

Anticipation and experience of stressful situations and their psychobiological impact on providing pre-hospital emergency medicine care

ABSTRACT:

Background

Individuals who provide emergency care mount rapid psychobiological responses to provide resource when faced with an incident. Monitoring individuals engaging in real emergency situations would provide an understanding of their stress responses; however, this presents logistical challenges and could compromise patient care. An alternative is to assess individuals during high-fidelity training scenarios.

Aims

To assess the impact of high-fidelity training on psychobiological responding.

Method

In a sample of doctors and paramedics (N=27), psychological (state, cognitive and somatic anxiety; stress, worry, demand, control) and biological (diurnal cortisol; heartrate, heartrate variability [HRV]-derived stress) measures were recorded during 10 training days and a no-training weekend. Training involved the acquisition of human factors, non-technical and surgical skills, and their application in complex high-fidelity scenarios including road-traffic accidents, firearms incidents, and swift water rescues.

Results

Psychobiological responding during training was distinct from the weekend and characterized by statistically significant increases in anxiety, stress, worry, heartrate, HRV-derived stress, and diurnal cortisol secretion. The highest levels of psychobiological responding occurred on days characterized by greater perceived demand and lower perceived control of the day's events.

Conclusions

This is the most comprehensive assessment of psychobiological stress indices during an extended period of high-fidelity simulation of emergency medicine care. This study gives unique insight into factors affecting stress responding and could be used to identify patterns of responding that may impact upon health and wellbeing.

Keywords

Stress, Emergency medicine, Cortisol, Heartrate, High-fidelity training

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