

## SUPPLEMENTAL DATA FILE 1

### Search strategies and retrieved records from each electronic database

#### 1. PubMed

Date of search: 01/31/2017

Search strategy:

#1 (medical error OR patient safety incident OR adverse event OR near miss OR human error)  
#2 (health personnel OR second victim OR health professional OR health care provider)  
#3 (psychological impact OR experienc\* OR psychological response OR psychological symptom OR feeling OR emotion\* OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)

#1 and #2 and #3

*n* findings: 3,225

#### 2. Cochrane Library

Date of search: 02/01/2017

Search strategy:

#1 "medical error" or "patient safety incident" OR "adverse event" or "near miss" or "human error"  
#2 "health personnel" or "second victim" or "health professional" or "health care provider"  
#3 "psychological impact" or "experienc\*" or "psychological response" or "psychological symptom" or "feeling" or "emotion" or "mental health" or "cognit\*" or "psychosomatic symptom" or "coping" or "resilience" or "peer support" or "team building"

#4 #1 AND #2 AND #3

*n* findings: 89

#### 3. Web of Science (core collection) search strategy

Date of search: 02/06/2017

Search Strategy:

#1 (medical error OR patient safety incident OR human error OR adverse event)<sup>1</sup>  
#2 (health personnel OR second victim OR health professional OR health care provider)  
#3 (psychological impact OR psychological response OR psychological symptom OR feeling OR emotion OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)

#4 #3 AND #2 AND #1

*n* findings: 1,248

<sup>1</sup> The term "near miss" could not be included due to the error message: *Search Error: Invalid query.*

#### 4. Scopus

Date of search: 02/06/2017

Search Strategy:

((((( medical AND error) OR patient AND safety AND incident) or adverse AND event) OR near AND miss) OR human AND error)) AND (((health AND personnel) OR second AND victim) or health AND professional) OR health AND care AND provider)) AND (((((((((((psychological AND impact) OR experience\*) OR psychological AND response) OR psychological AND symptom) OR feeling) OR emotion\*) OR mental AND health) OR cognit\*) OR psychosomatic AND symptom) OR coping) OR resilience) OR peer AND support) OR team AND building)

*n* findings: 1,820

#### 5. PsycINFO

Date of search: 02/08/2017

Search strategy:

(medical error OR adverse event OR near miss OR human error) AND (health personnel OR second victim OR health professional OR healthcare provider) AND (psychological impact OR experienc\* OR psychological response OR psychological symptom OR feeling OR emotion\* OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)

*n* findings: 419

#### 6. Excerpta Medica Database (EMBASE)

Date of search: 02/08/2017

Search strategy:

#1 (medical error OR patient safety incident OR adverse event OR near miss OR human error)  
#2 (health personnel OR second victim OR health professional OR health care provider)  
#3 (psychological impact OR experienc\* OR psychological response OR psychological symptom OR feeling OR emotion\* OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)

#1 and #2 and #3

*n* findings: 212

#### 7. ScienceDirect

Date of search: 02/08/2017

Search strategy:

(medical error OR patient safety incident OR adverse event OR near miss OR human error) AND (health personnel OR second victim OR health professional OR healthcare provider) AND (psychological impact OR experience\* OR psychological response OR psychological symptom OR feeling OR emotion\* OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)

*n* findings: 979

## **8. MEDLINE**

Date of search

02/09/2017

Search strategy:

((medical error or patient safety incident or adverse event or near miss or human error) and (health personnel or second victim or health professional or health care provider) and (psychological impact or experience\* or psychological response or psychological symptom or feeling or emotion\* or mental health or cognit\* or psychosomatic symptom or coping or resilience or peer support or team building))

*n* findings: 122

## **9. Cumulative Index of Nursing and Allied Health Literature (CINAHL)**

Date of search: 02/09/2017

Search strategy:

(medical error OR adverse event OR near miss OR human error) AND (health personnel OR second victim OR health professional OR healthcare provider) AND (psychological impact OR experienc\* OR psychological response OR psychological symptom OR feeling OR emotion\* OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)

*n* findings: 235

## SUPPLEMENTAL DATA FILE 2

### Additional Searches

#### Grey Databases

1. OpenSIGLE database/opengrey.eu
  - Date of the search: 07/11/2017
  - Search strategy: (medical error OR patient safety incident OR adverse event OR near miss OR human error) AND (health personnel OR second victim OR health professional OR health care provider) AND (psychological impact OR experienc\* OR psychological response OR psychological symptom OR feeling OR emotion OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)
2. PsycEXTRA
  - Date of the search: 07/14/2017
  - Search strategy: (medical error OR patient safety incident OR adverse event OR near miss OR human error) AND (health personnel OR second victim OR health professional OR health care provider) AND (psychological impact OR experienc\* OR psychological response OR psychological symptom OR feeling OR emotion OR mental health OR cognit\* OR psychosomatic symptom OR coping OR resilience OR peer support OR team building)
3. Grey Literature Project (<http://www.greylit.org/home>)
  - Date of the search: 07/14/2017
  - Since the complete search strategy did not reveal any findings, separate searches were conducted for the following search terms: “medical error”, “second victim”, “adverse event”, “patient safety”

#### Journals (Volumes January 2000 – July 2017)

1. *Journal of the American Medical Association (JAMA)*
2. *JAMA Internal Medicine (formerly Archives of Internal Medicine)*
3. *Annals of Internal Medicine*
4. *BMJ Quality and Safety (formerly Quality in Health Care and Quality & Safety in Health Care)*
5. *Journal of Patient Safety*

#### Reference lists of reviews

1. Brasaitte I, Kaunonen M, Suominen T. Healthcare professionals' knowledge, attitudes and skills regarding patient safety: a systematic literature review. *Scand J Caring Sci* 2015;29:30-50.
2. Chan ST, Khong PCB, Wang W. Psychological responses, coping and supporting needs of healthcare professionals as second victims. *Int Nurs Rev* 2017;64:242-62.
3. Coughlan B, Powell D, Higgins MF. The second victim: a review. *Eur J Obstet Gynecol Reprod Biol* 2017;213:11-16.
4. Lewis EJ, Baernholdt M, Hamric AB. Nurses' experience of medical errors: an integrative literature review. *J Nurs Care Qual* 2013;28:153-61.
5. Perez B, Knych SA, Weaver SJ, et al. Understanding the barriers to physician error reporting and disclosure: a systemic approach to a systemic problem. *J Patient Saf* 2014;10:45-51.
6. Sammer CE, Lykens K, Singh KP, et al. What is patient safety culture? A review of the literature. *J Nurs Scholarsh* 2010;42:156-65.

7. Schwappach DL, Boluarte TA. The emotional impact of medical error involvement on physicians: a call for leadership and organizational accountability. *Swiss Med Wkly* 2009;139:9-15.
8. Seys D, Wu AW, Van Gerven E, et al. Health care professionals as second victims after adverse events: a systematic review. *Eval Health Prof* 2013;36:135-62.
9. Seys D, Scott S, Wu A, et al. Supporting involved health care professionals (second victims) following an adverse health event: a literature review. *Int J Nurs Stud* 2013;50:678-87.
10. Sirriyeh R, Lawton R, Gardner P, et al. Coping with medical error: a systematic review of papers to assess the effects of involvement in medical errors on healthcare professionals' psychological well-being. *Qual Saf Health Care* 2010;19:e43.
11. White AA, Waterman AD, McCotter P, et al. Supporting health care workers after medical error: considerations for health care leaders. *JCOM* 2008;15:240-47.
12. Wu AW, Shapiro J, Harrison R, et al. The impact of adverse events on clinicians: what's in a name? *J Patient Saf* Published Online First: November 4, 2017.doi:10.1097/PTS.0000000000000256

**Reference lists of books, book chapters, white paper, and consensus statement:**

1. Dekker S. Second Victim. Error, Guilt, Trauma and Resilience. Boca Raton, FL: CRC Press, Taylor & Francis Group, 2013.
2. Heyman B, Alasyweski A, Shaw M, et al. Risk, Safety and Clinical Practice. Health care through the lens of risk. Oxford, UK: Oxford University Press, 2010.
3. Hollnagel E, Wears RL, Braithwaite J. From Safety-I to Safety-II: A White Paper. The Resilient Health Care Net: Published simultaneously by the University of Southern Denmark, University of Florida, USA, and Macquarie University, Australia, 2015.
4. Hurwitz B, Sheikh A, eds. Health Care Errors and Patient Safety. West Sussex, UK: BMJ Books, 2009.
5. James JE. Medical Harm: What is it and what is the extent? In: James J, ed. The Health of Populations: Beyond Medicine. Cambridge, MA: Academic Press, 2016:105-31.
6. Powell SK. When things go wrong. responding to adverse events: a consensus statement of the Harvard Hospitals. *Lippincotts Case Manag* 2006;11:193-4.
7. Quick O. Regulating Patient Safety: The End of Professional Dominance? Cambridge, UK: Cambridge University Press, 2017.
8. Vincent C. Patient Safety. Second Edition. West Sussex, UK: BMJ Books, 2010.
9. Vincent C, Amalberti R. Safer Healthcare: Strategies for the Real World. Cham, Switzerland: Springer International Publishing, 2016.
10. Wachter R. Understanding patient safety. New York City: McGraw Hill Professional, 2007.

## SUPPLEMENTAL DATA FILE 3

### Grouped variables of interest

(listed according to the overall prevalence of the psychological and psychosomatic symptoms)

#### Troubling memories

- *Troubling memories* (Joesten et al., 2015)
- *Re-experiencing the event* (Wahlberg et al., 2016)
- *Memories of what happened to the patient kept troubling me for a long time after the event* (Schröder et al., 2016)

#### Anxiety/concern

- *Anxiety* (Cebeci et al., 2015)
- *Generally anxious (eg nervous, panicky or tense)* (Harrison et al., 2014)
- *Deep concern* (Leinweber et al., 2017)

#### Anger toward oneself

- *Angry at self* (Karga et al., 2011)
- *Self-anger* (Taifoori & Valiee, 2015)
- *Feeling angry at oneself* (Meurier et al., 1997)
- *Feeling angry at oneself* (Wu et al., 1991)
- *Angry with oneself* (Chard, 2010)

#### Regret/Remorse

- *Remorse* (Hobgood et al., 2005)
- *Fehler bedauert oder bereut [Engl. error regretted]* (Cramer et al., 2012)
- *Feeling remorseful* (Wu et al., 1991)

#### Distress

- *Emotional distress* (Hobgood et al., 2005)
- *Generally distressed (e.g., depressed, upset or angry)* (Harrison et al., 2014)

#### Fear of future errors

- *Angst, dass mir der Fehler nochmal passiert [Engl. fear of repeating the mistake]* (Cramer et al., 2012)
- *Anxiety about future errors* (McLennan et al., 2015)
- *Becoming preoccupied with the possibility of future errors* (Taifoori & Valiee, 2015)
- *Anxiety about the potential for future errors* (Waterman et al., 2007)
- *Anxious about potential for future errors* (Harrison et al., 2014)

#### Embarrassment

- *Embarrassment* (O'Beirne et al.)
- *Feeling embarrassed* (Karga et al., 2011)
- *Feeling embarrassed* (Taifoori & Valiee, 2015)
- *Feeling embarrassed* (Chard, 2010)

#### Guilt

- *Guilt* (O'Beirne et al.)
- *Guilt* (Cebeci et al., 2015)
- *Emotions of guilt* (Wahlberg et al., 2016)
- *I will always feel some sort of guilt when thinking about the event* (Schröder et al., 2016)

- *Feeling guilty* (Karga et al., 2011)
- *Feelings of guilt* (Dhillon et al., 2015)
- *Guilt* (Hobgood et al., 2005)
- *Feelings of guilt* (Leinweber et al., 2017)
- *Guilty feelings* (Meurier et al., 1997)
- *Feeling guilty* (Wu et al., 1991)
- *Feeling guilty* (Taifoori & Valiee, 2015)
- *Feeling guilty* (Chard, 2010)

#### **Frustration**

- *Frustration* (O'Beirne et al., 2012)
- *Frustration* (Hobgood et al., 2005)

#### **Anger**

- *Anger* (O'Beirne et al., 2012)
- *Anger* (Hobgood et al., 2005)
- *Anger* (Leinweber et al., 2017)

#### **Fear**

- *Fear* (Cebeci et al., 2015)
- *Fear* (Hobgood et al., 2005)
- *Immediate reaction of fear* (Leinweber et al., 2017)

#### **Feeling of inadequacy**

- *Fühlte mich inkompetent* [Engl. *I felt incompetent*] (Cramer et al., 2012)
- *Feeling professionally inadequate* (Karga et al., 2011)
- *Feeling inefficient* (Taifoori & Valiee, 2015)
- *Feelings of inadequacy* (Meurier et al., 1997)
- *Inadequacy* (Hobgood et al., 2005)
- *Feeling inadequate* (Wu et al., 1991)
- *I felt inadequate* (Chard, 2010)

#### **Reduced job satisfaction**

- *Negative impact on job satisfaction* (McLennan et al., 2015)
- *Reduced job satisfaction* (Waterman et al., 2007)
- *Reduced job satisfaction* (Harrison et al., 2014)

#### **Concern regarding colleagues' reactions**

- *Feeling fearful of losing their colleagues' trust* (Karga et al., 2011)
- *I worried a lot about what my clinical peers would think about me after the event* (Joesten et al., 2015)
- *I worried a lot about what my clinical peers would think about me after the event* (Schröder et al., 2016)

#### **Symptoms of depression**

- *Sadness* (O'Beirne et al., 2012)
- *Feelings of isolation* (Dhillon et al., 2015)
- *Sadness* (Cebeci et al., 2015)
- *Became depressed* (Chard, 2010)
- *Sorrow* (Hobgood et al., 2005)
- *Feeling depressed* (Taifoori & Valiee, 2015)

- *Depression* (Shanafelt et al., 2010)
- *Feeling depressed* (Karga et al., 2011)
- *Helplessness* (Leinweber et al., 2017)

#### **Fear of repercussions/official consequences**

- *Fearful of repercussions* (Karga et al., 2011)
- *Fear of negative repercussions* (Wu et al., 1999)
- *Fearful of repercussions* (Meurier et al., 1997)
- *Worry about lawsuits* (Joesten et al., 2015)
- *I was fearful of repercussions* (Chard, 2010)
- *I worried about an official complaint (or the possibility of one)* (Schröder et al., 2016)

#### **Sleeping difficulties**

- *litt unter Schlafstörungen* [Engl. *suffered from sleeping disturbances*] (Cramer et al., 2012)
- *Difficulty sleeping* (Dhillon et al., 2015)
- *Negative impact on ability to sleep* (McLennan et al., 2015)
- *Sleeping difficulties* (Waterman et al., 2007)
- *Sleep disturbance* (Harrison et al., 2014)

#### **Anger toward others**

- *Angry at others* (Karga et al., 2011)
- *Angry with other people* (Chard, 2010)
- *Feeling angry at other people* (Meurier et al., 1997)
- *Feeling angry toward others on the team* (Taifoori & Valiee, 2015)

#### **Loss of confidence**

- *Loss of self-confidence* (Cebeci et al., 2015)
- *Im Nachhinein unsicher* [Engl. *unconfident afterwards*] (Cramer et al., 2012)
- *Less self-confidence at work* (Taifoori & Valiee, 2015)
- *Feeling less confident in my work* (Meurier et al., 1997)
- *I feel less confident in my work* (Chard, 2010)
- *Feeling less confident at work* (Karga et al., 2011)
- *Confidence affected* (Dhillon et al., 2015)
- *Loss of confidence* (Waterman et al., 2007)
- *Negative impact on confidence in ability* (McLennan et al., 2015)
- *Lower professional confidence* (Harrison et al., 2014)

#### **Concern regarding patient's reactions**

- *Anxiety about loss of patient's trust* (Cebeci et al., 2015)
- *I feared having to speak to the patient and/or family* (Joesten et al., 2015)

#### **Self-doubts**

- *Self-doubt* (O'Beirne et al., 2012)
- *Als Person in Frage gestellt* [Engl. *questioning oneself as person*] (Cramer et al., 2012)



## SUPPLEMENTAL DATA FILE 4

### Excluded studies

Study	Reason for exclusion
1. Aaraas IJ, Jones B, Gupta TS. [Norwegian and Australian physicians' attitudes to adverse events]. <i>Tidsskr Nor Laegeforen</i> 2005;125:2204-6. Norwegian.	Wrong focus
2. Aasland OG, Førde R. Impact of feeling responsible for adverse events on doctors' personal and professional lives: the importance of being open to criticism from colleagues. <i>Qual Saf Health Care</i> 2005;14:13-7.	Wrong focus
3. Baas MAM, Scheepstra KWF, Stramrood CAI, et al. Work-related adverse events leaving their mark: a cross-sectional study among Dutch gynecologists. <i>BMC Psychiatry</i> 2018;18:73.	Wrong focus
4. Bark P, Vincent C, Olivieri L, et al. Impact of litigation on senior clinicians: implications for risk management. <i>BMJ Qual Saf</i> 1997;6:7-13.	Wrong focus
5. Bell SK, Moorman DW, Delbanco T. Improving the patient, family, and clinician experience after harmful events: the "when things go wrong" curriculum. <i>Acad Med</i> 2010;85:1010-7.	Wrong focus
6. Bognár A, Barach P, Johnson JK, et al. Errors and the burden of errors: attitudes, perceptions, and the culture of safety in pediatric cardiac surgical teams. <i>Ann Thorac Surg</i> 2008;85:1374-81. doi:10.1016/j.athoracsur.2007.11.024	Wrong focus
7. Borrell-Carrió F, Regadera CP, Sala RS, et al. [Clinical error and adverse events: primary care doctors' perception]. <i>Aten Primaria</i> 2006;38:25-32. Spanish.	Wrong focus
8. Burlison JD, Quillivan RR, Scott SD, et al. The effects of the second victim phenomenon on work-related outcomes: connecting self-reported caregiver distress to turnover intentions and absenteeism. <i>J Patient Saf</i> Published Online First: November 2, 2016 2016.	No prevalence of psychological and/or psychosomatic symptoms reported
9. Carrillo I, Ferrús L, Silvestre C, et al. Propuestas para el estudio del fenómeno de las segundas víctimas en España en atención primaria y hospitales. <i>Rev Calid Asist</i> 2016;31Supl.2:3-10. Spanish.	No sufficient information
10. Castel ES, Ginsburg LR, Zaheer S, et al. Understanding nurses' and physicians' fear of repercussions for reporting errors: clinician characteristics, organization demographics, or leadership factors? <i>BMC Health Serv Res</i> 2015;15:326.	Wrong focus
11. Chang Y, Mark B. Effects of learning climate and registered nurse staffing on medication errors. <i>Nurse Res</i> 2011;60:32-9.	Wrong focus
12. Coffey M, Thomas K, Tallett S, et al. Pediatric residents' decision-making around disclosing and reporting adverse events: the importance of social context. <i>Acad Med</i> 2010;85:1619-25.	Wrong focus

13. Corkhill V, Merrick K, Tay J. The impact of SUIs on O&G trainees: a national survey of 'second victims'. Poster presented at: RCOG World Congress 2016; June 20-22, 2016; Birmingham, UK.	No sufficient information
14. Cunningham W. The immediate and long-term impact on New Zealand doctors who receive patient complaints. <i>N Z Med J</i> 2004;117:U972.	Wrong focus
15. Dietz I, Borasio GD, Molnar C, et al. Errors in palliative care: kinds, causes, and consequences: a pilot survey of experiences and attitudes of palliative care professionals. <i>J Palliat Med</i> 2013;16:74-81.	Wrong focus
16. Edrees HH, Paine LA, Feroli ER, et al. Health care workers as second victims of medical errors. <i>Pol Arch Med Wewn</i> 2011;121:101-8.	Wrong focus
17. Engel KG, Rosenthal M, Sutcliffe K. Residents' responses to medical error: coping, learning, and change. <i>Acad Med</i> 2006;81:86-93.	Mismatch with the inclusion criteria
18. Fisseni G, Pentzek M, Abholz HH. Responding to serious medical error in general practice – consequences for the GPs involved: analysis of 75 cases from Germany. <i>Fam Pract</i> 2008;25:9-13.	Wrong focus
19. Gainotti S, Petrini C, Spedicato MR. [A survey on some Italian doctors' opinions about errors in clinical medicine]. <i>Ann Ist Super Sanità</i> 2006;42:348-64. Italian.	No sufficient information
20. Gazoni FM, Amato PE, Malik ZM, et al. The impact of perioperative catastrophes on anesthesiologists: results of a national survey. <i>Anesth Analg</i> 2012 Mar;114:596-603.	No sufficient information
21. Habermann M, Cramer H. [Survey in hospitals. Nursing errors, error culture and error management.] <i>Pflege Z</i> 2010;63:552-5. German.	Full-text not available
22. Han K, Bohnen, JD, Peponis T, et al. The Surgeon as the second victim? Results of the Boston intraoperative adverse events surgeons' attitude (BISA) study. <i>J Am Coll Surg</i> 2017;224:1048-1056.doi:10.1016/j.jamcollsurg.2016.12.039	Mixed population
23. Harrison R, Lawton R, Perlo J, et al. Emotion and coping in the aftermath of medical error: a cross-country exploration. <i>J Patient Saf</i> 2015;11:28-35.	No prevalence of psychological and/or psychosomatic symptoms reported
24. Hayashino Y, Utsugi-Ozaki M, Feldman MD, et al. Hope modified the association between distress and incidence of self-perceived medical errors among practicing physicians: prospective cohort study. <i>PLoS ONE</i> 2012;7:e35585.	Wrong focus
25. Heard GC, Sanderson PM, Thomas RD. Barriers to adverse event and error reporting in anesthesia. <i>Anesth Analg</i> 2012;114:604-14.	Wrong focus
26. Heard GC, Thomas RD, Sanderson PM. In the aftermath:	Wrong focus

attitudes of anesthesiologists to supportive strategies after an unexpected intraoperative patient death. *Anesth Analg* 2016;122:1614-24.

27. Hu YY, Fix ML, Hevelone ND, et al. Physicians' needs in coping with emotional stressors: the case for peer support. <i>Arch Surg</i> 2012;147:212-7.	Wrong focus
28. Hwang JI, Park HA. Nurses' perception of ethical climate, medical error experience and intent-to-leave. <i>Nurs Ethics</i> 2014;21:28-42.	Wrong focus
29. Hwang JI, Park HA. Relationships between evidence-based practice, quality improvement and clinical error experience of nurses in Korean hospitals. <i>J Nurs Manag</i> 2015;23:651-60.	Wrong focus
30. Jones JH, Treiber L. When the 5 rights go wrong: medication errors from the nursing perspective. <i>J Nurs Care Qual</i> 2010;25:240-7.	Mismatch with the inclusion criteria
31. Kaldjian LC, Forman-Hoffman VL, Jones EW, et al. Do faculty and resident physicians discuss their medical errors? <i>J Med Ethics</i> 2008;34:717-22.	Wrong focus
32. Kaldjian LC, Jones EW, Wu BJ, et al. Reporting medical errors to improve patient safety: a survey of physicians in teaching hospitals. <i>Arch Intern Med</i> 2008;168:40-6.	Wrong focus
33. Kershaw K. Adverse clinical incidents: support for midwives. <i>RCM Midwives</i> 2007;10:462-5.	Wrong focus
34. Kozłowska K, Nunn K, Cousens P. Adverse experiences in psychiatric training. Part 2. <i>Aust N Z J Psychiatry</i> 1997;31:641-52.	Wrong focus
35. Lander LI, Connor JA, Shah RK, et al. Otolaryngologists' responses to errors and adverse events. <i>Laryngoscope</i> 2006;116:1114-20.	No sufficient information
36. Lewis EJ, Baernholdt MB, Yan G, et al. Relationship of adverse events and support to RN burnout. <i>J Nurs Care Qual</i> 2015;30:144-52.	Mixed population
37. Li Y, Cao F, Cao D, et al. Nursing students' post-traumatic growth, emotional intelligence and psychological resilience. <i>J Psychiatr Ment Health Nurs</i> 2015;22:326-32.	Wrong focus
38. Mahjoub M, Bouafia N, Cheikh AB, et al.[Patient safety culture based on a non-punitive response to error and freedom of expression of healthcare professionals]. <i>Santé Publique</i> 2016;5:641-6.French.	Wrong focus
39. Martinez W, Lehmann LS. The "hidden curriculum" and residents' attitudes about medical error disclosure: comparison of surgical and nonsurgical residents. <i>J Am Coll Surg</i> 2013;217:1145-50.	Wrong focus
40. Meurier CE, Vincent CA, Parmar DG. Nurses' responses to severity dependent errors: a study of the causal attributions made	Wrong focus

by nurses following an error. *J Adv Nurs* 1998;27:349-54.

41. Mira JJ, Carrillo I, Lorenzo S, et al. The aftermath of adverse events in Spanish primary care and hospital health professionals. <i>BMC Health Serv Res</i> 2015;15:151.	Mixed population
42. Mizrahi T. Managing medical mistakes: ideology, insularity and accountability among internists-in-training. <i>Soc Sci Med</i> 1984;19:135-46.	Mismatch with the inclusion criteria
43. Mrayyan MT, Shishani K, Al-Faouri I. Rate, causes and reporting medication errors in Jordan: nurses' perspectives. <i>J Nurs Manag</i> 2007;15:659-70.	Wrong focus
44. Muller D, Ornstein K. Perceptions of and attitudes towards medical errors among medical trainees. <i>Med Educ</i> 2007;41:645-52.	Wrong focus
45. Nielsen KJ, Pedersen AH, Rasmussen K, et al. Work-related stressors and occurrence of adverse events in an ED. <i>Am J Emerg Med</i> 2013;31:504-8.	Wrong focus
46. Oshikoya KA, Oreagba IA, Ogunleye OO, et al. Medication administration errors among paediatric nurses in Lagos public hospitals: an opinion survey. <i>Int J Risk Saf Med</i> 2013;25:67-78.	Wrong focus
47. Panella M, Rinaldi C, Leigheb F, et al. The determinants of defensive medicine in Italian hospitals: the impact of being a second victim. <i>Rev Calid Asist</i> 2016;31Suppl2:20-5.	Wrong focus
48. Paulsen PME, Brattebø G. Medisinstudentar og legar sine haldningar til medisinske feil og pasientskade. <i>Tidsskr Nor Lægeforen</i> 2006;126:2129-32. Norwegian.	Wrong focus
49. Petrova E. Nurses' perceptions of medication errors in Malta. <i>Nurs Stand</i> 2010;24:41-8.	Wrong focus
50. Pratt SD, Jachna BR. Care of the clinician after an adverse event. <i>Int J Obstet Anesth</i> 2015;24:54-63.	Mismatch with the inclusion criteria
51. Pronovost PJ, Bienvenu OJ. A piece of my mind. From shame to guilt to love. <i>JAMA</i> 2015;314:2507-8.	Mismatch with the inclusion criteria
52. Quillivan RR, Burlison JD, Browne EK, et al. Patient safety culture and the second victim phenomenon: connecting culture to staff distress in nurses. <i>Jt Comm J Qual Patient Saf</i> 2016;42:377-86.	Wrong focus
53. Ramirez AJ, Graham J, Richards MA, et al. Burnout and psychiatric disorder among cancer clinicians. <i>Br J Cancer</i> 1995;71:1263-9.	Wrong focus
54. Raymond CB, Woloschuk DM, Honcharik N. Attitudes and behaviours of hospital pharmacy staff toward near misses. <i>Healthc Q</i> 2011;14:48-56.	Wrong focus
55. Rinaldi C, Leigheb F, Vanhaecht K, et al. Becoming a "second victim" in health care: pathway of recovery after adverse event. <i>Rev Calid Asist</i> 2016;31Suppl2:11-19.	Mismatch with the inclusion criteria

56. Rivera EY, Lee C, Bernstein PS, et al. "Second victim" experiences in obstetrics and Gynecology [339] [abstract]. <i>Obstet Gynecol</i> 2015; 125:107S.	No sufficient information
57. Robertson JH, Thomason AM. An exploration of the effects of clinical negligence litigation on the practice of midwives in England: a phenomenological study. <i>Midwifery</i> 2016;33:55-63.	Mismatch with the inclusion criteria
58. Santos AE, Padilha KG. [Medication adverse events in emergency department: nurse's professional conduct and personal feelings]. <i>Rev Bras Enferm</i> 2005;58:429-33. Portuguese.	Wrong focus
59. Schelbred AB, Nord R. Nurses' experiences of drug administration errors. <i>J Adv Nurs</i> 2007;60:317-24.	Mismatch with the inclusion criteria
60. Schröder K, Larsen PV, Jørgensen JS, et al. Psychosocial health and well-being among obstetricians and midwives involved in traumatic childbirth. <i>Midwifery</i> 2016;41:45-53.	No sufficient information
61. Scott SD, Hirschinger LE, Cox KR, et al. Caring for our own: deploying a systemwide second victim rapid response team. <i>Jt Comm J Qual Patient Saf</i> 2010;36:233-40.	Wrong focus
62. Stangierski A, Warmuz-Stangierska I, Ruchala M, et al. Medical errors – not only patients' problem. <i>Arch Med Sci</i> 2012;8:569-74.	Wrong focus
63. Taylor D, Hassan MA, Luterman A, et al. Unexpected intraoperative patient death: the imperatives of family-and surgeon-centered care. <i>Arch Surg</i> 2008;143:87-92.	Mismatch with the inclusion criteria
64. Teng CI, Chang SS, Hsu KH. Emotional stability of nurses: impact on patient safety. <i>J Adv Nurs</i> 2009; 65:2088-96.	Wrong focus
65. Theorell T. [Many physicians feel distressed after committing Medical errors. Two thirds worried about committing new errors, according to a North American survey]. <i>Lakartidningen</i> 2008;105:610-1. Swedish.	Full-text not available
66. Tipton DJ, Giannetti VJ, Kristofik JM. Managing the aftermath of medication errors: managed care's role. <i>J Am Pharm Assoc</i> 2003;43:622-8.	Mismatch with the inclusion criteria
67. Torppa MA, Kuikka L, Nevalainen M, et al. Emotionally exhausting factors in general practitioners' work. <i>Scand J Prim Health Care</i> 2015;33:178-83.	Wrong focus
68. Ugur E, Kara S, Yildirim S, et al. Medical errors and patient safety in the operating room. <i>J Pak Med Assoc</i> 2016;66:593-7.	Wrong focus
69. Van Gerven E, Seys D, Panella M, et al. Involvement of health-care professionals in an adverse event: the role of management in supporting their workforce. <i>Pol Arch Med Wewn</i> 2014;124:313-20.	Wrong focus
70. Van Gerven E, Bruyneel L, Panella M, et al. Psychological impact and recovery after involvement in a patient safety incident: a repeated measures analysis. <i>BMJ Open</i> 2016;6:e011403.	No prevalence of psychological and/or psychosomatic symptoms reported

71. Van Gerven E, Vander Elst T, Vandebroek S, et al. Increased risk of burnout for physicians and nurses involved in a patient safety incident. <i>Med Care</i> 2016;54:937-43.	Wrong focus
72. Varughese E, Janda M, Obermair A. Can the use of quality assurance tools reduce the impact of surgical complications on the well-being of obstetricians and gynaecologists in Australia and New Zealand. <i>Aust N Z J Obstet Gynaecol</i> 2014;54:30-5.	Wrong focus
73. Venus E, Galam E, Aubert JP, et al. Medical errors reported by French general practitioners in training: results of a survey and individual interviews. <i>BMJ Qual Saf</i> 2012;21:279-86.	Mismatch with the inclusion criteria
74. Vohra PD, Johnson JK, Daugherty CK, et al. Housestaff and medical student attitudes toward medical errors and adverse events. <i>Jt Common J Qual Patient Saf</i> 2007;33:493-501.	Wrong focus
75. Wahlberg A, Andreen Sachs M, Bergh Johannesson K, et al. Self-reported exposure to severe events on the labour ward among Swedish midwives and obstetricians: a cross-sectional retrospective study. <i>Int J Nurs Stud</i> 2017;65:8-16.	Wrong focus
76. West CP, Huschka MM, Novotny PJ, et al. Association of perceived medical errors with resident distress and empathy: a prospective longitudinal study. <i>JAMA</i> 2006;296:1071-8.	No sufficient information
77. White AA, Gallagher TH, Krauss MJ, et al. The attitudes and experiences of trainees regarding disclosing medical errors to patients. <i>Acad Med</i> 2008;83:250-6.	Wrong focus
78. Wolf ZR, Serembus JF, Smetzer J, et al. Responses and concerns of healthcare providers to medication errors. <i>Clin Nurse Spec</i> 2000;14:278-87.	Wrong focus
79. Wu AW, Folkman S, McPhee, SJ, et al. Do house officers learn from their mistakes? <i>Qual Saf Health Care</i> 2003;12:221-8.	Reprint of the paper published in JAMA, 1991, Volume 265, pages 2089-94.
80. Wurst FM, Kunz I, Skipper G, et al. The therapist's reaction to a patient's suicide: results of a survey and implications for health care professionals' well-being. <i>Crisis</i> 2011;32:99-105.	No sufficient information

## SUPPLEMENTAL DATA FILE 5

### Critical appraisal results for the included studies using the JBI Critical Appraisal Checklist for Prevalence Studies

	1. Appropriate sample frame to address target population	2. Appropriate way of recruitment	3. Adequate sample size	4. Description of study subjects and setting in detail	5. Data Analysis with sufficient coverage of the identified sample	6. Use of valid methods for identifying the condition	7. Measurement of condition in standard, reliable way	8. Appropriate statistical analysis	9. Adequate response rate or, if not, appropriate management of low response rate	Absolute number of criteria met
Cebeci et al. (2015)	✓	✓	?	✗	✓	✗	✓	✓	✓	6
Chard (2010)	✓	✓	✓	✓	✓	✓	✓	✓	?	8
Cramer et al. (2012)	✓	✓	✓	✓	✓	✗	✓	✓	✓	8
Dhillon et al. (2015)	✓	✓	?	✓	✓	✗	✓	✓	?	6
Harrison et al. (2014)	✓	✓	✓	✓	✓	?	✓	✓	✓	8
Hobgood et al. (2005)	✓	✗	?	✓	✓	✗	✓	✓	✓	6
Joesten et al. (2015)	✓	✗	?	?	✓	✗	✓	✓	✓	5
Karga et al. (2011)	✓	✓	✓	✓	✓	✓	✓	✗	✓	8
Leinweber et al. (2017)	✓	✓	✓	✓	✓	✓	✓	✗	✗	7
McLennan et al. (2015)	✓	✓	?	✗	✓	?	✓	✓	✓	6
Meurier et al. (1997)	✓	?	?	✗	✓	✓	✓	✓	✓	6
O'Beirne et al. (2012)	✓	✓	?	✓	✓	?	✓	✗	NA*	5
Schröder et al. (2016)	✓	✓	✓	✓	✓	?	✓	✓	✓	8
Shanafelt et al. (2010)	✓	✓	✓	✓	✓	✓	✓	✓	?	8
Taifoori & Valiee (2015)	✓	✓	✓	✓	✓	?	✓	✓	✓	8
Wahlberg et al. (2016)	✓	✓	✓	✗	✓	✓	✓	✓	✓	8
Waterman et al. (2007)	✓	✓	✓	✓	✓	✗	✓	✗	✗	6
Wu et al. (1991)	✓	✓	?	✓	✓	✓	✓	✓	✓	8

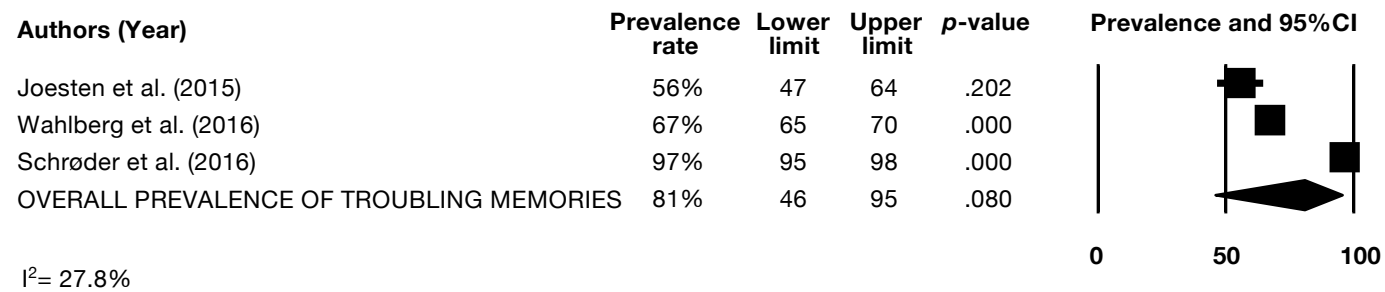
✓ = Yes; ✗ = No; ? = Unsure; NA = Not applicable

\* This item is not applicable in this case because patient safety incident reports had been collected over three years.

## SUPPLEMENTAL DATA FILE 6

### Forest plots of all performed meta-analyses

#### TROUBLING MEMORIES

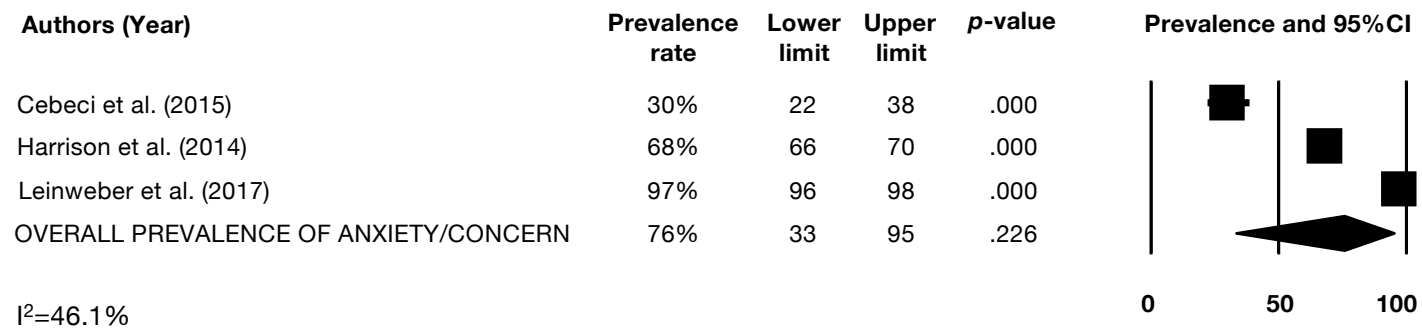


Meta Analysis



## ANXIETY/CONCERN

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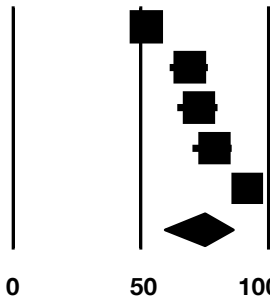


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**Meta Analysis**

## ANGER TOWARDS ONESELF

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
Karga et al. (2011)	52%	48	56	.300	
Taifoori & Valiee (2015)	69%	62	76	.000	
Meurier et al. (1997)	73%	65	80	.000	
Wu et al. (1991)	79%	71	85	.000	
Chard (2010)	92%	86	95	.000	
OVERALL PREVALENCE OF ANGER TOWARDS ONESELF	75%	59	86	.003	

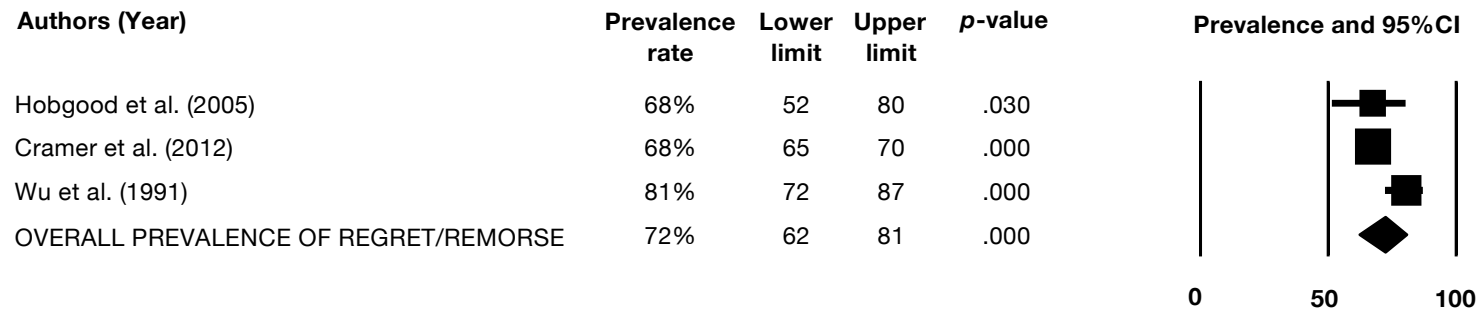
$I^2=4.8\%$

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### Meta Analysis

## REGRET/REMORSE

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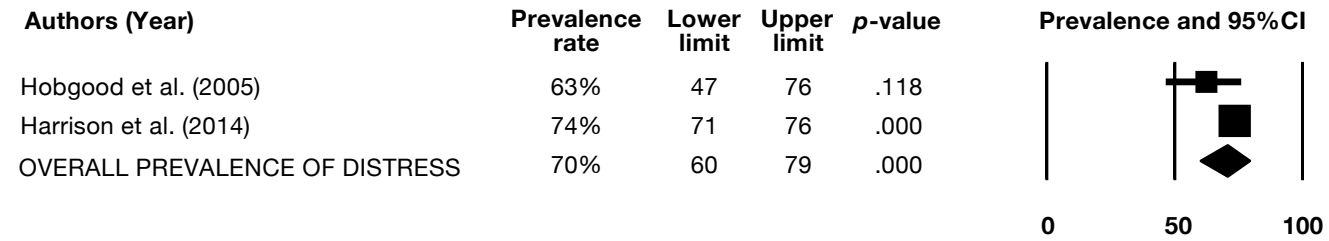
$I^2=0\%$

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### Meta Analysis

## DISTRESS

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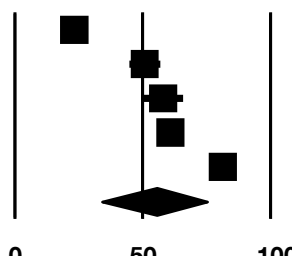
$I^2 = 0\%$

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### Meta Analysis

## FEAR OF FUTURE ERRORS

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
Cramer et al. (2012)	23%	21	26	.000	
McLennan et al. (2015)	51%	45	57	.766	
Taifoori & Valiee (2015)	58%	50	66	.044	
Waterman et al. (2007)	61%	59	63	.000	
Harrison et al. (2014)	81%	79	83	.000	
OVERALL PREVALENCE OF FEAR OF FUTURE ERRORS	56%	34	75	.625	

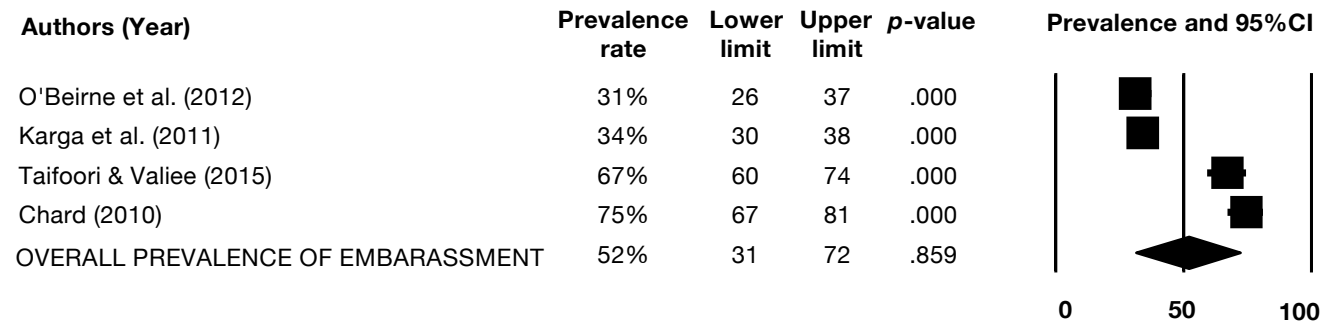
$I^2=0\%$

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### Meta Analysis

## EMBARASSMENT

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$I^2=13.6\%$

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### Meta Analysis

## GUILT

Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
O'Beirne et al. (2012)	10%	7	15	.000	
Cebeci et al. (2015)	22%	15	30	.000	
Wahlberg et al. (2016)	35%	33	37	.000	
Schröder et al. (2016)	36%	33	39	.000	
Karga et al (2011)	44%	40	48	.004	
Dhillon et al. (2015)	50%	44	56	.949	
Hobgood et al. (2005)	53%	37	67	.752	
Leinweber et al. (2017)	65%	62	69	.000	
Meurier et al. (1997)	66%	57	74	.000	
Wu et al. (1991)	72%	63	79	.000	
Taifoori & Valiee (2015)	84%	77	89	.000	
Chard (2010)	84%	78	89	.000	
OVERALL PREVALENCE OF GUILT	51%	41	62	.812	

$I^2=53.1\%$

### Meta Analysis

## FRUSTRATION

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
O'Beirne et al. (2012)	48%	42	54	.517	
Hobgood et al. (2005)	55%	40	69	.528	
OVERALL PREVALENCE OF FRUSTRATION	49%	43	55	.718	

I<sup>2</sup> = 0%

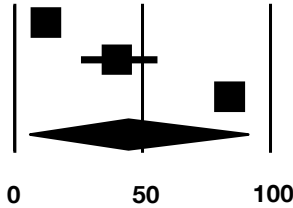
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### Meta Analysis



## ANGER

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
O'Beirne et al. (2012)	12%	9	17	.000	
Hobgood et al. (2005)	40%	26	56	.209	
Leinweber et al. (2017)	84%	81	87	.000	
OVERALL PREVALENCE OF ANGER	44%	6	91	.858	

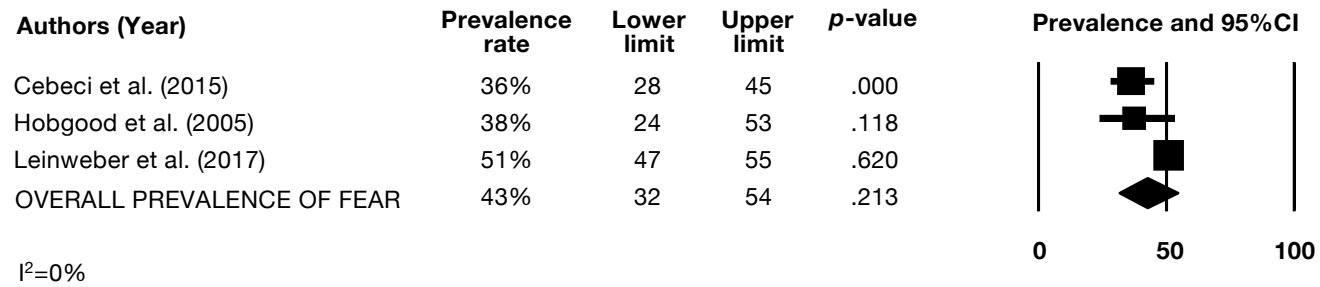
I<sup>2</sup>= 0%

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### Meta Analysis

## FEAR

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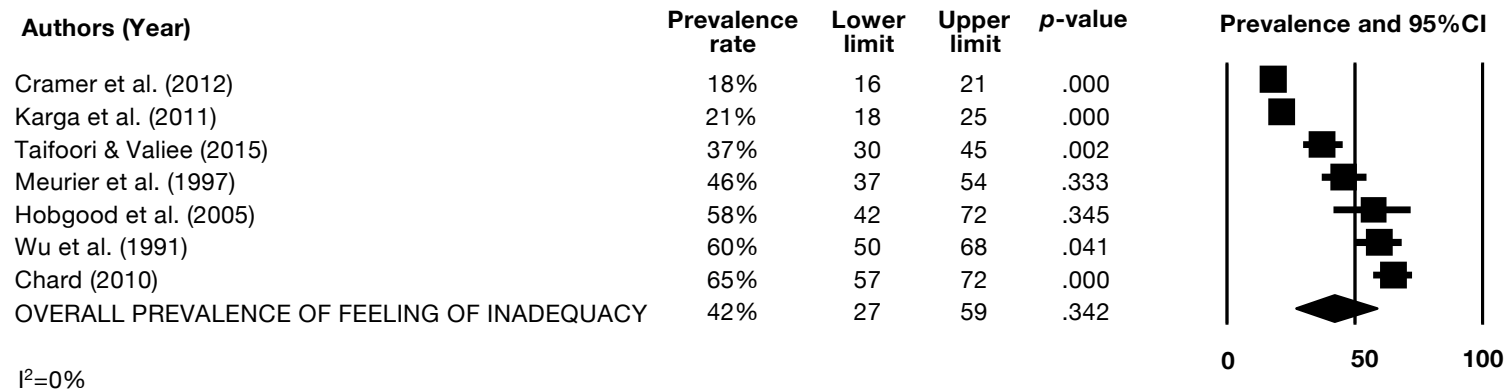


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### Meta Analysis

## FEELING OF INADEQUACY

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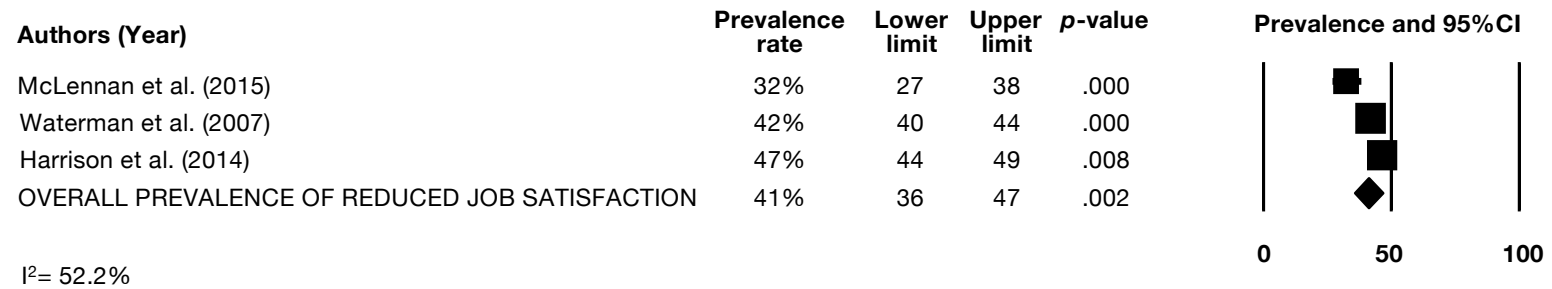



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### Meta Analysis

## REDUCED JOB SATISFACTION

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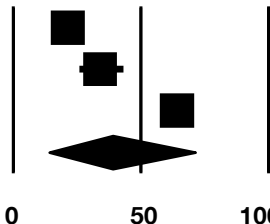


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**Meta Analysis**

## CONCERN REGARDING COLLEAGUES' REACTIONS

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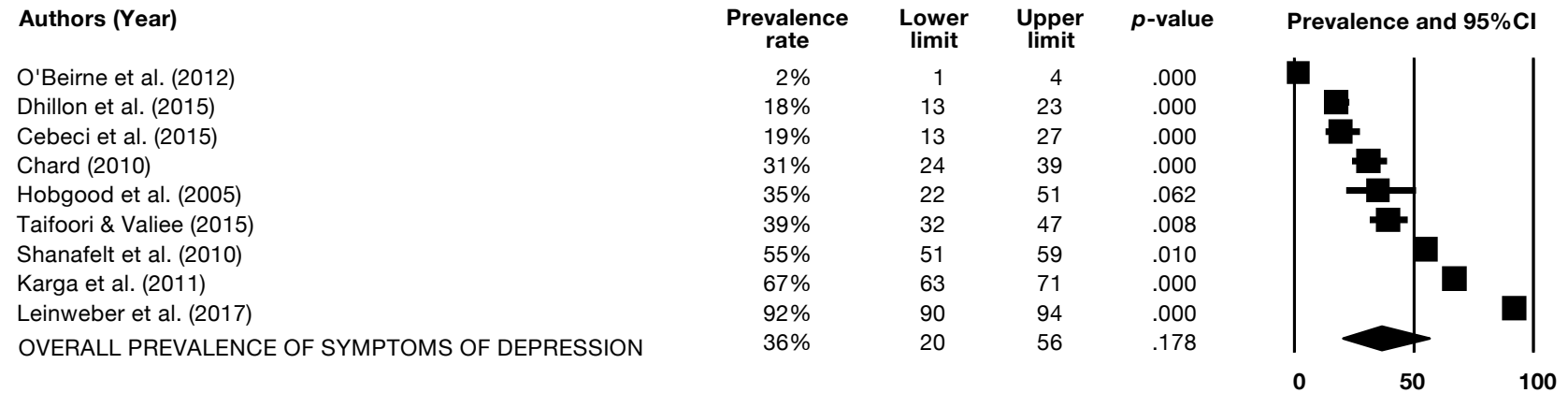
Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
Karga et al. (2011)	21%	18	25	.000	
Joesten et al. (2015)	34%	26	43	.001	
Schröder et al (2016).	64%	61	67	.000	
OVERALL PREVALENCE OF CONCERN REGARDING COLLEAGUES' REACTIONS	39%	14	71	.511	

$I^2=0\%$

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**Meta Analysis**

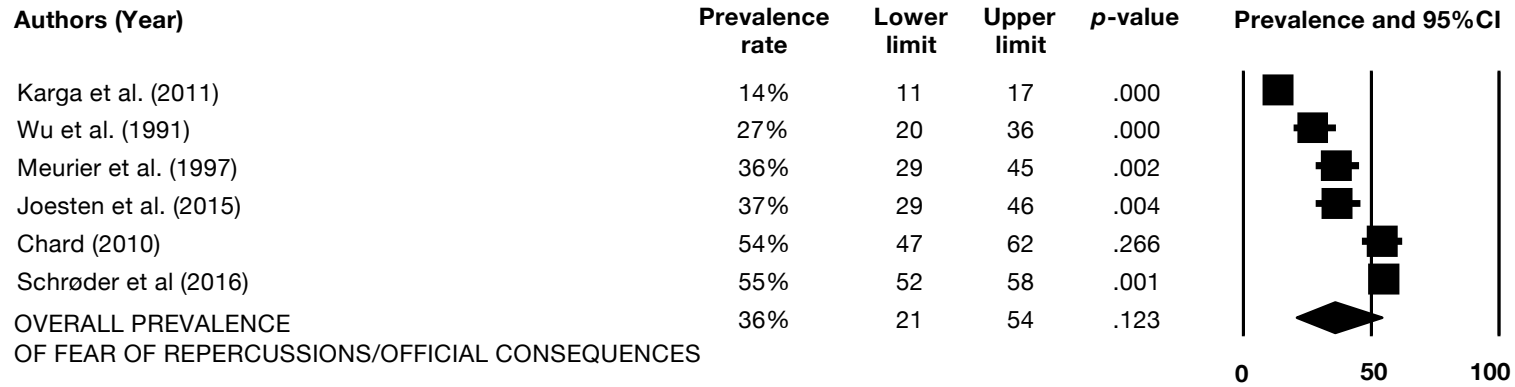
## SYMPTOMS OF DEPRESSION



$I^2=48.6\%$

### Meta Analysis

## FEARS OF REPERCUSSIONS/OFFICIAL CONSEQUENCES

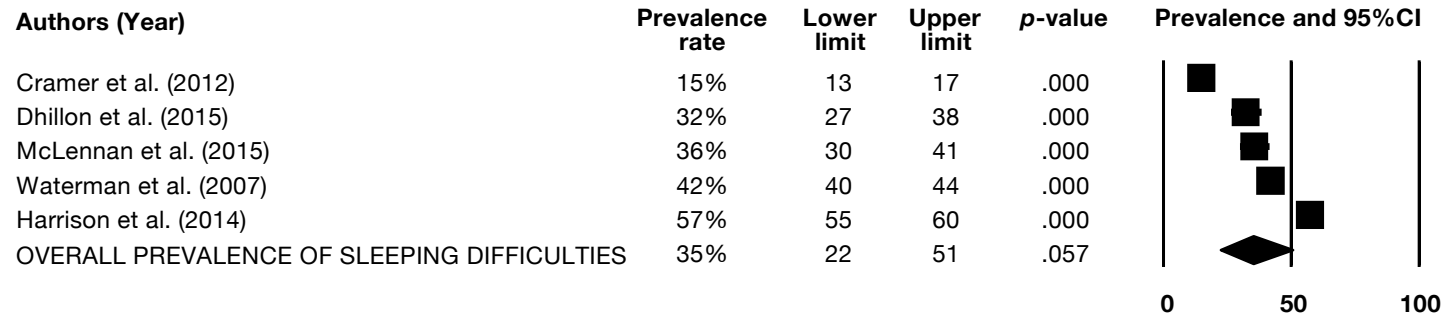


$I^2=0\%$

### Meta Analysis

## SLEEPING DIFFICULTIES

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$I^2 = 5.0\%$






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### Meta Analysis



## ANGER TOWARDS OTHERS

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
Karga et al. (2011)	15%	12	18	.000	
Chard (2010)	38%	31	46	.003	
Meurier et al. (1997)	42%	34	51	.066	
Taifoori & Valiee (2015)	44%	36	52	.126	
OVERALL PREVALENCE OF ANGER TOWARDS OTHERS	33%	18	52	.078	

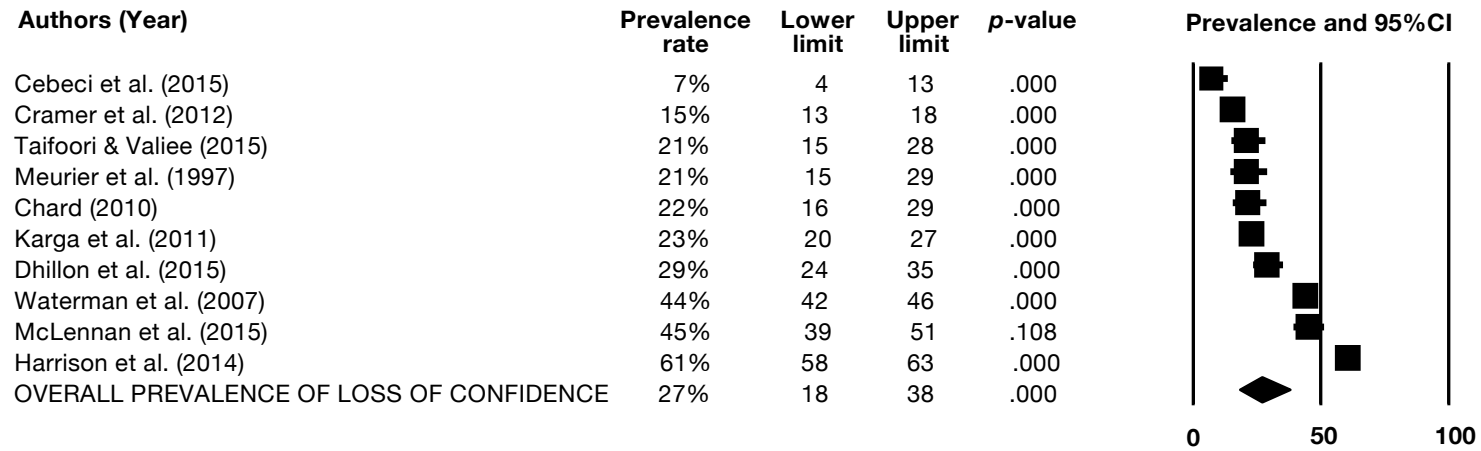
$I^2=0\%$

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### Meta Analysis

## LOSS OF CONFIDENCE

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$I^2 = 6.5\%$

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### Meta Analysis

## CONCERN REGARDING PATIENTS' REACTIONS

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
Cebeci et al. (2015)	2%	0	6	.000	
Joesten et al. (2015)	31%	23	40	.000	
OVERALL PREVALENCE OF CONCERN REGARDING PATIENTS' REACTIONS	8%	0	70	.148	

0 50 100


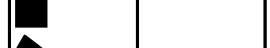
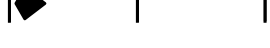
$I^2 = 0\%$

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### Meta Analysis

## SELF-DOUBTS

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Authors (Year)	Prevalence rate	Lower limit	Upper limit	p-value	Prevalence and 95%CI
O'Beirne et al. (2012)	3%	2	7	.000	
Cramer et al. (2012)	9%	7	10	.000	
OVERALL PREVALENCE OF SELF-DOUBTS	6%	2	14	.000	

I<sup>2</sup>= 0%

0      50      100

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**Meta Analysis**

## SUPPLEMENTAL DATA FILE 7

### Prevalence rates of ungrouped variables of interest

#### Cebeci et al. (2015)

- *panic/worries* (10%\*, 13/124)

#### Chard (2010)

- *I felt devastated that I may have have hurt someone* (76%; 118/158)

#### Cramer et al. (2012)

- *aufgeregt, gestresst oder geärgert* [Engl. *being nervous, stressed, or angry*] (52.6%; 579/1,100)
- *schämte mich oder fühlte mich schuldig* [Engl. *I was embarrassed or I felt guilty*] (34.2%, n=376/1,100)

#### Dhillon et al. (2015)

- *Difficulty concentrating* (16%; 40/245)
- *Change in appetite* (9.0%; 22/245)

#### Harrison et al. (2014)

- *Negative towards yourself (eg, shame, guilt or feeling incompetent)* (27.3%; 399/1,463)

#### Joesten et al. (2015)

- *There were times when I felt less able to work safely and effectively because of what happened.* (28.4%; 34/120)
- *I found it difficult to continue to practice effectively after the event* (27.5%; 33/120)
- *I had extreme anxiety about disclosing it to the patient and/or family* (27.5%; 33/120)

#### Karga et al. (2011)

- *fearful of patient's clinical course* (36.0%; 192/536\*\*)

#### Leinweber et al. (2017)

- *powerlessness* (82%; 563/687\*\*)
- *feeling horrified* (75%; 515/687\*\*)
- *prevalence of probable PTSD* (17%; 95% CI 14.2 to 20.0; 102/601)

#### O'Beirne et al. (2012)

- *blame* (5.5%; 13/238\*\*)
- *relief* (3.8%; 9/238\*\*)
- *shame* (2.9%; 6/238\*\*)

#### Schrøder et al. (2016)

- *In the beginning I felt guilty that things turned out the way they did* (49.7%; 507/1,021)

#### Taifoori & Valiee (2015)

- *Being upset about having harmed the patient* (85.6 %; 131/153)
- *Fear of others' reactions* (47.1%, 72/153)
- *Nonchalant and dispassionate* (10.5 %, 16/153)
- *Self-criticism and self-blame* (71.2%; 109/153)

#### Wahlberg et al. (2016)

- *Probable symptoms of PTSD* (15%; 95% CI 13 to 17; 244/1,628\*\*)
- *Symptoms of probable PTSD* (5% 95% CI 4 to 7; 81/1,628\*\*)

- *Emotions of intense fear, helplessness or panic (A2:1 criterion)* (43%; 700/1,628<sup>\*\*</sup>)
- *Threat to professional role/identity (A2:2 criterion)* (19.8%; 323/1,628<sup>\*\*\*</sup>)
- *at least one symptom of avoidance or numbing (C criterion)* (36.7%; 598/1,628<sup>\*\*\*</sup>)
- *one or more symptoms of arousal (D criterion)* (57.6%; 937/1,628<sup>\*\*\*</sup>)

\* we converted the absolute frequency into the percentage

\*\* we converted the percentage into the absolute frequency

\*\*\* we summed up the percentages reported for obstetricians and midwives and then converted the overall percentage into the absolute frequency