

Studentship 3: Social interactions and their influences on diurnal cortisol patterns

Supervisors: Dr Meena Kumari, Professor Yvonne Kelly

The hypothalamic pituitary adrenal (HPA) axis plays a primary biological role in translating chronic stress into ill health (Adam and Kumari, 2010). Frequent and long-lasting activation of the HPA axis, as occurs in recurrently stressful environments, can compromise HPA axis functioning to cause these alterations in diurnal cortisol pattern. Negative or lack of social interactions with family and friends may be an example of such a recurrently stressful environment. Recent data suggest that alterations in diurnal cortisol patterns are predictive of cardiovascular related mortality in the Whitehall II study (Kumari et al., 2011). However, the association of negative or lack of social interactions with family and friends with diurnal cortisol patterns and the role these associations play in the development of poor health has not been examined.

The project will

- Characterise which aspects of social support, (negative, practical or emotional support) are associated with diurnal cortisol patterns; whether these associations are dependent on chronicity of exposure to adverse social support; and whether these associations are gender dependent.
- Examine whether social support is predictive of adverse changes in diurnal cortisol patterns; the nature of change in diurnal cortisol patterns in older age groups; whether change in diurnal cortisol patterns is influenced by no or negative social support; and whether these associations are gender dependent.
- Study whether diurnal cortisol patterns play a role in the association of negative social supports and health.

Data will come from the Whitehall II study. Measures of social supports from waves 1-7 can be used to examine the chronicity of exposure to adverse social support. Diurnal cortisol patterns were measured in waves 7 and 9 of the study. Diurnal cortisol patterns have been examined using multilevel and latent variable mixture modelling approaches. These methods will be developed to examine change in patterns across time.

References:

Adam EK, Kumari M. Assessing salivary cortisol in large-scale, epidemiological research. *Psychoneuroendocrinology*. 2009;34:1423-36.

Kumari M, Shipley M, Stafford M, Kivimaki M. Association of diurnal patterns in salivary cortisol with all-cause and cardiovascular mortality: findings from the Whitehall II study. *J Clin Endocrinol Metab*. 2011;96:1478-85.