57/06 - "The diurnal pattern of cortisol secretion in relation to season in healthy participants and those with seasonal affective disorder (SAD)"

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Objectives: This study compared the daily pattern of free salivary cortisol secretion in winter and in summer between two groups; participants with seasonal affective disorder (SAD) and age- and sex-matched healthy controls. The aim was to enhance theoretical understanding of the regulation of cortisol secretion over the day and contribute to the understanding of the pathophysiology and treatment of SAD.

Methods: Fifty-two participants completed the study with an equal number in each group. The diurnal pattern of cortisol secretion was assessed across two consecutive days in summer, and two in winter, with conditions being counterbalanced. On each study day participants collected multiple saliva samples in the domestic setting to capture the cortisol awakening response (CAR) and declining levels across the day. In addition, perceived stress, anxiety, depression, state stress and state arousal were assessed using validated questionnaires.

Results: In summer, SAD and control participants had similar psychological and cortisol profiles. In winter however, SAD participants reported greater depression, stress and anxiety, and lower levels of arousal (i.e. more drowsy, tired and sluggish, less alert, active, energetic and stimulated) following awakening in the morning. Furthermore, the CAR was significantly attenuated in SAD participants during winter months. There was no difference in cortisol levels during the rest of the day between controls and SAD participants in winter. In line with the above findings and previous research there was a negative relationship between the increase in cortisol following awakening and a measure of seasonality in winter. Participants who reported greater propensity for seasonal changes in mood exhibited an attenuated CAR in winter.

Conclusions: In winter, when light levels are low the cortisol response to awakening is attenuated in participants with seasonal affective disorder in comparison to controls. This study provides a new understanding of the physiology of clinical condition and will inform treatment.

Keywords: Seasonal affective disorder, cortisol, cortisol awakening response, seasonal differences