication error—definition Norwegian Board of Health
Scott, Hirschinger, and Cox (2008)	United States (Missouri)	2007-2008	Hospital	Qualitative study Cross-sectional Interviews and thought-evoking questionnaires	11 Staff nurses and 3 immediate nursing supervisors	Event—not defined
Scott et al. (2009)	United States (Missouri)	2007-2008	Hospital	Qualitative study Cross-sectional Semistructured interviews	31 Professionals involved in patient safety events (10 physicians, 11 registered nurses, and 10 other health professionals)	All types of clinical events that impacted health professional—not defined
Scott et al. (2010)	United States (Missouri)	2007-2008	Hospital	Quantitative study Cross-sectional Questionnaires	898 Professionals, specialism not specified	All adverse events—not defined
West et al. (2006)	United States (Minnesota)	2003-2006	Hospital	Prospective three-years longitudinal study Questionnaires	184 Internal medicine residents	Self-perceived medical errors—not defined
West, Tan, Habermann, Sloan, and Shanafelt (2009)	United States (Minnesota)	2003-2009	Hospital	Prospective three-years longitudinal study Questionnaires	380 Internal medicine residents	Self-perceived medical errors—not defined

(continued)

Table 1. (continued)

Author	Country	Year of study	Setting	Type of study/design	Participants	Type of event (definition in appendix)
Wolf, Serembus, Smetzer, Cohen, and Cohen (2000)	United States	Not reported	Not reported	Mixed methods Cross-sectional Questionnaires	402 Health care professionals of which 208 nurses, 112 pharmacists, and 82 physicians with various specialities	All medication errors—not defined
Wu, Folkman, McPhee, and Lo (1991)	United States	1989	Hospital	Quantitative study. cross-sectional questionnaires	114 House officers, specialism not specified	Most significant medical mistake—definition mistake
Wu, Folkman, McPhee, and Lo (1993)	United States	1989	Hospital	Quantitative study, cross-sectional questionnaires	114 House officers, specialism not specified	Most significant medical mistake—definition mistake with serious outcome

Note. RN = registered nurses; AORN = Association of periOperative Registered Nurses; IOM = Institute of Medicine; NHS = National Health Service.

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Table 2. Definition and Descriptions of a "Second Victim"

Definition

"A health care provider involved in an unanticipated adverse patient event, medical error, and/or a patient related–injury who become victimized in the sense that the provider is traumatized by the event. Frequently second victims feel personally responsible for the unexpected patient outcomes and feel as though they have failed their patient, second guessing their clinical skills and knowledge base" (Scott et al., 2009)

Descriptions

"Many errors are built into existing routines and devices, setting up the unwitting physician and patient for disaster. And, although patients are the first and obvious victims of medical mistakes, doctors are wounded by the same errors: they are the second victims" (Wu, 2000)

"Virtually every practitioner knows the sickening feeling of making a bad mistake. You feel singled out and exposed—seized by the instinct to see if anyone has noticed. You agonize about what to do, whether to tell anyone, what to say. Later, the event replays itself over and over in your mind. You question your competence but fear being discovered. You know you should confess, but dread the prospect of potential punishment and of the patient's anger" (Vincent, 2003)

"Many errors are built into existing routines and devices, setting up the unwitting physician and patient for disaster. And, although patients are the first and obvious victims of medical mistakes, doctors are wounded too." Denham further described second victims as "Nurses, pharmacists, and other members of the health care team are also susceptible to error and vulnerable to its fallout. Given the hospital hierarchy, they have less latitude to deal with their mistakes: they often bear silent witness to mistakes and agonize over conflicting loyalties to patient, institution, and team. They too are victims" (Denham, 2007)

Research Question 2: What is the prevalence of second victims?

The prevalence of second victims in health care is estimated in three studies and varies from 10.4% (Lander et al., 2006) over approximately 30% (Scott et al., 2010) to 43.3% (Wolf, Serembus, Smetzer, Cohen, & Cohen, 2000). The study of Lander et al. (2006) reported the lowest prevalence of second victims. The otolaryngologists in this study were not asked about their emotional reaction when making an error, but they were asked whether an error had occurred during the last 6 months. If an error had occurred, they described this error. Thirty percent of the medical students, physicians, and professional nurses in the study of Scott et al. reported personal problems within the past 12 months (Scott et al., 2010). In the study of Wolf, Serembus, Smetzer, Cohen, and Cohen(2000) 40.8% of respondents reported that

the error had a moderately severe harmful effect and 2.5% describing a severe impact on their personal lives.

> *Research Question 3:* What is the impact of the error on the second victim?

The second victim is troubled about the impact of the error on the first victim. Feelings of guilt, anger, frustration, psychological distress, and fear are the most common psychosocial and physical symptoms of the second victim following an adverse event. In addition, the error can have an impact on both the personal and professional life of the second victim (Aasland & Førde, 2005; Schelbred & Nord, 2007; Sirriyeh et al., 2010). This response can disrupt the therapeutic relationship with the first victim and leave the patient, family, and caregiver to suffer alone (Bell, Moorman, & Delbanco, 2010). The reactions of second victims are influenced by the outcome of the error and their degree of personal responsibility for the adverse event (Engel, Rosenthal, & Sutcliffe, 2006; Levinson & Dunn, 1989). Poor patient outcomes and greater perceived personal responsibility were associated with more intense reactions and greater personal anguish among resident physicians (Engel et al., 2006). Female second victims tend to report significantly more distress than males, are more afraid of losing their confidence, are more concerned about receiving blame, and experience more loss of reputation from their colleagues. They are more motivated to discuss the error to learn whether colleagues would make the same decision and are more likely to attend training programs. Regardless of the outcome, they are more likely to feel guilty and fear all repercussions in nearly every situation (Kaldjian et al., 2008; Muller & Ornstein, 2007; Wu, Folkman, McPhee, & Lo, 1991). Students can also be deeply affected by errors (Martinez & Lo, 2008).

Second victims can respond emotionally, cognitively, and behaviorally (Fischer et al., 2006; MITSS, 2011; Wolf, 2005). Both emotional and cognitive responses can influence physical and psychosocial symptoms (MITSS, 2011; Scott, Hirschinger, & Cox, 2008). The perceptions of other people, for example colleagues, can influence feelings of guilt. For example, fear by the second victim that their peers think they provide poor quality of care (Christensen, Levinson, & Dunn, 1992; Levinson & Dunn, 1989). Several studies reveal that second victims blame themselves or feel ashamed of their individual responses to the clinical event (Newman, 1996; Schwappach & Boluarte, 2009; Wu, Sexton, & Pham,, 2008). Second victims may feel guilty because of their errors and harm they caused to the patient (Bell et al., 2010; Gallagher, Waterman, Ebers, Fraser, & Levinson,

2003; MITSS, 2011). There are no significant differences in empathy scores (individual's concern for the feelings of others) and cognitive empathy scores (an individual's ability to understand the perspective of another person about his or her circumstances) between residents who did or did not report an error (West et al., 2006). In some circumstances, the second victim can have continued emotional distress and can develop posttraumatic stress disorder (PTSD) (Rassin, Kanti, & Silner, 2005; Schelbred & Nord, 2007; Scott et al., 2008). Symptoms may include insomnia, nightmares, reliving the incident repeatedly, loss of trust by their colleagues, lack of self-confidence, and fear of making another error (Schelbred & Nord, 2007). Besides PTSD, the second victim can experience burnout and/or depression (Fahrenkopf et al., 2008; West, Tan, Habermann, Sloan, & Shanafelt, 2009). In a study by West et al. (2006), 60% of the residents who reported an error had a positive screen for depression. The emotional response in the aftermath of the error is significantly related to reported changes in practices and can be correlated with the error severity and personal responsibility (Arndt, 1994a; Meurier, Vincent, & Parmar, 1997; Wu et al., 1991).

A secondary response, besides the emotional and cognitive response, might be a behavioral response, which includes taking responsibility, disclosure, and reflection about the case (Fischer et al., 2006). Professionals have a strong sense of personal responsibility, and the degree of personal responsibility for an event is linked to taking responsibility for the medical error (Engel et al., 2006; Goldberg et al., 2002; Penson, Svendsen, Chabner, Lynch, & Levinson, 2001). Wu, Folkman, McPhee, and Lo (1993) recommended that house officers should be encouraged to accept responsibility for the mistake and discuss the mistake and should be discouraged from forgetting or avoiding thinking about it. Engel, Rosenthal, and Sutcliffe (2006) found that residents who are confronted with serious adverse events and/or felt personal responsibility for these are inherently motivated to change their future practice behavior. However, this may challenge their emotional well-being. Meurier, Vincent, and Parmar (1998) found that different factors are related to accepting responsibility like self-blame or importance of the error. Disclosure of the error to the patient is stressful and has a significant impact on the second victim. Disclosure may help both the patient and the physicians to deal with the consequences of an error, but some may not disclose because of legal implications, psychological distress, or uncertainty about the cause of the error (Lander et al., 2006). Lander et al. (2006) suggested that the failure to deal with emotional need hampers completion of the necessary steps to deal with an error. Respectful disclosure should contain support, resolution, learning, and improvement (Conway et al.,

2010). An overview of the impact of an adverse event on the second victim is given in Table 3.

> *Research Question 4:* What are individual coping strategies used by second victims?

Every second victim has his or her own way of coping, but Scott et al. (2009) described a six-stage general recovery trajectory for second victims: Stage 1: chaos and accident response; Stage 2: intrusive reflection characterized by "what if" questions; Stage 3: restoring personal integrity by looking for support to tell their experience or understand the impact on them personal and professional; Stage 4: enduring the inquisition from others, and wondering about the impact of their mistake; Stage 5: obtaining emotional "first aid"; and Stage 6: moving on or dropping out, surviving, or thriving. For the later stages, institutions provide some emotional support but for the earlier stages frontline supervisors and peers could be trained in providing more immediate support.

Two major coping strategies, problem-focused strategy and emotion-focused strategy, were found in the literature. These are important to the individual achieving an effective coping strategy by dealing with the error, analyzing, and learning from it either alone or with colleagues (Aasland & Førde, 2005; Arndt, 1994b; Chard, 2010). The "Ways of Coping Scale," by Folkman and Lazarus, is used for measuring the two major forms of coping (Chard, 2010; Christensen et al., 1992; Wu , Folkman, McPhee, & Lo1993). In problem-focused coping, the individual tries to cope with the problem that causes distress and tries to determine what transpired. In this strategy, the clinician is trying to learn from the mistake, which includes information seeking, problem solving, and attempting to deal with the problem itself (Chard, 2010; Christensen et al., 1992; Wu et al., 1993). Sometimes discussing details with medical colleagues was experienced as unhelpful because the involved doctor felt that colleagues minimized the mistake and were avoiding the emotional concerns (Christensen et al., 1992). In the second strategy, emotion-focused coping, the individual copes by managing the emotional distress caused by the error (Chard, 2010; Christensen et al., 1992; Wu et al., 1993). This strategy can include accepting responsibility for the mistake and recommending practice changes to reduce future errors (Goldberg et al., 2002). Meeting the patient or family has been identified as an important way for reducing the negative impact of event for physicians. However, it is not a guaranteed method for obtaining relief or absolution (Aasland & Førde, 2005; Berlinger & Wu, 2005). Engel

Table 3. Overview of the Symptoms of the Second victim ($n = 41$ Included in This Literature Review)

Psychological symptoms		Physical symptoms		Behavioral symptoms		Cognitive symptoms		Possible long-term effects	
Feelings of guilt	$n = 19^a$	Sleeping disturbances, fatigue	$n = 2$	Insomnia	$n = 4$	Disturbance in concentration	$n = 1$	Burnout	$n = 4$
Anger	$n = 14$	Uncontrollable crying, uncontrollable shaking, increase blood pressure, exhaustion, abdominal discomfort, nausea, vomiting or diarrhoea, muscle tension, headaches, eating disorder	$n = 1$	Seeking solace in alcohol or drugs, isolation	$n = 2$			Decrease quality of life	$n = 3$
Irritation	$n = 13$							Possible PTSD, concentration difficulties	$n = 2$
Psychological distress, fear	$n = 12$							Affected memory, easy loss of nerves, anxiety	$n = 1$
Depressed mood, feelings of embarrassment, humiliation, uncomfortable	$n = 8$								
Feelings of shame, feelings of inadequacy, regret, grief, sadness, self-doubt, disappointment	$n = 7$								
Frustration, anxiety	$n = 6$								
Loss of self-confidence	$n = 4$								

(continued)

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Table 3. (continued)

Psychological symptoms	Physical symptoms	Behavioral symptoms	Cognitive symptoms	Possible long-term effects
Feelings of remorse, repetitive intrusive memories, anxiety, horrified	*n* = 3			
Sadness, nervousness, anguish, self-blame	*n* = 2			
Indifference, devastation, believe actions were reasonable, depression, loss of temper, hypervigilance, disbelief, spiritual distress, panicky, confusion, vulnerability, feelings of betrayal of others, discouragement, sorrow, excessive excitability, upset, dysphonic feelings, intense feelings of agony and anguish, desperation	*n* = 1			

Note. PTSD = posttraumatic stress disorder.
[a] Symptoms were mentioned in 19 out of 41 publications.

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Table 4. Overview of Coping Strategies ("Ways of Coping Scale" by Folkman and Lazarus; *n* = 41 Included in This Literature Review)

Seeking social support	*n* = 15[a]
For example, talking to someone about feelings; accepting sympathy; and understanding from someone; asking a relative or friend for advice	
Accepting responsibility	*n* = 6
For example, promising to do things differently; criticizing or lecturing oneself; apologizing or doing something to make up	
Distancing	*n* = 5
Foe example, not letting it get to them; going on as if nothing has happened; trying to forget the whole thing	
Emotional self-control	*n* = 4
For example, trying to keep feelings from interfering with other things; trying to keep feelings to themselves; keeping others from knowing how bad things are	
Escape-avoidance	*n* = 3
For example, wishing the situation would go away or be over; having fantasies of how things might turn out; trying to make themselves feel better by eating, drinking, using drugs or medications	
Planful problem solving	*n* = 2
For example, concentrating on what to do next; knowing what had to be done, doubling effort to make up; making a plan of action and following it	

[a] Out of 41 publications, 15 mentioned this coping strategy.

et al. (2006) found that talking with family and friends is less important in the coping process than talking with medical colleagues. Table 4 presents an overview of coping strategies.

Making changes in practice is another identified coping strategy. These changes can be defensive or constructive. A common defensive tactic is to keep the error to oneself. A common constructive reaction is to solicit insights from a colleague regarding alternative response approaches. Defensive and constructive practice changes are described in Table 5. In 1984, Mizrahi described three defensive mechanisms: denial process, discounting, and distancing. Defensive changes, such as distancing and escape or avoidance, are also associated with perception of job overload as cause for the mistake and the perception that the institution responded judgmentally (Meurier et al., 1997; Wu et al., 1991, 1993). The second change in practice is making constructive changes and includes accepting responsibility and planful problem solving (Chard, 2010). Most of the participants in the study

Table 5. Overview of Defensive and Constructive Changes in Practice ($n = 41$ Included in This Literature Review)

Defensive changes in practice		Constructive changes in practice	
More likely to keep error to themselves	$n = 4$[a]	Asking a colleague what they would have done in similar situation	$n = 5$
Avoidance of similar patients	$n = 3$	Seeking more advice, paying more attention to detail	$n = 4$
Feeling less confident with patient/family, getting more worried, less trusting of others' capability	$n = 2$	Reading more carefully, learning/ making changes in practice to reduce future errors	$n = 3$
Avoid further contact with patient/family, thought about leaving practice, change in doctor–patient relationship, ordering more tests, afraid of making another error	$n = 1$	Increasing education, confirming data personally, trusting others' judgment less, keeping better documentation of patient records, do more observations on patient	$n = 2$
		Asking for references, listening to patient more closely, following policies and procedures more closely, slowing down more, increasing attention to self-care and self-pacing, using more evidence-based medicine, changing organization of data, allowing colleagues to learn from mistakes, learning whether colleagues would have made the same judgment and decision, improving respondent's practice or department, improving routines related to drug administration, increasing vigilance, reviewing of medication, prevention, double checking of subject's work, checking on each other, medication prior to dispensing or administration	$n = 1$

[a] Out of 41 publications, 4 mentioned this change in practice.

of Penson, Svendsen, Chabner, Lynch, and Levinson (2001) agreed that discussion of the error was beneficial. Meurier et al. (1997) reported that emotional responses and coping strategies used in the aftermath of an error were

significantly related to report changes in practice. In this study, accepting responsibility and planful problem-solving strategies were related positively to constructive changes. There are some relationships between the coping strategies and the changes in practices. The coping strategies of seeking social support and planful problem solving were significant predictors of constructive changes in practice. Significant predictor of defensive changes in practice are accepting responsibility for the error and using self-control. There is also a relationship between coping and emotional distress. A strong and significant relationship was found between escape or avoidance and emotional distress (Chard, 2010).

Discussion

The term second victim was introduced by Wu in 2000, and a specific definition was posed by Scott et al. in 2009. Attention was paid to the emotional impact of adverse events on physicians as early as 1984 by Mizrahi. Since then, there have been numerous reports about the negative impact of errors on second victims. Individual clinicians can respond behaviorally by taking responsibility, ensuring disclosure, and careful reflection of the adverse event and/or emotionally or cognitively, with burnout or depression. Because of the strong potential impact of adverse clinical events on a second victim, there is an identified need for specific support. The specific form of support may need to differ by gender, since women tend to react differently to an adverse event and are more motivated to discuss the error and learn whether colleagues would make the same decision (Lander et al., 2006; Muller & Ornstein, 2007; Wu et al., 1991). It should be taken into account that students can also be deeply wounded by adverse events and become second victims (Martinez & Lo, 2008).

The research articles in our review were diverse. Qualitative ($n = 15$), quantitative ($n = 15$), and mixed studies ($n = 2$) were included. Only 10 of the research articles describe the definition of the reported adverse event. Most of the studies analyzed the impact or the coping strategies for health care professionals ($n = 17$). In 15 articles, it was stated that after an adverse event constructive changes were made, 10 studies stated defensive changes. A fundamental limitation is the fact that the included studies did not use the same type of adverse event and the same definition or description of second victim which makes synthesis difficult. For example, some studies used ''medication errors'' as type of event, while others used ''serious adverse events.'' Another limitation of this review is the exclusion of personal stories. Personal reflections and stories relating to a second victim

experience may provide valuable insights regarding the impact of the error on the second victim.

The prevalence rates of second victims in our study varied from 10.4% (Lander et al., 2006) up to 43.3% (Wolf et al., 2000). A more recent study shows that 46% of the respondents described being second victim of an incident (Edrees, Paine, Feroli, & Wu, 2011). It is estimated that nearly half of the health care providers could experience the impact as a second victim at least once in their career. The performance of second victims can be impaired and thereby create additional safety hazards. They can disclose the error to the patient, but this may cause additional stress (Waterman et al., 2007). Some may find dysfunctional ways to deal with their error and when they do not employ adaptive ways of coping, they may take solace in alcohol or drugs (Goldberg et al., 2002; King, Cockcroft, & Gooch, 1992; Wu, 2000). A question that follows is what is likely to be the net effect on the quality of care? Disclosure of the mistake can lead to a better patient outcome, better patient professional relationship, and improved health care delivery systems (van Pelt, 2008). Disclosure can have a positive impact on the emotional stress of the second victim and reduces the likelihood of future mistakes (Smith & Forster, 2000; Wu, 2000; Wu et al., 1991). Fear for loss of reputation or loss of patients are barriers for not discussing the error with the patients (Fisseni, Pentzek, & Abholz, 2008). The impact of the second victim can increase when the health care provider receives a patient complaint. A patient complaint also has an emotional impact on the health care provider and an impact on their personal life. The health care provider can loose confidence in his job and the doctor–patient relationship can be affected (Ashok & Ogden, 1999; Cunningham, 2004).

After an adverse event, organizations have the responsibility of trying to understand what happened and why it happened. Adverse events should be used to improve quality of care and to prevent future harm (Conway et al., 2010). However, organizations also need to support their health care providers when an adverse event does occur. The need for support is not limited to the person who committed an obvious error but may extend to other frontline health care staff. Organizational leaders in health care need to establish resources to help clinicians deal with the emotional impact of the adverse event and assure that they are treated respectfully and compassionately (Conway & Weingart, 2009).

A final consideration is that the health care organization can also be victim of the adverse event (third victim). The impact of the adverse event on these third victims depends on the response and behavior of the organizational leaders (Denham, 2007). Based on the increased trend to openly

discuss and learn from adverse events, it is likely that the number of second and third victims has been underestimated. The financial impact on the whole health system is also likely to be considerable, but this has not been examined. Organizations need to consider institutional support strategies to aid all of the victims of adverse events. These support mechanisms should be culturally dependant and need to take into account immediate, middle long and long-term support needs of the health care clinician who becomes a second victim. Future research is necessary to identify support mechanisms that have a significant impact on outcomes including burnout, distress, and loss of confidence.

Conclusion

Health care leaders need to be aware of the high prevalence of second victims within their organizations and should provide supportive interventions in the aftermath of adverse events. Most second victims struggle in isolation, both personally and professionally. This also has a negative impact on their colleagues, supervisors, managers, patients, and organization. Addressing the needs of health care's second victims needs to become part of national and local patient safety and quality improvement initiatives. In the words of Don Berwick, former administrator for the Center for Medicare and Medicaid Services (CMS), ''health care workers who get wrapped up in error and injury, as almost all someday will, get seriously hurt too. And if we're really healers, then we have a job of healing them too. That's part of the job. It's not an elective issue, it's an ethical issue'' (Denham, 2007).

Appendix A

Table A1. Definition of Event Types

Error (definition study Shah et al., 2004)	"anything that has happened anywhere in your practice (office, hospital, operating room, emergency room, etc.) that was not anticipated, should not have happened, and makes you say 'I don't want this to happen again.' It can be small or large, administrative or clinical—anything that you feel could be avoided in the future." (Lander et al., 2006)

(continued)

Table A1. (continued)

Medical error	"a preventable adverse event that affects a patient by prolonging treatment or causing discomfort, disability, or death." (Kaldjian et al., 2008)
Medical error (broad definition IOM)	"the failure of a planned action to be completed as intended (i.e., error or execution), as the use of a wrong plan to achieve an aim (i.e., error or planning), or as an act or omission for which the resident felt responsible that had serious or potentially serious consequences for the patient and that would have been judged wrong by knowledgeable peers at the time it occurred." (Hobgood, Hevia, Tamayo-Sarver, Weiner, & Riviello, 2005)
Medical error (IOM)	"the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim." (Engel et al., 2006; Gallagher et al., 2003)
Medical mistake	"a mistake resulting in an unanticipated negative consequence of a medical intervention. Unanticipated negative consequences are defined as patient reactions which increase morbidity or pain. Medical interventions include diagnosis, test procedures and the prescribing of drugs, among others. Included in mistakes are both errors of commission and omission." (Mizrahi, 1984)
Medication error (definition Norwegian Board of Health)	"events that led to, or could have led to, substantial injury to patients." (Schelbred & Nord, 2007)
Mistake	"an act or omission for which the house officer felt responsible that had serious or potentially serious consequences for the patient and that would have been judged wrong by knowledgeable peers at the time it occurred." (Wu et al., 1991)
Mistake with serious outcome	"a mistake resulting in a prolonged hospital stay, a specific procedure, a change in therapy, or death." (Wu et al., 1993)
Near misses	"an event or situation that could have resulted in an accident, injury, or illness, but did not, either by change or through timely intervention." (Engel et al., 2006)
Nursing error	"any wrongful decision, omission, or action for which the nurse felt responsible and that had adverse or potentially adverse consequences for the patient and that would have been judged wrong by knowledgeable peers at the time it occurred." (Meurier et al., 1997)

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