

The effect of examination stress on changes of salivary cortisol and pulse rate in children and the role of personality traits on them

Abstract

Background&Objective: Examinations are among the most important stressors in schools and universities that result to psycho physiological outcomes but these effects on children has not been paid much attention. This study was done to determine the effect of stress of final examinations on the activation of hypothalamus-pituitary-adrenal axis (change of salivary cortisol) and autonomous nervous system (pulse rate) in children.

Materials&Methods: A total of 100 children (50 boys, 50 girls) in 5th grade aged less than 12 years from two primary schools of five educational district in Tehran were chosen randomly. The subjects completed Adolescent's Eysenck personality inventory. Physical and mental health was reviewed the medical history, clinical examinations and after controlling sleep, food, drug and sport variables, salivary samples and pulse rates were taken five times as follows: once a week before and then three times through mathematics, history and science exams and once a week after passing the exams at 9 to 10 am. Salivary cortisol samples were analysed by ELISA method.

Results: Cortisol levels increased significantly during examinations in compare with cortisol levels before and after examinations. Depending to sex, psychoticism, neuroticism and extroversion –introversion variables, only the effect of psychoticism and extroversion –introversion are statistically significant ($P<0.05$). Also repeated analysis of variance for pulse rate indicated the increase rate of later factor ($P<0.05$).

Conclusion: Final examinations as a stressor resource increase salivary cortisol and pulse rates of children. Personality factors can modulate the effect of examinations on salivary cortisol. Sex also modulates pulse rates increasing during academic examinations.

Key Words: Examination stress- HPA axis- Salivary cortisol- Pulse- Children personality

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