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Effects of half- or whole-night shifts on hypothalamo-pituitary-adrenal axis and autonomic nervous systems in women

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The aim of this study was to examine the effects of disturbed sleep patterns on hypothalamo-pituitary-adrenal axis (HPA, i.e. corticosterone and cortisol) and autonomic nervous systems (ANS, i.e. alpha-amylase) in females working in dfferent types of shifts.

The participants consisted of female nurses (n=52) working in the University Hospital for at last 5 years (40 night shift workers, 12 day-time workers) or female postgraduate students working in the Faculty of Medicine (all were day-time workers, n=8).

Cortisol levels were found to be higher in whole-night workers compared to day-time and half-night groups (P = 0.043). There was no difference between the groups in terms of corticosterone (p = 0.540) and alpha amylase levels (p = 0.864).

Cortisol, the main glucocorticoid in humans, was higher in women working in whole-night shifts suggesting that these women have activated HPA axis even though the other trace glucocorticoid (namely corticosterone) did not differ. Moreover, different pattern of alpha-amylase secretion suggest that HPA and ANS systems work in different fashion in shift workers.