Healthcare Worker Resilience: The Intersection of Quality, Stress and Fatigue

J. Bryan Sexton, PhD
Associate Professor, Department of Psychiatry
Director of Patient Safety Center, Duke University Health System
Webinars Given by the Patient Safety Center

- Safety Culture 101: Work with Culture Data
- Psychological Safety
- Leadership Engagement in Quality & Patient Safety
- Intro to Safety Culture Debriefings
- Stress Recognition and Coaching
- Finding, Fixing and Learning from Defects
- Introduction to TeamSTEPPS
- Caregiver Resilience and Quality Improvement: Double Edged Sword
- Fatigue Management
- Conflict Resolution
- Care Coordination and Handoffs
- Advanced RCAs

For Information on our webinars or our 2012 Resilience Collaborative, please contact Christen Fullwood at 919.257.3376

Courses:

- **Patient Safety Leadership Training & Certification Course** (3 days - Offered in April & September)
  - Course Description
  - Registration Information; April 2012
  - Registration Information; July 2012
  - Registration Information; Sept 2012

- **Physician Leadership in Patient Safety & Quality** (1 Day)
  - Course Description
  - Registration Information; February 2012

- **TeamSTEPPS™ Train the Trainer** (2 days)
  - Course Description
  - Registration Information; November 2012

- **TeamSTEPPS™ Essentials - (4 Hours)**
  - Course Description
  - Registration Information; March 2012
  - Registration Information; June 2012
  - Registration Information; August 2012
  - Registration Information; October 2012

- **Enhancing Caregiver Resilience: Burnout & Quality Improvement Full Course**
  (3 days: 1 full day plus 2 half days, and a follow-up webinar - Offered in May & November)
  - Course Description
  - Registration Information; May 2012
  - Registration Information; November 2012

http://bit.ly/WISERstudy
Redefining Quality

• How we take care of our patients
• How we take care of each other
• How we take care of ourselves
Resilience

Self Aware

Mindfulness

Purpose

Self Care

Relationships
Resilience

Self Aware

Relationships

Mindfulness

Self Care

Purpose
What is Resilience?

• Traditionally, resilience has come to mean an individual's ability to overcome adversity and continue his or her normal development.

• More recently and cross-culturally (Ungar, 2008): “In the context of exposure to significant adversity, whether psychological, environmental, or both, resilience is both the capacity of individuals to navigate their way to health-sustaining resources, including opportunities to experience feelings of well-being, and a condition of the individual’s family, community and culture to provide these health resources and experiences in culturally meaningful ways.”
Resilience across Cultures

Michael Ungar

Correspondence to Michael Ungar, Dalhousie University, School of Social Work, Nova Scotia, Canada. E-mail: michael.ungar@dal.ca

Summary

Findings from a 14 site mixed methods study of over 1500 youth globally support four propositions that underlie a more culturally and contextually embedded understanding of resilience: 1) there are global, as well as culturally and contextually specific aspects to young people’s lives that contribute to their resilience; 2) aspects of resilience exert differing amounts of influence on a child’s life depending on the specific culture and context in which resilience is realized; 3) aspects of children’s lives that contribute to resilience are related to one another in patterns that reflect a child’s culture and context; 4) tensions between individuals and their cultures and contexts are resolved in ways that reflect highly specific relationships between aspects of resilience. The implications of this cultural and contextual understanding of resilience to interventions with at-risk populations are discussed.

Major article

Nurse staffing, burnout, and health care–associated infection

Jeannie P. Cimiotti DNSc, RN\textsuperscript{a,b,\*}, Linda H. Aiken PhD\textsuperscript{c}, Douglas M. Sloane PhD\textsuperscript{c}, Evan S. Wu BS\textsuperscript{c}

\textsuperscript{a} New Jersey Collaborating Center for Nursing, Rutgers, The State University of New Jersey, Newark, NJ
\textsuperscript{b} College of Nursing, Rutgers, The State University of New Jersey, Newark, NJ
\textsuperscript{c} Center for Health Outcomes and Policy Research, School of Nursing, University of Pennsylvania, Philadelphia, PA

\textbf{Background:} Each year, nearly 7 million hospitalized patients acquire infections while being treated for other conditions. Nurse staffing has been implicated in the spread of infection within hospitals, yet little evidence is available to explain this association.

\textbf{Methods:} We linked nurse survey data to the Pennsylvania Health Care Cost Containment Council report on hospital infections and the American Hospital Association Annual Survey. We examined urinary tract and surgical site infection, the most prevalent infections reported and those likely to be acquired on any unit within a hospital. Linear regression was used to estimate the effect of nurse and hospital characteristics on health care–associated infections.

\textbf{Results:} There was a significant association between patient-to-nurse ratio and urinary tract infection (0.86; \textit{P} = .02) and surgical site infection (0.93; \textit{P} = .04). In a multivariate model controlling for patient severity and nurse and hospital characteristics, only nurse burnout remained significantly associated with urinary tract infection (0.82; \textit{P} = .03) and surgical site infection (1.56; \textit{P} < .01) infection. Hospitals in which burnout was reduced by 30\% had a total of 6,239 fewer infections, for an annual cost saving of up to $68 million.

\textbf{Conclusions:} We provide a plausible explanation for the association between nurse staffing and health care–associated infections. Reducing burnout in registered nurses is a promising strategy to help control infections in acute care facilities.
“The negative screams at you, but the positive only whispers...”

-- Barbara Fredrickson
“Genetic Dispositions”

Our Darwinian DNA utilizes some negative-emotion mechanisms to help us pass our traits on to offspring:

- Ability to worry about the future
- Remember bad things that happened to us
- Anticipate new things that could go wrong

- These help us with survival, but not with happiness
Cultivating Positive Emotion: 3 to 1 Ratio

Meeting agenda item: What are we doing well?
I can't change the direction of the wind, but I can adjust my sails to always reach my destination.

- Jimmy Dean
Random acts of Kindness:

Doing a kindness produces the single most reliable momentary increase in well-being of any exercise that has been tested

Find one wholly unexpected kind thing to do tomorrow and just do it. Notice what happens to your mood.

-- Marti Seligmann, 2011
4 a.m. Friend:

Is there someone in your life whom you would feel comfortable phoning at four in the morning to tell your troubles to?

• If so, you are likely to live longer than those who say “no.” Discovered by George Vaillant (Harvard psychiatrist) and called the capacity to be loved.

• Conversely, loneliness is such a disabling condition that it suggests the pursuit of relationships is fundamental to well-being.

-- Marti Seligmann, 2011
Friendship Networks:
Half of all friends replaced every 7 years

• Who do you talk with, regarding personal issues?
• Who helps you with DIY in your home?
• Who do you pop by to see?

-Sociologist Gerald Mollenhorst of Utrecht University
The most important single ingredient in the formula of success is knowing how to get along with people.

Theodore Roosevelt; The 26th US President
Good Attachments = you are there for me when things go wrong


Post-traumatic stress disorder, resilience and vulnerability

Ayesha S. Ahmed

<table>
<thead>
<tr>
<th>Box 2 Factors promoting resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal characteristics</strong></td>
</tr>
<tr>
<td>• Self-esteem</td>
</tr>
<tr>
<td>• Trust</td>
</tr>
<tr>
<td>• Resourcefulness</td>
</tr>
<tr>
<td>• Self-efficacy</td>
</tr>
<tr>
<td>• Internal locus of control</td>
</tr>
<tr>
<td>• Secure attachments</td>
</tr>
<tr>
<td>• Sense of humour</td>
</tr>
<tr>
<td>• Self-sufficiency</td>
</tr>
<tr>
<td>• Sense of mastery</td>
</tr>
<tr>
<td>• Optimism</td>
</tr>
<tr>
<td>• Interpersonal abilities such as social skills, problem-solving skills and impulse control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>External factors</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Safety</td>
</tr>
<tr>
<td>• Religious affiliation</td>
</tr>
<tr>
<td>• Strong role models</td>
</tr>
<tr>
<td>• Emotional sustenance: the extent to which others provide the individual with understanding, companionship, sense of belonging and positive regard</td>
</tr>
</tbody>
</table>
Attachment

An abundance of research shows that the perception that one has supportive others to turn to in times of stress (i.e., perceived support) buffers against the harmful effects of stress (e.g., Cohen, 1992; Collins & Feeney, 2000; Sarason, Sarason, & Gurung, 1997).
But if things go right, and you are there for me, does that have an independent impact on relationship functioning?
...79 dating couples... Both self-report data and observational codes showed that 2 months later, responses to positive event discussions were more closely related to relationship well-being and break-up than were responses to negative event discussions. The results are discussed in terms of the recurrent, but often overlooked, role that positive emotional exchanges play in building relationship resources.
How do you respond when people share good news with you? The manner in which you respond when others share triumph with you directly builds or undermines your relationships. Research into couples and intimate relationships suggests that supporting partners when good things happen is as important in building a relationship as supporting when bad things happen.
<table>
<thead>
<tr>
<th>Active Destructive Responding</th>
<th>Finding the bad in the good: where you find the cloud in the silver lining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Destructive Responding</td>
<td>Not caring at all about their news</td>
</tr>
<tr>
<td>Passive Constructive Responding</td>
<td>Not making a big deal out of it</td>
</tr>
<tr>
<td>Active Constructive Responding</td>
<td>Reacting positively, being interested and caring about their news.</td>
</tr>
</tbody>
</table>
Active Constructive Responding

Maintain eye contact / smile / touch / laugh

• Don’t overdo the praise and positive feedback (it can make people feel uncomfortable/patronized)
• Concentrate on asking questions which encourage the person to talk about their good news/ savor their positive emotions.
• If this type of active and constructive response does not come easily to you try to ask at least three questions.

Time Remaining: 00:00
Cultivating Positive Emotion: 3 to 1 Ratio
The most expensive real estate in the body

- 2% of total bodyweight
- 20% of oxygen
- 20-30% of Kcals
- More neurons than stars in the galaxy
Prefrontal Cortex

• Ability to regulate emotions and be socially appropriate
• Logic & Reason:
  – Focus, empathy, foresight, organization, learning from mistakes, insight, planning, judgment
• Busier in women than in men
Example of impact on critical care nurses

- Half are emotionally exhausted (burned out)
- 2 out of 3 have difficulty sleeping
- 1 out of 4 are clinically depressed

Burnout ≠ Lazy
Are they burned out?

A brief tour of prevalence…
Burnout is common among physicians in the United States, with an estimated 30% to 40% experiencing burnout.
Objective: To investigate resident burnout in relation to work and home-related factors.

Method: Maslach Burnout Inventory was mailed to residents in eight different medical specialties, with a response rate of 35%. Results: Overall, 50% of residents met burnout criteria, ranging from 75% (obstetrics/gynecology) to 27% (family medicine). The first year of residency, being single, personal stress, and dissatisfaction with faculty were independently associated with burnout. Conclusions: Efforts to reduce resident burnout nationally would benefit from expanding beyond the work-hours regulation. (Academic Psychiatry 2004; 28:240–242)
## Burnout Comparison Among Residents in Different Medical Specialties (49% 27-75%)
Martini et al. 2004, Academic Psychiatry

### TABLE 1. Percentage of Residents Meeting Criteria for Burnout by Specialty

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Number of Residents</th>
<th>Residents Responding</th>
<th>Burnout Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Obstetrics/gynecology</td>
<td>36</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Internal medicine</td>
<td>114</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Neurology</td>
<td>16</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>21</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>Dermatology</td>
<td>10</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>General surgery</td>
<td>59</td>
<td>25</td>
<td>42</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>29</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Family medicine</td>
<td>36</td>
<td>15</td>
<td>42</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>321</strong></td>
<td><strong>110</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

*Three responders did not report program affiliation.*
Burnout and psychiatric morbidity in new medical graduates

Simon M Willcock, Michele G Daly, Christopher C Tennant and Benjamin J Allard

To gain unconditional medical registration, all Australian medical graduates undertake a year of internship within the public hospital system. The intern year has historically been seen as a trial of spirit and stamina and a primary initiation rite,¹ and represents an initiation into a challenging career where a stoic work ethic is the dominant culture and personal needs are secondary to the needs of both patients and employers. The internship period has been associated with elevated levels of psychiatric morbidity (including depression and anxiety)²,³ and burnout.⁴ Levels of depression and anxiety reported among interns are greater than for the general community, and increase significantly.

**ABSTRACT**

**Objective:** To determine the prevalence of psychiatric morbidity and burnout in final-year medical students, and changes in these measures during the intern year.

**Design:** Prospective longitudinal cohort study over 18 months, with assessment of psychiatric morbidity and burnout on six occasions.

**Participants:** All 117 students in the first graduating cohort of the University of Sydney Graduate Medical Program were invited to participate in the study; 110 consented.

**Outcome measures:** Psychiatric morbidity assessed with the 28-item General Health Questionnaire and burnout assessed with the Maslach Burnout Inventory.

**Results:** The point prevalence of participants meeting criteria for psychiatric morbidity and burnout rose steadily throughout the study period.

**Conclusions:** Internship remains a stressful time for medical graduates, despite initiatives to better support them during this period. The implications for the doctors themselves and for the communities they serve warrant further attention, including programs specifically aimed at reducing the rate of psychological morbidity and burnout during internship.

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3 Maslach Burnout Inventory subscale scores (mean [SD]) for 101 participating medical students in their final year at study enrolment (Time 1)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Participating medical students</th>
<th>Medical practitioner</th>
<th>Post-secondary school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal accomplishment (PA)</td>
<td>36.74 (6.72)</td>
<td>36.53 (7.34)</td>
<td>39.17 (7.92)</td>
</tr>
<tr>
<td>Emotional exhaustion (EE)</td>
<td>17.57 (8.27)</td>
<td>22.19 (10.53)</td>
<td>18.57 (11.95)</td>
</tr>
<tr>
<td>Depersonalisation (DP)</td>
<td>5.99 (4.32)</td>
<td>7.12 (5.22)</td>
<td>5.57 (6.63)</td>
</tr>
</tbody>
</table>

*Occupational subgroups (data from the Maslach Burnout Inventory manual).⁵

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4 Mean emotional exhaustion and depersonalisation scores over the study period

Bars show 95% confidence intervals.

---

Point (with a GHQ case-identification score of >7 to increase the specificity of the instrument), emotional exhaustion was strongly associated with risk of psychiatric disturbance equivalent to rates reported for an Australian youth cohort. Prevalences increase significantly during internship, with 70% meeting criteria for psychiatric disturbance during internship.
34% of faculty members met the criteria for burnout.
The high prevalence of burnout in the academic setting (34% of surveyed physicians) noted by Shanafelt and colleagues requires that we pay attention.


In comparative studies of United States and Dutch physicians, it was shown to be moderated by work control, work-home balance, and home support.


There is very real human suffering among burned out physicians and among their families.

Preventing Burnout in Academic Medicine
Mark Linzer, MD: Arch Intern Med. 2009;169(10):927-928

- Leaders should role model stress management and personal-professional balance and try to show how much they value the well-being of their physicians.

- If time spent on their career goals < 10%, prevalence of burnout > 50%.

- Convincingly linked burnout with intent to leave costing $250 000 per primary care physician (generalists and subspecialists could cost millions).
Table 4: Nurse outcomes in 12 European countries and the US. Data are number of nurses reporting outcome/total number of nurses surveyed, and percentage

<table>
<thead>
<tr>
<th>Country</th>
<th>Reportd ward to have poor or fair quality of care</th>
<th>Gave ward poor or failing safety grade</th>
<th>Regarded themselves to be burnt out</th>
<th>Dissatisfied with job</th>
<th>Intended to leave their job in the next year</th>
<th>Not confident that patients can manage own care after hospital discharge</th>
<th>Not confident that hospital management would resolve patients’ problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>886/3167</td>
<td>199/3150</td>
<td>6</td>
<td>730/2938</td>
<td>680/3159</td>
<td>934/3164</td>
<td>1921/3153</td>
</tr>
<tr>
<td>England</td>
<td>540/2899</td>
<td>191/2895</td>
<td>7</td>
<td>1138/2699</td>
<td>1136/2904</td>
<td>1261/2896</td>
<td>981/2901</td>
</tr>
<tr>
<td>Finland</td>
<td>141/1099</td>
<td>76/1095</td>
<td>7</td>
<td>232/1047</td>
<td>300/1114</td>
<td>546/1111</td>
<td>441/1098</td>
</tr>
<tr>
<td>Germany</td>
<td>526/1507</td>
<td>94/1506</td>
<td>6</td>
<td>431/1430</td>
<td>561/1505</td>
<td>539/1498</td>
<td>473/1505</td>
</tr>
<tr>
<td>Greece</td>
<td>170/361</td>
<td>61/358</td>
<td>17</td>
<td>246/315</td>
<td>199/358</td>
<td>177/358</td>
<td>231/358</td>
</tr>
<tr>
<td>Ireland</td>
<td>152/1389</td>
<td>117/1385</td>
<td>8</td>
<td>536/1293</td>
<td>581/1383</td>
<td>612/1380</td>
<td>588/1385</td>
</tr>
<tr>
<td>Netherlands</td>
<td>756/2185</td>
<td>123/2187</td>
<td>6</td>
<td>211/2061</td>
<td>240/2188</td>
<td>418/2197</td>
<td>889/2195</td>
</tr>
<tr>
<td>Norway</td>
<td>468/3732</td>
<td>199/3712</td>
<td>5</td>
<td>823/3501</td>
<td>773/3729</td>
<td>942/3712</td>
<td>2097/3710</td>
</tr>
<tr>
<td>Poland</td>
<td>683/2581</td>
<td>463/2579</td>
<td>18</td>
<td>929/2321</td>
<td>663/2584</td>
<td>1056/2387</td>
<td>1890/2571</td>
</tr>
<tr>
<td>Spain</td>
<td>897/2794</td>
<td>173/2784</td>
<td>6</td>
<td>787/2670</td>
<td>1053/2786</td>
<td>740/2774</td>
<td>1554/2779</td>
</tr>
<tr>
<td>Sweden</td>
<td>2750/100</td>
<td>1117/100</td>
<td>11</td>
<td>2788/9477</td>
<td>2251/100</td>
<td>3418/100</td>
<td>2833/9995</td>
</tr>
<tr>
<td>Switzerland</td>
<td>324/1604</td>
<td>71/1606</td>
<td>4</td>
<td>228/1563</td>
<td>338/1610</td>
<td>447/1623</td>
<td>564/1612</td>
</tr>
<tr>
<td>US</td>
<td>4196/26</td>
<td>1628/26</td>
<td>6</td>
<td>9122/277</td>
<td>6692/26</td>
<td>3767/271</td>
<td>1449/25</td>
</tr>
</tbody>
</table>
Conclusions  In hospitals with high patient-to-nurse ratios, surgical patients experience higher risk-adjusted 30-day mortality and failure-to-rescue rates, and nurses are more likely to experience burnout and job dissatisfaction.
Race, Ethnicity, and Medical Student Well-being in the United States

Liselotte N. Dyrbye, MD; Matthew R. Thomas, MD; Anne Eacker, MD; William Harper, MD; F. Stanford Massie Jr, MD; David V. Power, MD, MPH; Mashele Huchka, BS; Paul J. Novotny, MS; Jeff A. Sloan, PhD; Tait D. Shanafelt, MD

Background: Little is known about the training experience of minority medical students. We explore differences in the prevalence of burnout, depressive symptoms, and quality of life (QOL) among minority and nonminority medical students as well as the role race/ethnicity plays in students’ experiences.

Methods: Medical students (N=3080) at 5 medical schools were surveyed in 2006 using validated instruments to assess burnout, depression, and QOL. Students were also asked about the impact of race/ethnicity on their training experience.

Results: The response rate was 55%. Nearly half of students reported burnout (47%) and depressive symptoms (49%). Mental QOL scores were lower among students than among the age-matched general population (43.1 vs 47.2; P < .001). Prevalence of depressive symptoms was similar regardless of minority status, but more nonminority students had burnout (39% vs 33%; P < .03). Minority students were more likely to report that their race/ethnicity had adversely affected their medical school experience (11% vs 2%; P < .001) and cited racial discrimination, racial prejudice, feelings of isolation, and different cultural expectations as causes. Minority students reporting such experiences were more likely to have burnout, depressive symptoms, and low mental QOL scores than were minority students without such experiences (all P < .05).

Conclusions: Symptoms of distress are prevalent among medical students. While minorities appear to be at lower risk for burnout than nonminority students, race does contribute to the distress minority students do experience. Additional studies are needed to define the causes of these perceptions and to improve the learning climate for all students.

Arch Intern Med. 2007;167(19):2103-2109
Results 24 (20%) of the participating residents met the criteria for depression and 92 (74%) met the criteria for burnout. Active surveillance yielded 45 errors made by participants. Depressed residents made 6.2 times as many medication errors per resident month as residents who were not depressed: 1.55 (95% confidence interval 0.57 to 4.22) compared with 0.25 (0.14 to 0.46, P<0.001). Burnt out residents and non-burnt out residents made similar rates of errors per resident month: 0.45 (0.20 to 0.98) compared with 0.53 (0.21 to 1.33, P=0.2).

Conclusions Depression and burnout are major problems among residents in paediatrics. Depressed residents made significantly more medical errors than their nondepressed peers; however, burnout did not seem to correlate with an increased rate of medical errors.
Nurse Burnout and Patient Satisfaction

Doris C. Vahey, PhD, RN†, Linda H. Aiken, PhD, RN†‡, Douglas M. Sloane, PhD†, Sean P. Clarke, PhD, RN†, and Delfino Vargas, PhD†
†Mount Sinai Medical Center, Department of Nursing, New York, NY
‡Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing, Philadelphia, Pennsylvania
‡Department of Sociology, University of Pennsylvania, Philadelphia, Pennsylvania

Abstract

Background—Amid a national nurse shortage, there is growing concern that high levels of nurse burnout could adversely affect patient outcomes.

Objectives—This study examines the effect of the nurse work environment on nurse burnout, and the effects of the nurse work environment and nurse burnout on patients’ satisfaction with their nursing care.

Research Design/Subjects—We conducted cross-sectional surveys of nurses (N = 820) and patients (N = 621) from 40 units in 20 urban hospitals across the United States.

Measures—Nurse surveys included measures of nurses’ practice environments derived from the revised Nursing Work Index (NWI-R) and nurse outcomes measured by the Maslach Burnout Inventory (MBI) and intentions to leave. Patients were interviewed about their satisfaction with nursing care using the La Monica-Oberst Patient Satisfaction Scale (LOPSS).

Results—Patients cared for on units that nurses characterized as having adequate staff, good administrative support for nursing care, and good relations between doctors and nurses were more than twice likely as other patients to report high satisfaction with their care, and their nurses reported significantly lower burnout. The overall level of nurse burnout on hospital units also affected patient satisfaction.

Conclusions—Improvements in nurses' work environments in hospitals have the potential to simultaneously reduce nurses' high levels of job burnout and risk of turnover and increase patients’ satisfaction with their care.
The prevalence and impact of post traumatic stress disorder and burnout syndrome in nurses.
Mealer M, Burnham EL, Goode CJ, Rothbaum B, Moss M.
Division of Pulmonary Sciences and Critical Care Medicine, Department of Medicine, University of Colorado School of Medicine, Denver, Colorado 80045, USA. Meredith.Mealer@UCDenver.edu

18% (61/332) met diagnostic criteria for PTSD
86% (277/323) met criteria for BOS
# Patterns of distress in US medical students

Liselotte N. Dyrbye¹, William Harper², Steven J. Durning³, Christine Moutier⁴, Matthew R. Thomas¹, F. Stanford Massie Jr⁵, Anne Eacker⁶, David V. Power⁷, Daniel W. Szydlo⁸, Jeff A. Sloan⁸ & Tait D. Shanafelt¹

## Table 1. Types of distress among responding medical students at seven medical schools, 2007.

<table>
<thead>
<tr>
<th>Stress domain</th>
<th>Prevalence (%) or mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Burnout</strong></td>
<td></td>
</tr>
<tr>
<td>Burned out, no. (%)</td>
<td>1069/2154 (49.6%)</td>
</tr>
<tr>
<td>Emotional exhaustion, mean ± SD</td>
<td>24.0 ± 10.8</td>
</tr>
<tr>
<td>Depersonalization, mean ± SD</td>
<td>7.3 ± 5.9</td>
</tr>
<tr>
<td>Personal accomplishment, mean ± SD</td>
<td>36.2 ± 7.7</td>
</tr>
<tr>
<td><strong>QOL</strong></td>
<td></td>
</tr>
<tr>
<td>Mental, mean ± SD</td>
<td>43.5 ± 11.0</td>
</tr>
<tr>
<td>Mental QOL score 1/2 SD below age and gender-matched population norm, no. (%)</td>
<td>899/2178 (41.3%)</td>
</tr>
<tr>
<td>Physical, mean ± SD</td>
<td>52.2 ± 6.9</td>
</tr>
<tr>
<td>Mental QOL score 1/2 SD below age and gender-matched population norm, no. (%)</td>
<td>486/2178 (22.3%)</td>
</tr>
<tr>
<td>Symptoms of depression, no. (%)</td>
<td>1037/2228 (46.5)</td>
</tr>
<tr>
<td>Epworth Sleepiness Scale, mean ± SD</td>
<td>10.2 ± 4.36</td>
</tr>
<tr>
<td>Excessive fatigue, no. (%)</td>
<td>1034/2233 (46.3%)</td>
</tr>
<tr>
<td>Perceived Stress Scale, mean ± SD</td>
<td>16.6 ± 7.49</td>
</tr>
<tr>
<td>High stress, no. (%)</td>
<td>1073/2206 (48.6%)</td>
</tr>
</tbody>
</table>

Notes: 

- aMaslach Burnout Inventory (Maslach et al. 1996). A score of ≥27 on the emotional exhaustion subscale score and/or ≥10 on the depersonalization subscale. 
- bScore of ≥11, and 
- cScore of ≥1/2 SD than the norm for age-matched US general population.
# Patterns of distress in US medical students

Table 3. Factors independently associated with serious thoughts of dropping out of medical school or suicidal ideation.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>Odds ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dropout</td>
<td>Burned out</td>
<td>2.402</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Positive depression screen</td>
<td>2.185</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>Low physical QOL</td>
<td>2.156</td>
<td>0.0021</td>
</tr>
<tr>
<td></td>
<td>Low mental QOL</td>
<td>2.104</td>
<td>0.0002</td>
</tr>
<tr>
<td></td>
<td>Has children</td>
<td>2.048</td>
<td>0.0011</td>
</tr>
<tr>
<td></td>
<td>High stress (PSS ≥ 17)</td>
<td>1.954</td>
<td>0.0045</td>
</tr>
<tr>
<td></td>
<td>Third-year student&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.502</td>
<td>0.0204</td>
</tr>
<tr>
<td></td>
<td>High fatigue (Epworth ≥ 11)</td>
<td>1.460</td>
<td>0.0221</td>
</tr>
<tr>
<td></td>
<td>$50,000–$99,999 student loan debt&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.589</td>
<td>0.0089</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>Positive depression screen</td>
<td>4.052</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>Low mental QOL</td>
<td>1.982</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>Fourth-year student&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.695</td>
<td>0.0064</td>
</tr>
<tr>
<td></td>
<td>Burned out</td>
<td>1.686</td>
<td>0.0037</td>
</tr>
<tr>
<td></td>
<td>Has children</td>
<td>1.579</td>
<td>0.0399</td>
</tr>
<tr>
<td></td>
<td>≥1 Negative life events last 12 months</td>
<td>1.545</td>
<td>0.0044</td>
</tr>
<tr>
<td></td>
<td>Third-year student</td>
<td>1.458</td>
<td>0.0392</td>
</tr>
</tbody>
</table>

Notes: <sup>a</sup>For school year students who indicated they were taking a break from medical school to pursue enrichment activities, such as research projects or graduate work, were used as reference value, <sup>b</sup>For debt, <$50,000 was used as reference value.
Burnout and Suicidal Ideation among U.S. Medical Students

Dyrbye et al., 2010

50% of medical students burned out
10% have suicidal ideation
Although the groups (surgeons & internal medicine physicians) in these 2 studies were disparate, the same 3 factors (hours worked per week, work/home conflict in the last 3 weeks, and resolving the last work/home conflict in favor of work) remained independent factors associated with burnout in multivariable models in both samples with strikingly similar odds ratios. These findings suggest that work/home conflict and how that conflict is managed may be central factors for physician burnout in a variety of practice settings.
Burnout syndrome in critical care nursing staff.


Am J Respir Crit Care Med. 2007 Apr 1;175(7):634-6.

• Protective factors:
  – research participation
  – better palliative care
  – # decisions to forego life-sustaining treatmentss in the last week
  – age
  – ability to chose days off
  – quality of working relationships (pts, mgr, MDs)
Background: Despite extensive burnout research, to our knowledge, no published studies have compared rates of burnout among medical specialties or to the general US population.

Methods: We conducted a telephone survey of a large sample of US physicians using the American Medical Association Masterfile and surveyed the general US population. Burnout was measured using validated tools, and overall satisfaction with work-life balance was estimated.

Results: Of 27,276 physicians invited to participate, 7,288 (27%) agreed. When assessed using the Maslach Burnout Inventory, 45.8% of physicians reported burnout, with substantial differences by specialty. The specialties with the highest rates of burnout, in decreasing order, were psychiatry, general pediatrics, general surgery, and obstetrics and gynecology. The specialties with the lowest rates of burnout were emergency medicine, general internal medicine, neurology, and family medicine.

Figure 1. Burnout by specialty.
In conclusion, burnout is highly prevalent among US Physicians (32%), more so than among other US workers (23.5%).

(1) the prevalence of burnout among US physicians is at an alarming level, (2) physicians in specialties at the front line of care access (emergency medicine, general internal medicine, and family medicine) are at greatest risk, (3) physicians work longer hours and have greater struggles with work-life integration than other US workers, and (4) after adjusting for hours worked per week, higher levels of education and professional degrees seem to reduce the risk for burnout in fields outside of medicine, whereas a degree in medicine (MD or DO) increases the risk. These results suggest that the experience of burnout among physicians does not simply mirror larger societal trends.
From Dr Jekyll into Hiding

• Burnout is not an attitude problem
• Burnout is a workplace problem
  – Failure to recognize the human side of work or demands of superhuman efforts, people feel overloaded, frustrated and well, burned out. Self-improvement alone will not beat it.

• We slip from productive to frustrated/cranky, to not being disengaged:
  – social distancing: social networks, diet, sleep habits, all suffer, with increases in self injury, mistakes at work, illness, traffic violations, etc.
Yoda had the right idea:

Fear leads to anger. Anger leads to hate. Hate leads to suffering.

Prolonged stress leads to frustration and anger, which leads to suspicion and mistrust, and ultimately, the dark side...Burnout
From First to Worst

Those with tenacity, dedication and a strong sense of responsibility are vulnerable to burnout.

Burnout Lead Weights: work hours, night shift, conflicts with colleagues, fiscal debt, poor boundaries between work/home life.

Burnout Band-aides: spending time with spouse, social support, positive learning environment, having a clinician as a parent, being a parent, and getting satisfaction from conversations with others, control over days off, quality of working relationships.
Our brains interpret prolonged fatigue as a stressor, releasing additional glucocorticoids...
In the past week, how many of you...

- Skipped a meal?
- Ate a poorly balanced meal?
- Worked an entire shift without any breaks?
- Changed personal/family plans because of work?
- Arrived home late from work?
- Drank too much coffee?
- Slept less than 5 hours in a night?
  - Over 40% of Americans regularly sleep less than 5 hours a night
    - 2X as likely to die of heart disease
    - 1.7x as likely to die of all causes (Cappuccino, 2007)
Sleepy at Work:

“Slept less than 5 hours in a night: 3 or more nights in the past week.”

% of respondents reporting 3 or more days in past week

Each bar = 1 DUHS Clinical Area
Why do we sleep?

• Recharge our batteries: repair and rejuvenate
  - Improved Immune System Function

• Memory Consolidation

• Emotional Regulation

In a pinch, choose <3 or >5 hours
The Impact of Sleep Deprivation on Emotional Brain Reactivity and Functional Connectivity

Overnight Therapy? The Role of Sleep in Emotional Brain Processing

Matthew P. Walker and Els van der Helm
University of California, Berkeley

Cognitive neuroscience continues to build meaningful connections between affective behavior and human brain function. Within the biological sciences, a similar renaissance has taken place, focusing on the role of sleep in various neurocognitive processes and, most recently, on the interaction between sleep and emotional regulation. This review surveys an array of diverse findings across basic and clinical research domains, resulting in a convergent view of sleep-dependent emotional brain processing. On the basis of the unique neurobiology of sleep, the authors outline a model describing the overnight modulation of affective neural systems and the (re)processing of recent emotional experiences, both of which appear to redress the appropriate next-day reactivity of limbic and associated autonomic networks. Furthermore, a rapid eye movement (REM) sleep hypothesis of emotional-memory processing is proposed, the implications of which may provide brain-based insights into the association between sleep abnormalities and the initiation and maintenance of mood disturbances.

Keywords: REM sleep, emotion, affect, memory, depression
Typical night shift creates biological clock stress equivalent of jet lag from flying back and forth between Tokyo and San Francisco every few days.

-Davidson, et al. 2006. Current Biology
Better Night of Sleep

• Skip the snooze button (makes you more tired) – falling back asleep and waking up again takes too much energy and you won’t gain any deep sleep
• Avoid caffeine within 4-6 hours of sleep onset
• Get outside in the natural afternoon light (even if it is cloudy) to reset circadian rhythms
• Avoid eating within 2-3 hours of sleep onset, it is harder for your body to wind down when it is still digesting
• Exercise in the morning (e.g., 7am relative to 1pm or 7pm) provides boost of energy, decreases stress hormones, and improves sleep quality (75% more time in deep sleep).
  – http://www.news.appstate.edu/2011/06/13/early-morning-exercise
Blue Blockers

“Blue blockers represent an elegant means to prevent the light-induced melatonin suppression”
Sasseville A, Paquet N, Sévigny J, Hébert M.

Blue Blockers
Blue Blockers represent an elegant means to prevent the light-induced melatonin suppression
Sasseville A, Paquet N, Sévigny J, Hébert M.

Source
Centre de Recherche Universite Laval Robert-Giffard/Department of Oto Rhino Laryngology and Ophtalmology, Universite Laval, Quebec, Canada.

Abstract
Night shiftworkers often complain of disturbed sleep during the day. This could be partly caused by morning sunlight exposure during the commute home, which tends to maintain the circadian clock on a daytime rhythm. The circadian clock is most sensitive to the blue portion of the visible spectrum, so our aim was to determine if blocking short wavelengths of light below 540 nm could improve daytime sleep quality and nighttime vigilance of night shiftworkers. Eight permanent night shiftworkers (32-56 yrs of age) of Quebec City's Canada Post distribution center were evaluated during summertime, and twenty others (24-55 yrs of age) during fall and winter. Timing, efficacy, and fragmentation of daytime sleep were analyzed over four weeks by a wrist activity monitor, and subjective vigilance was additionally assessed at the end of the night shift in the fall-winter group. The first two weeks served as baseline and the remaining two as experimental weeks when workers had to wear blue-blockers glasses, either just before leaving the workplace at the end of their shift (summer group) or 2 h before the end of the night shift (fall-winter group). They all had to wear the glasses when outside during the day until 16:00 h. When wearing the glasses, workers slept, on average +/-SD, 32+/-.29 and 34+/-.60 more min/day, increased their sleep efficacy by 1.95+/-.2.17% and 4.56+/-.6.1%, and lowered their sleep fragmentation by 1.74+/-.1.36% and 4.22+/-.9.16% in the summer and fall-winter group, respectively. Subjective vigilance also generally improved on Fridays in the fall-winter group. Blue-blockers seem to improve daytime sleep of permanent night-shift workers.
“The negative screams at you, but the positive only whispers...”
-- Barbara Fredrickson
Tool of the Week:
Three Good Things

“People who believe they cause good things tend to like themselves better than people who believe good things come from other people or circumstances.”

-Martin Seligman
Three Good Things Exercise


Three Good Things

Day ZERO: What went well, and what was your role in making it happen.

1)

2)

3)

Which good thing from today stands out as your favorite (please circle)? Briefly share why it was your favorite:

It’s not necessary, but is there any background that you would like to provide about your day that puts your good things into context?
The Cognitive Consequences of Sleep and Sleep Loss
Walken, MP. Sleep Medicine 9 Suppl. 1 (2008) S29-S34

One night of sleep deprivation:
-40% reduction in ability to form new memories in humans.
-Negative memories are most resilient to fatigue, so you are tired and grumpy.

Fig. 4. Sleep deprivation induced emotional and neutral memory encoding impairments [3,18]. *P ≤ 0.05, **P ≤ 0.01. Reprinted, with permission, from the Annual Review of Psychology, Volume 57. © 2006 by Annual Reviews www.annualreviews.org
Overnight Therapy? The Role of Sleep in Emotional Brain Processing

Matthew P. Walker and Els van der Helm
University of California, Berkeley

Cognitive neuroscience continues to build meaningful connections between affective behavior and human brain function. Within the biological sciences, a similar renaissance has taken place, focusing on the role of sleep in various neurocognitive processes and, most recently, on the interaction between sleep and emotional regulation. This review surveys an array of diverse findings across basic and clinical research domains, resulting in a convergent view of sleep-dependent emotional brain processing. On the basis of the unique neurobiology of sleep, the authors outline a model describing the overnight modulation of affective neural systems and the (re)processing of recent emotional experiences, both of which appear to redress the appropriate next-day reactivity of limbic and associated autonomic networks. Furthermore, a rapid eye movement (REM) sleep hypothesis of emotional-memory processing is proposed, the implications of which may provide brain-based insights into the association between sleep abnormalities and the initiation and maintenance of mood disturbances.

Keywords: REM sleep, emotion, affect, memory, depression
Three Good Things

• Memories are tricky: good ones are like Teflon, they slip away, while the bad ones stick like Velcro (especially when we are tired)
• Three Good Things retrains our brains so that we can remember the good things, and our role in bringing them about
• Marti Seligman

http://www.youtube.com/watch?v=dwkDEM4gFBA
Positive psychology has flourished in the last 5 years. The authors review recent developments in the field, including books, meetings, courses, and conferences. They also discuss the newly created classification of character strengths and virtues, a positive complement to the various editions of the Diagnostic and Statistical Manual of Mental Disorders (e.g., American Psychiatric Association, 1994), and present some cross-cultural findings that suggest a surprising ubiquity of strengths and virtues. Finally, the authors focus on psychological interventions that increase individual happiness. In a 6-group, random-assignment, placebo-controlled Internet study, the authors tested 5 purported happiness interventions and 1 plausible control exercise. They found that 3 of the interventions lastingly increased happiness and decreased depressive symptoms. Positive interventions can supplement traditional interventions that relieve suffering and may someday be the practical legacy of positive psychology.
Three Good Things Exercise


Three Good Things

Day ZERO: What went well, and what was your role in making it happen.

1) 

2) 

3) 

Which good thing from today stands out as your favorite (please circle)? Briefly share why it was your favorite:

It’s not necessary, but is there any background that you would like to provide about your day that puts your good things into context?
Three good things

- [http://www.youtube.com/watch?v=dwkDEM4gFBA](http://www.youtube.com/watch?v=dwkDEM4gFBA)

Seligman, Steen, Park & Petersen, 2005
My First 3GT....
Three Good Things Examples

Self-Aware
- Accomplished everything I needed to in preparation for tomorrow ahead of schedule. My role was to stay calm and focus.
- On a daily basis I stop and question why I react to the children's behavior and then I am able to respond without talking harshly.
- Much less stressful day, in part due to a concerted attitude shift on my part. My role was to use the lessons from yesterday to make better choices today.

Mindfulness
- Had an unusually long and stressful day of running around... reminded me of what not to do and encouraged me to stop and center myself this evening, and to plan better for tomorrow.
- I had a wonderfully generative and exciting conversation with some colleagues about an innovative new way of implementing a project. I listened, asked lots of questions, exchanged ideas, and suspended judgment.
- Made it through another day at work without crying! Kept thinking + thoughts.

Purpose
- One of my nurses was in a bad mood when I arrived to work. I sent her an email to come and talk to me about meeting her daughter's boyfriend the previous Monday. We talked for half an hour about her family, work, etc and she left in an improved mood. The atmosphere in the clinic was much happier!
- My daughter told me she loves me and that I've been a safe and supportive mom. Wow.
- It restarted knitting my daughters college graduation afghan again after at least a year. It felt so good to knit again and work on a promise that I gotten halfway on. I put my knitting bag near my chair, the next day I gave myself an hour or so to just get into the process.

Self Care
- I went to the Dr for my annual exam. I took care of myself and made my appointment 4 weeks ago.
- I listened to my body and went to bed earlier than anticipated.
- I enjoyed an hour of self-time today at an acupuncture appointment. I scheduled the appointment weeks ahead of time knowing I would need the reprieve especially this week. In addition, I was asked some really thought provoking questions while there. My role was to actively plan self-care and to be receptive to challenging thoughts.

Relationships
- I really listened to my husband as he talked about some things he felt good about at work. He felt heard. When our daughter came in, he really listened to her--I think in part because someone listened to him.
- I had a good laugh with my direct reports today. I took the time to seek them out and talk to them purposefully not about work.
- I had a great conversation with a new Nurse Practitioner and made her feel welcome to working in my clinic. I took the time at the end of the day when I could have gone home early to get to know her.
Three good things

• For 14 days, reflect on the positive, and your role in bringing it about
• Best time is right before sleep onset
• Learning about how others use it can be very helpful/inspiring
• Remember your resilience pillars as “Good Thing Prompts”
• Better sleep quality, positive interactions, see positive patterns
• Beware of transitions – some people fall off on their Three Good Things in transitions to and from the weekend
## Three Good Things Results
(Severe Depression N=50)

<table>
<thead>
<tr>
<th></th>
<th>Happiness</th>
<th>CES-D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>53.4 (15&lt;sup&gt;th&lt;/sup&gt; percentile)</td>
<td>33.90 (severe)</td>
</tr>
<tr>
<td>Post-test</td>
<td>69.8 (50&lt;sup&gt;th&lt;/sup&gt; percentile)</td>
<td>17.20 (mild-moderate)</td>
</tr>
<tr>
<td>Change</td>
<td>+16.4 (92% increased)</td>
<td>-16.70 (94% Decreased)</td>
</tr>
</tbody>
</table>

*Results within 14.8 days on average*
Take Home

• Redefine Quality
• Burnout/Resilience predicts quality
  – 1 out of 3 are burned out
• Protect prefrontal reserves
  – Cultivate what you do well (3:1 ratio)
  – Three Good Things
  – ACR
  – Sleep: <3 or >5 hours; nap prophylactically;
    Vitamin D; Blue Blockers; skip snooze

• bit.ly/WISERstudy
  • https://duke.qualtrics.com/SE/?SID=SV_bpFTvQlqpXZk03X
    – Or email: christen.fullwood@opensafety.org to forward the link...
Unless someone like you cares a whole awful lot, nothing is going to get better. It's not.

Theodor ("Dr. Seuss") Geisel, The Lorax
Webinars Given by the Patient Safety Center

- Safety Culture 101: Work with Culture Data
- Psychological Safety
- Leadership Engagement in Quality & Patient Safety
- Intro to Safety Culture Debriefings
- Stress Recognition and Coaching
- Finding, Fixing and Learning from Defects
- Introduction to TeamSTEPPS
- Caregiver Resilience and Quality Improvement: Double Edged Sword
- Fatigue Management
- Conflict Resolution
- Care Coordination and Handoffs
- Advanced RCAs

For Information on our webinars or our 2012 Resilience Collaborative, please contact Christen Fullwood at 919.257.3376

Courses:

- **Patient Safety Leadership Training & Certification Course** (3 days - Offered in April & September)
  - Course Description
  - Registration Information; April 2012
  - Registration Information; July 2012
  - Registration Information; Sept 2012

- **Physician Leadership in Patient Safety & Quality** (1 Day)
  - Course Description
  - Registration Information; February 2012

- **TeamSTEPPS™ Train the Trainer** (2 days)
  - Course Description
  - Registration Information; November 2012

- **TeamSTEPPS™ Essentials** - (4 Hours)
  - Course Description
  - Registration Information; March 2012
  - Registration Information; June 2012
  - Registration Information; August 2012
  - Registration Information; October 2012

- **Enhancing Caregiver Resilience: Burnout & Quality Improvement Full Course**
  (3 days: 1 full day plus 2 half days, and a follow-up webinar - Offered in May & November)
  - Course Description
  - Registration Information; May 2012
  - Registration Information; November 2012

http://bit.ly/WISERstudy
NEW BOOK

http://unaccountablebook.com/
Duke Resilience Collaborative

WISER #1: Introduction to Resilience
WISER #2: Fatigue Management
WISER #3: Mindfulness
WISER #4: Dealing with Difficult Colleagues
WISER #5: Resilience Writing #1
WISER #6: Resilience Writing #2
WISER #7: Resilience Writing #3
WISER #8: Coping with Change

http://bit.ly/WISERstudy
This is a Gift

- Decreased depressive symptoms \(^5,1\)
- Improved psychological well-being \(^6\)
- Improved working memory \(^2\)
- Improved sleep \(^3\)
- Improved immune system function \(^4\)
- Improved relationships \(^5\)
- Improved coping with emotional upheavals \(^6\)
Emotional Exhaustion decreased

<table>
<thead>
<tr>
<th>4-item Emotional Exhaustion (MBI)</th>
<th>Mean (stdev) at Baseline</th>
<th>Mean (stdev) at Course Completion</th>
<th>t statistic</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Emotional Exhaustion at Baseline (&lt;49), n = 60</td>
<td>25.62 (14.40)</td>
<td>27.19 (22.92)</td>
<td>-0.556</td>
<td>0.580</td>
</tr>
<tr>
<td>Moderate Emotional Exhaustion at Baseline (50-74), n = 33</td>
<td>58.33 (6.38)</td>
<td>42.99 (28.37)</td>
<td>3.152</td>
<td>0.004</td>
</tr>
<tr>
<td>High Emotional Exhaustion at Baseline (≥75), n = 38</td>
<td>86.84 (9.62)</td>
<td>79.88 (17.59)</td>
<td>2.637</td>
<td>0.012</td>
</tr>
<tr>
<td>Overall, n = 131</td>
<td>51.62 (32.03)</td>
<td>46.45 (28.57)</td>
<td>2.568</td>
<td>0.011</td>
</tr>
</tbody>
</table>

Overall, n = 131

This figure was compiled by Whitney Chadwick.
Depressive symptoms decreased

<table>
<thead>
<tr>
<th>CES-D10 Score</th>
<th>Mean (stdev) at Baseline</th>
<th>Mean (stdev) at Course Completion</th>
<th>t statistic</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Depressive Symptoms at Baseline (&lt;11), n = 75</td>
<td>4.83 (3.13)</td>
<td>5.07 (4.43)</td>
<td>-0.49</td>
<td>0.624</td>
</tr>
<tr>
<td>High Depressive Symptoms at Baseline (≥ 11), n = 30</td>
<td>14.73 (3.56)</td>
<td>10.63 (5.77)</td>
<td>4.53</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Overall, n = 105</td>
<td>7.66 (5.54)</td>
<td>6.66 (5.45)</td>
<td>2.12</td>
<td>0.036</td>
</tr>
</tbody>
</table>

this figure was compiled by Whitney Chadwick,
Subjective Happiness increased

<table>
<thead>
<tr>
<th>Subjective Happiness Scale Score</th>
<th>Mean (stdev) at Baseline</th>
<th>Mean (stdev) at Course Completion</th>
<th>t statistic</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Happiness at Baseline (&lt;5), n = 40</td>
<td>4.08 (0.74)</td>
<td>4.78 (0.97)</td>
<td>-5.957</td>
<td>&lt; 0.0005</td>
</tr>
<tr>
<td>High Happiness at Baseline (≥5), n = 92</td>
<td>5.86 (0.55)</td>
<td>5.84 (0.76)</td>
<td>0.342</td>
<td>0.733</td>
</tr>
<tr>
<td>Overall, n =132</td>
<td>5.32 (1.02)</td>
<td>5.51 (0.96)</td>
<td>-3.003</td>
<td>0.003</td>
</tr>
</tbody>
</table>

this figure was compiled by Whitney Chadwick,
## Work-Life Balance Variables, Pre and Post Intervention

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>Pre-WISER%</th>
<th>Post-WISER%</th>
<th>t-statistic$^\wedge$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliberately attempted to notice things without evaluating or judging them</td>
<td>54.8%</td>
<td>82.2%</td>
<td>-4.346</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Deliberately helped my circadian rhythms through skin exposure to sunlight</td>
<td>43.8%</td>
<td>75.3%</td>
<td>-7.915</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Spent time outside, enjoying nature</td>
<td>87.7%</td>
<td>90.4%</td>
<td>-4.874</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Spent time stretching</td>
<td>46.6%</td>
<td>69.9%</td>
<td>-3.96</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Thought about my personal resilience</td>
<td>61.6%</td>
<td>85.0%</td>
<td>-4.623</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Thought about the resilience of others</td>
<td>58.9%</td>
<td>80.8%</td>
<td>-3.657</td>
<td>&lt;0.0005</td>
</tr>
<tr>
<td>Prayed at work</td>
<td>59.1%</td>
<td>69.3%</td>
<td>-2.817</td>
<td>0.006</td>
</tr>
<tr>
<td>Argued with a coworker</td>
<td>17.0%</td>
<td>8.0%</td>
<td>2.726</td>
<td>0.008</td>
</tr>
<tr>
<td>Spent time thinking about and learning from my past</td>
<td>75.0%</td>
<td>79.6%</td>
<td>-2.533</td>
<td>0.013</td>
</tr>
<tr>
<td>Reflected on my day or my life</td>
<td>76.7%</td>
<td>89.0%</td>
<td>-2.313</td>
<td>0.022</td>
</tr>
<tr>
<td>Had difficulty sleeping</td>
<td>70.4%</td>
<td>61.4%</td>
<td>2.17</td>
<td>0.032</td>
</tr>
<tr>
<td>Used aspirin or other pain relievers</td>
<td>56.2%</td>
<td>49.3%</td>
<td>2.02</td>
<td>0.046</td>
</tr>
<tr>
<td>Exercised</td>
<td>61.4%</td>
<td>70.4%</td>
<td>-1.215</td>
<td>0.227</td>
</tr>
<tr>
<td>Ate a poorly balanced meal</td>
<td>69.2%</td>
<td>76.9%</td>
<td>1.156</td>
<td>0.250</td>
</tr>
</tbody>
</table>

$^\wedge$T-test conducted on mean values for each item, percentages reported here for interpretability.
FRUSTRATION

CHANGE

ADAPTION

untempered

ATTACK
The Stages

• Rumination (negative loops)
  • Burnout
    – Physical, Mental and Emotional Exhaustion
    – Shame and Doubt (imposter syndrome grows)
    – Cynicism and Negativity
  • Depression and/or PTSD (time for meds)
# Prevalence of adverse events in hospitals

<table>
<thead>
<tr>
<th>Author, year, country (N)</th>
<th>AE (%)</th>
<th>Disability (%)</th>
<th>Mortality (%)</th>
<th>Preventability (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brennan, 1991, USA (30,195)</td>
<td>3.7</td>
<td>2.6</td>
<td>13.6</td>
<td>NA</td>
</tr>
<tr>
<td>Gawande, 1992, USA (14,700)</td>
<td>2.9</td>
<td>NA</td>
<td>8.8</td>
<td>53</td>
</tr>
<tr>
<td>Wilson, 1995, AUS (14,179)</td>
<td>16.6</td>
<td>13.7</td>
<td>4.9</td>
<td>51</td>
</tr>
<tr>
<td>Vincent, 2001, UK (1,014)</td>
<td>10.8</td>
<td>6</td>
<td>8</td>
<td>48</td>
</tr>
<tr>
<td>Schioler, 2002, DK (1,097)</td>
<td>9</td>
<td>26.3</td>
<td>40.4</td>
<td></td>
</tr>
<tr>
<td>Davis, 2004, NZ (6,579)</td>
<td>8.8</td>
<td>15</td>
<td>58.8</td>
<td></td>
</tr>
<tr>
<td>Baker, 2004, CND (3,745)</td>
<td>7.5</td>
<td>5.2</td>
<td>15.9</td>
<td>36.9</td>
</tr>
<tr>
<td>Michel, 2004, F (786)</td>
<td>15.4</td>
<td>NA</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Soop, 2009, SW (1,967)</td>
<td>12.3</td>
<td>NA</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Zegers, 2009, NL (7,926)</td>
<td>5.7</td>
<td>12.8</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>Aranaz-A, 2009, SP (5,908)</td>
<td>11.6</td>
<td>16</td>
<td>4.4</td>
<td>43</td>
</tr>
<tr>
<td>Mendes, 2009, BR (1,103)</td>
<td>7.6</td>
<td>NA</td>
<td>66.7</td>
<td></td>
</tr>
<tr>
<td>Aranaz-A, 2011, LAc (11,379)</td>
<td>10.5</td>
<td>28</td>
<td>6</td>
<td>59</td>
</tr>
</tbody>
</table>