6 Acute Stress Among Emergency Medicine Residents Working in the Emergency Department

Janicki A, Frisch A, Frisch S, Patterson P, Brown A / University of Pittsburgh School of Medicine, Department of Emergency Medicine; University of Pittsburgh School of Nursing

Background: Exposure to stress can affect performance in many ways. It may impair cognitive performance and the ability to multitask, both vital in Emergency Medicine. It has been demonstrated that board certified EM physicians experience physiologic stress while working clinically, but it is unclear if residents experience a similar acute stress response working in the ED.

Objective: We sought to determine if EM residents experience acute physiologic and subjective stress while working clinically in the Emergency Department in order to identify resident, patient, and shift characteristics contributing to the acute stress response and elicit targeted educational interventions. We hypothesized that residents experience acute subjective and physiologic stress while working clinically.

Methods: We performed a prospective observational study evaluating surrogate markers of physiologic stress including heart rate (HR) and heart rate variability (HRV) and subjective stress levels in EM residents during clinical shifts. HR and HRV were measured via a 3-lead Holter monitor worn during clinical shifts and compared to baseline data obtained during educational didactic sessions. Subjective stress was evaluated through a survey completed before and after clinical shifts.

Results: Twenty-one residents were enrolled and data acquired from 40 shifts. Median age was 28. There were 6 PGY-1, 8 PGY-2, and 7 PGY-3 participants. Residents experienced an increase in subjective stress ($p<0.001$), mean heart rate ($p<0.001$), maximum heart rate ($p<0.001$), and decrease in HRV ($p=0.005$) while working clinically. HRV was inversely correlated with subjective stress levels, but this did not reach statistical significance ($p=0.09$).

Conclusions: EM residents experience acute subjective stress and physiologic changes associated with acute stress while working in the ED. Reported stress appears to correlate with HRV indicating a direct relationship between acute subjective and physiologic stress, but this did not reach statistical significance. These findings should be studied in a larger, more diverse cohort and efforts made to identify resident, patient, and shift characteristics that contribute to the acute stress response to elicit targeted educational interventions.

Table 1. Participant demographics assessment (n=21).

Age, median (interquartile range)	28 (27-28)
Gender, n (%)	
Male	17 (81)
Female	4 (19)
Relationship Status, n (%)	
Single	9 (43)
Married/Civil Partnership	12 (57)
Race, n (%)	
White	20 (95)
Black	1 (5)
Postgraduate Year level, n (%)	
PGY-1	6 (29)
PGY-2	8 (38)
PGY-3	7 (33)
Resident experience level, days, mean (SD)	463.7 (279.2)

Table 2. Physiologic and subjective parameters.

	Baseline	During clinical work	P-value
Heart rate, bpm[a], mean (95% CI)	70 (77.8-73.2)	78 (74.7-81.7)	$p < 0.001$
Maximum heart rate, bpm[a], mean (95% CI)	83 (78.4-86.7)	109 (103.6 – 113.8)	$p < 0.001$
Heart rate variability			
SDNN[b], msec, mean (95% CI)	262.8 (230.8-294.7)	208.9 (184.9-232.8)	$p = 0.005$
	Pre-Shift	**Post-Shift**	**P-value**
Subjective stress score, range 1-7, mean (95% CI)	2.4 (2.1-2.7)	3.9 (3.5-4.3)	$p < 0.001$
PGY 1	2.7 (2.4-3.0)	4.9 (4.5-5.3)	
PGY 2	2.6 (2.0-3.3)	3.8 (3.1-4.6)	$p = 0.01$[c]
PGY 3	1.9 (1.5-2.4)	3.2 (2.4-4.0)	

[a]beats per minute; [b]standard deviation of all normal RR intervals; [c] PGY levels compared using analysis of variance.

7 An Approach for Leveraging Patients' Feedback in Emergency Medicine Training

Mozayan C, Gisondi M, Kline M, Manella H, Chimelski E, Alvarez A, Sebok-Syer S / Stanford Emergency Medicine Residency; Northwestern University

Background: The advancement of competency-based medical education has demanded more assessment data regarding residents' clinical performance. Given residents spend a significant amount of their time with patients, patients may be ideally suited to provide feedback on resident communication. In this study, we explored whether patients could provide residents with feedback on their communication skills.

Objective: To understand patients' experiences in the ED and evaluate the scope and quality of the feedback they are able to provide to emergency medicine residents.

Methods: Adult patients pending discharge from the ED were interviewed in-person by trained individuals over a 5 month (12/2018-4/2019) period using the Communication Assessment Tool. This tool contained 13 Likert scale