Burnout and Compassion Fatigue: Can Early Life Experiences Affect Your Risk?

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Early Life Experiences May Affect Vulnerability to Care Provider Burnout & Compassion Fatigue
And... It May Start Even Before Birth
Early Experiences May Train Adult Stress Response System Function
HPA AXIS AND SYMPATHOADRENAL SYSTEM
FUNCTIONS OF THE STRESS RESPONSE SYSTEM

- Regulates vital functions on a minute by minute basis, maintaining homestasis and health

- Responds to changes in the internal or external environment [a stressor – can be negative or positive]
  - Supports strategy to fix problem, e.g., running away
  - Ameliorates any damage done
  - Restores homestasis

- If homeostasis cannot be restored, ensures vital functions can continue, but there is a cost [chronic stress or allostatic load]
EARLY LIFE EXPERIENCES AND TRAINING OF STRESS RESPONSE SYSTEM: Animal Research
STRESS DURING PREGNANCY

- HPA axis hyper-reactivity in adult male rats
- HPA axis hyperactivity in diurnal activity in adult males & female rats
- HPA axis hyper-reactivity to certain stressors in females, but hypo-reactivity to others
- Life-long unless treated with environmental enrichment or antidepressants
- Sympathoadrenal hyper-reactivity in adult males and females
NUTRITION

**Prenatal Undernutrition**
- HPA axis hyper-reactivity in adult ewes

**Postnatal Undernutrition**
- HPA axis hyper-reactivity in adult ewes
- Sympathoadrenal hyper-reactivity in adult ewes
- HPA axis hypo-reactivity in adult rams
MATERNAL SEPARATION

- HPA axis hyper-reactivity in adult female rats and increased vulnerability to effects of chronic stress
- HPA axis hyper-reactivity also occurs in male adult rats
- Sympathetic system hyper-activity, but lower levels of dopamine in male rats
- Effects can be reversed by environmental enrichment and antidepressants
EARLY LIFE EXPERIENCES AND TRAINING OF STRESS RESPONSE SYSTEM: 
*Human Research*
STRESS DURING PREGNANCY

- HPA axis hyper-reactivity in girls, not boys
- Correlates with morning awakening cortisol levels in boys & girls
- Associated with low heart rate variability in infants and toddlers
Associated with HPA axis and sympathoadrenal hyper-reactivity
Stress response system diurnal rhythms may not be disturbed
EARLY EXPOSURES TO PAIN AND ILLNESS

- Very low birth weight babies showed blunted HPA axis function in NICU

- But HPA axis hyper-reactivity at 18 months

- Both findings predicted by number of skin-breaking procedures from birth to term
EARLY ABUSE, NEGLECT, CHAOS

- Effects on stress response system are contradictory:
  - HPA axis hypo- and hyperactivity both reported
  - Sympathoadrenal system hypo- and hyperactivity both reported

- Contradictions likely the result of:
  - Differences in methodology
  - Developmental timing of stressor
  - Time since stressor experienced
  - Previous exposure to stressors
IS STRESSOR EXPOSURE DURING DEVELOPMENT ALWAYS BAD?

NO

- Human handling of rodents during maternal separation paradigm reduces their later sensitivity to stressors.

- Some human prenatal stress studies suggest low level of stress makes offspring less sensitive to later stressors.

- Environmental programming may be critical and in numerous species is dependent on increases in corticotropin releasing hormone.
IS ACUTE STRESSOR EXPOSURE ALWAYS BAD?

NO

THE STRESS RESPONSE CURVE

- Good Stress
- Distress

Stress Management Increasing
The Performance Level

- Actual Performance

Fatigue
Exhaustion
ILL-Health
BREAKDOWN

Perceived Arousal

Adapted from Nixon P, Practitioner, 1979
HABITUATION TO REPEATED STRESSOR

- HPA axis demonstrated habituation
- Sympathoadrenal system did not show habituation; heart rate did
- 26% did not mount response to stressor

EARLY LIFE EXPERIENCES & TRAINING OF STRESS RESPONSE SYSTEM: Summary

- Animal and human data strongly indicate that early experiences train system
- Effects may make individual *more or less* resistant to later stressors
- Direction of effects varies by:
  - Sex of individual
  - Developmental period of exposure
  - Type of exposure
  - Genotype, e.g., serotonin transporter, monoamine oxidase-A
  - Mechanisms of effects likely to be epigenetic, e.g., methylation
BURNOUT AND COMPASSION FATIGUE IN MEDICAL CARE PROVIDERS: *Early Life Experiences?*
40-53% of nurses have burnout

7-33% have compassion fatigue
19-47% of physicians report burnout

23-70% of residents are burned out

Burnout associated with medical errors
NURSE BURNOUT

PERMANENT WRINKLES from constant smile.

CAULIFLOWER EARS from stethoscopes.

HAIR FRAZZLED from bad nerves.

BLOODSHOT EYES from night shift.

BAD EYES from deciphering doctor's handwriting.

JAUNDICED SKIN from hepatitis patient.

BAD POSTURE from bending over beds.

SORE BACK from lifting 400 lb. patients.

TORN POCKETS from pen and pencils because of coins and theft if left on the desk.

TACKY CLOTHES from years of low pay.

HAND LOST from 99-year-old patients.

VARICOSE VEINS from hours of standing to assist the doctor to change a bandaid.

FOLEY BAG because of lack of time to go to the toilet.

TENNIS SHOES from running after and/or from doctors.
THEORETICAL MODEL OF BURNOUT
The Compassion Fatigue Process (Figley, 2001)
# CORRELATES OF BURNOUT IN PHYSICIANS

<table>
<thead>
<tr>
<th>Characteristic and Associated Factors</th>
<th>Odds Ratio*</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-specialty choice†</td>
<td>1.2–1.6</td>
<td>All &lt;0.009</td>
</tr>
<tr>
<td>Youngest child ≤ age 21</td>
<td>1.54</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Compensation = incentive pay based entirely on billing</td>
<td>1.37</td>
<td>&lt;0.001</td>
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<tr>
<td>Spouse works as other healthcare professional (nurse, pharmacist, etc.)</td>
<td>1.23</td>
<td>0.004</td>
</tr>
<tr>
<td>Number of nights on call per week (each additional night)</td>
<td>1.05</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Number of years in practice (each additional year)</td>
<td>1.03</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hours worked per week (each additional hour)</td>
<td>1.02</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Age (each additional year older)</td>
<td>0.96</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Has children</td>
<td>0.82</td>
<td>0.006</td>
</tr>
<tr>
<td>&gt;50% time dedicated to non-patient care (research, admin.)</td>
<td>0.81</td>
<td>0.035</td>
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*OR >1 indicate increased risk of burnout; OR <1 indicate lower risk of burnout.

†Trauma (OR = 1.56); Urologic (OR = 1.48); Otolaryngology (OR = 1.34); Vascular (OR = 1.36); General (OR 1.17).
Figure 1. Hypothesized integrated occupational stress model predicting job satisfaction and emotional distress. JDC = job demand-control model; ERI = Effort-Reward Imbalance; emo. distress = emotional distress; job satisfac. = job satisfaction; psy. demands = physical demands; people-o.-c. = people-oriented culture
BURNOUT AND COMPASSION FATIGUE AND EARLY LIFE EXPERIENCES:
Summary

➢ Few theories include this factor

➢ Few studies measure this construct

➢ Two studies provide some information:
  ✓ Quality of childhood experiences associated with physician burnout (Vaillant, et al., NEJM, 1972)
  ✓ Difficult early childhood predicted incidence of depression symptoms in medical interns (Sen, et al., Arch Gen Psychiatry, 2010)
BURNOUT AND COMPASSION FATIGUE IN MEDICAL CARE PROVIDERS: Stress Response System Function?
Burnout associated with blunted diurnal cortisol secretion

HPA axis reactivity to experimental stressors:
- Hypo-reactivity or no difference until repeated stressors, then abnormal habituation
- Sub-group with vital exhaustion displayed sensitization to repeated stress (Kudielka, et al., Biol Psychiatry, 2006)

HPA axis reactivity to environmental stressors (NICU/PICU):
- Stress reaction occurred more in MD’s than nurses
- Neither MD’s nor nurses were aware of stress reactions
BURNOUT: SYMPATHOADRENAL

- Few baseline differences in heart rate, blood pressure, or heart rate variability
- Exposure to experimental or environmental stressors reveals:
  - Sympathetic overdrive
  - Increasing exhaustion as stressor continues (Zanstra, et al., *Psychosom Med*, 2006)
- Evidence of parasympathetic withdrawal in vital exhaustion
- Reduced heart rate variability during sleep
BURNOUT AND STRESS RESPONSE SYSTEM FUNCTION: Summary

- Many studies of basal or diurnal function do not show difference between Ss with and without burnout.

- Studies showing difference usually demonstrate blunted HPA axis function and increased sympathetic tone.

- Data on reactivity to stressors show:
  - Lack of habituation or sensitization
  - Continued sympathetic tone
EXPANDED MODEL FOR DEVELOPMENT OF BURNOUT AND COMPASSION FATIGUE: Early Life Experiences/Genetic Influences on Stress Response System
Early life experiences, probably in interaction with specific gene expression profiles, can train the stress response system to be over-active in response to repeated stressors or to habituate quickly.

In response to chronically repeated stressors, these may lead to deterioration of the stress response system or to continued function. The first may be what is subjectively known as burnout/compassion fatigue and the second as resilience.
RESEARCH IMPLICATIONS OF EXTENDED MODEL

- **Prevalence Studies**
  - Add measurement of early life experiences
    - **Instruments**: Risky Families Questionnaire, Childhood Trauma Questionnaire, Parental Bonding Instrument, Conflict Tactics Scale
  - Assess stress response system function
    - **Protocols**: Should include exposure to repeated stressors

- **Longitudinal Studies**
  - Add early life experiences and stress response system function
  - Test if they predict incidence or course

- **Prevention/Intervention Studies**
  - Early life experiences analyzed as a moderator
  - Stress response system function tracked as mediator
CLINICAL IMPLICATIONS OF EXTENDED MODEL

- **Educational Programs**
  - add information on early life experiences and stress response
  - include methods to increase self-knowledge about experiences and reactions, e.g., life review, journals

- **Interventions**
  - non-specific programs may not work with individuals whose stress response system needs to be re-trained
  - re-training requires interventions such prescribed meditation, exercise, biofeedback, and parasympathetic breathing practice
  - physiological and psychological data monitoring may be critical for success
  - Model Interventions
THANK YOU