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

questions and 3 open ended questions. A content analysis of patients' responses to the open ended questions was done by 3 researchers using a modified version of the Completed Clinical Evaluation Report Rating (CCERR) tool.

Results: We collected data from 42 patients and received 32 narrative comments for 20 of our 46 residents. In general, patients responded very positively, with 551/588 (94%) reporting in the highest category of "Very Good." Analysis of the narrative comments using the CCERR demonstrated that patients can articulate quality aspects of their care, and that their comments were generally supportive. Furthermore, they are able to offer at least somewhat specific examples of things residents did well (81%). We found that patients were less likely to comment on things the resident did poorly or provide recommendations for improvement.

Conclusion: This study advances our understanding of the value and scope of feedback that patients can provide residents regarding communication. Our findings have implications for the use of patients as an untapped resource in terms of gathering more assessment data about resident clinical performance. Motivating patients to elaborate on residents' positive traits and describe what they did well may be the best avenue to maximize the yield from patient feedback.

Table 1. Modified CAT Questionnaire.

"How well did the resident physician..."	Very Poor	Poor	Fair	Good	Very Good	N/A
Greet you in a way that made you feel comfortable?	0(0)	0(0)	0(0)	2(5)	40(95)	0(0)
Treat you with respect?	0(0)	0(0)	0(0)	2(5)	40(95)	0(0)
Show interest in your ideas about your health?	0(0)	0(0)	0(0)	2(5)	40(95)	0(0)
Understand your main health concerns?	0(0)	0(0)	1(2)	0(0)	41(98)	0(0)
Pay attention to you (look at you, listen carefully)	0(0)	0(0)	1(1)	2(4)	39(93)	0(0)
Let you talk without interruptions?	0(0)	0(0)	1(2)	2(5)	39(93)	0(0)
Give you as much information as you wanted?	0(0)	0(0)	0(0)	3(7)	39(93)	0(0)
Talk in terms you could understand?	0(0)	0(0)	0(0)	2(5)	40(95)	0(0)
Check to be sure you understood everything?	0(0)	0(0)	3(7)	2(5)	36(86)	1(2)
Encourage you to ask questions?	0(0)	0(0)	1(2)	2(5)	38(93)	1(2)
Involve you in decisions as much as you wanted?	0(0)	0(0)	0(0)	1(2)	40(95)	1(2)
Discuss next steps, follow-up plans.	0(0)	0(0)	0(0)	1(2)	41(98)	0(0)
Show care and concern.	0(0)	0(0)	0(0)	3(7)	38(90)	1(2)
Spend the right amount of time with you.	0(0)	1(2)	0(0)	1(2)	39(93)	1(2)

Data are reported as n(%).

Table 2. Modified Completed Clinical Evaluation Report Rating (CCERR) Tool.

	Not at All	Somewhat	Good	Very Good	Excellent
Comments are balanced providing both strengths and areas for improvement.	28(88)	2(6)	2(6)	0(0)	0(0)
Comments justify the ratings provided.	5(16)	17(53)	10(31)	0(0)	0(0)
Clearly explained examples of strengths using specific descriptions are provided in the comments.	6(19)	23(72)	3(9)	0(0)	0(0)
Clearly explained examples of weaknesses using specific descriptions are provided in the comments.	27(84)	5(16)	0(0)	0(0)	0(0)
Concrete recommendations for the trainee to attain a higher level of performance are provided.	29(91)	3(9)	0(1)	0(0)	0(0)
Comments are provided in a supportive manner.	4(13)	4(13)	21(65)	3(9)	0(0)

Data are reported as n(%).

8 An Exploration of the Barriers To Workplace Lactation in Emergency Medicine

Moulton K, Sebok-Syer S / Stanford Emergency Medicine Residency Program

Background: The benefits of breastfeeding are well established in the literature and serve as a basis for ACEP and Accreditation Council for Graduate Medical Education (ACGME) policy. However, a lack of workplace research leaves decision-makers without an analytical basis for prioritization of return-to-work (RTW) investments. We undertook, to our knowledge, the first formal, systematic needs assessment of lactating mothers in EM.

Objectives: We aimed to study workplace lactation behavior and to identify barriers to lactation for women in EM. We hypothesized that, through analysis of semi-structured interviews, patterns will emerge that suggest specific, remediable barriers to achieving lactation goals. Some findings will likely be universal to the lactating worker, some unique to EM, and some specific to EM trainees.

1. Identify general and EM-specific barriers and challenges of lactating in the workplace
2. Describe some of the support structures that exist for women lactating at work
3. Consider additional efforts needed to support women returning to work while breastfeeding

Methods: We used qualitative research methods to explore this topic. The initial target population included women affiliated with our department who have delivered and returned to work within the last three years, and a snowball sampling technique was used. Respondents participated in 20-30 minute semi-structured telephone interviews. Audio was transcribed, coded, and analyzed to facilitate inductive research based on the emergence of patterns and themes.

Results: Data from five participants has been preliminarily analyzed, and additional interviews are scheduled. Participants described lactation space essentials, RTW support, their lactation-related goals, and barriers to lactation. Notably, some participants report that their lactation goal-setting was influenced more by workplace barriers than by personal preferences or professional society recommendations. We present these findings and describe how to interpret them in relation to ACGME policies and recent advances in the area of lactation and RTW.

Conclusions: Our hope is that this work will lead to actionable, EM-specific modifications to support lactating women locally and nationally.