

An Investigation of Stress in Greenville County EMTs and Paramedics

Callahan K, Dunn A, Owen H, & Fowler, L.A.

University of South Carolina School of Medicine Greenville



Background

Emergency Medical Services (EMS) providers regularly experience long shifts, stressful patient care situations, and an unpredictable work pace that can result in increased stress. Greenville County EMS (GCEMS), a large agency that runs 80,000 calls per year in the Upstate of South Carolina, has had consistent problems with low morale, extended response times, and high turnover among the field staff.

This study investigates perceived and physiologic stress among the EMTs and Paramedics working at GCEMS.

Methods

Subjects

20 paramedics and ten EMTs were evaluated 30 minutes prior to the start of their shift and 30 minutes following the conclusion of their 12-hour day shift.

Tasks

A participant's perceived stress was evaluated using the Perceived Stress Scale (PSS) while physiological stress was assessed by measuring cortisol levels in saliva.



Results

Time of Day on Perceived Stress:

Data indicated that there was not a significant difference in perceived stress prior to and following a participant's shift.

Time of Day on Physiologic Stress:

A paired samples t-test showed cortisol levels were significantly higher post shift than pre shift, $t(29) = 12.04$, $p < .001$. Refer to Figure 1.

Results

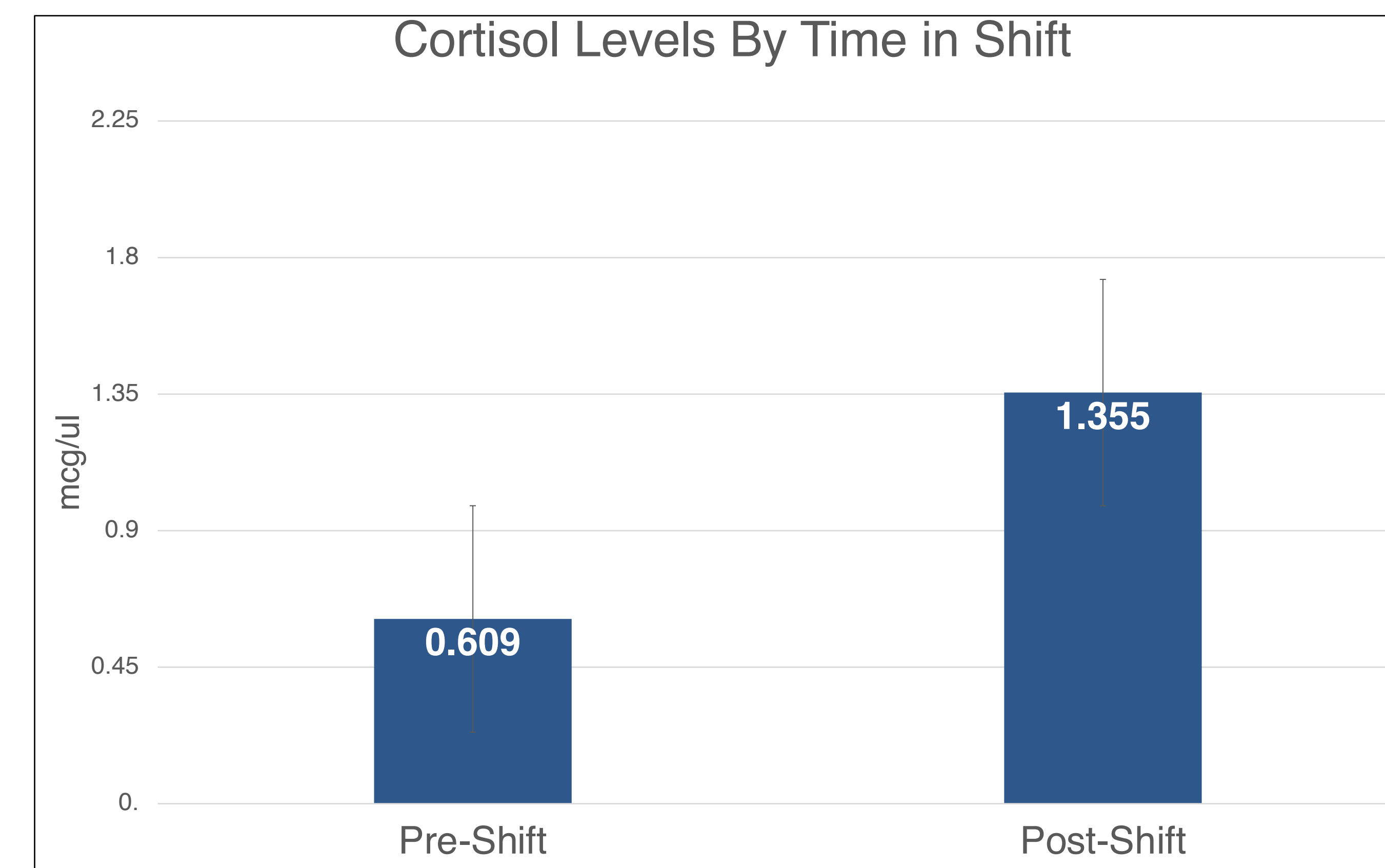


Figure 1. Cortisol levels by time in shift (means shown within bars).

Certification Level and Perceived Stress:

Data indicated that certification level (EMT vs Paramedic) did not have a significant effect on perceived stress.

Certification Level and Physiologic Stress:

Similarly, data indicated that certification level did not have a significant effect on physiologic stress (see Table 1)

	Certification	Mean	Standard Deviation
Pre-shift PSS	EMT	23.1	4.9
	Paramedic	21.7	2.4
	Total	22.2	3.5
Post-shift PSS	EMT	23.1	5.6
	Paramedic	21.4	2.9
	Total	22.0	4.1

Table 1. Perceived Stress Scale (PSS) by time in shift.

Discussions

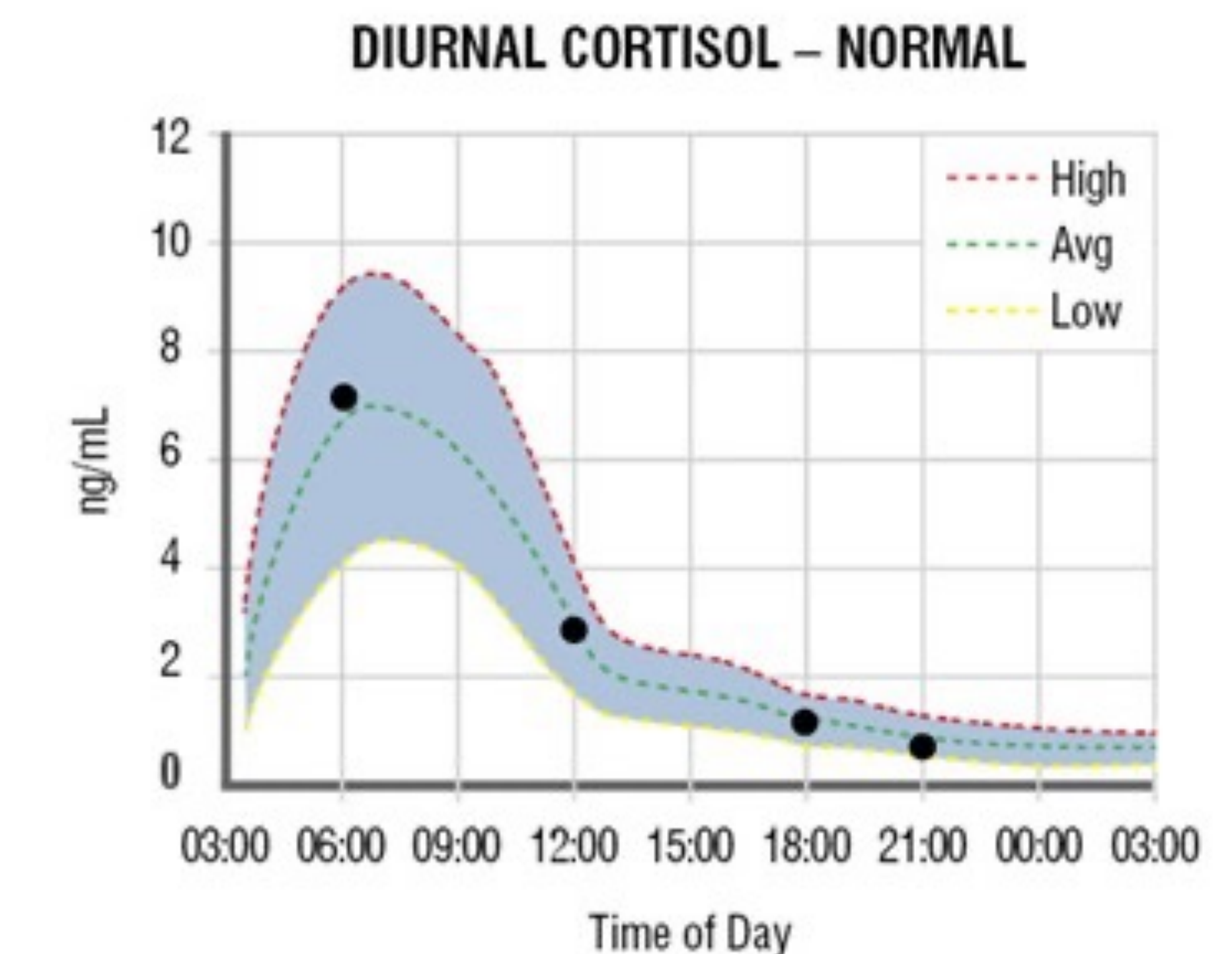


Figure 2. Diurnal Cortisol (taken from <https://www.zrtlab.com/landing-pages/diurnal-cortisol-curves/>)

While most research has found cortisol levels in other populations to be highest in the morning (see figure 2), the results of this study were different. There is a paucity of research on physiologic levels in EMS personnel, and this research could shed light on the stress levels these public servants are exposed to. This research also demonstrated that twelve hour shifts significantly increased the physiologic stress of the participants at GCEMS. Surprisingly, the perceived stress of the participants was not significantly affected by the 12-hour shifts. These results suggest that the PSS that was used for this study does not reflect the physical stress that the EMTs and Paramedics experience.

Acknowledgements

This research was funded in part by a Provost Internal Grant for Social Sciences at the University of South Carolina. Thanks to Shannon Ellis, Dr. Tom Blackwell, and Phil Head for their assistance in completing this research. Additionally, Callahan and Dunn were Summer Research Scholars funded by the Sargent Foundation. Additionally, special thanks to Jenni Payne and Jimmy Kelley for assistance in recruitment for this study.