

The diurnal pattern of cortisol secretion in relation to season in healthy participants and those with seasonal affective disorder

Results:

This study compared the daily pattern of cortisol secretion in winter and in summer between two groups; participants with seasonal affective disorder (SAD) and age and sex-matched healthy controls. The diurnal pattern of cortisol secretion was assessed across two consecutive days in summer, and two in winter. 52 participants completed the study with an equal number in each group. In both winter and summer, participants collected multiple saliva samples across the day to capture the cortisol awakening response (CAR) and declining levels across the day. In addition, state stress and arousal, perceived stress, anxiety and depression were assessed using validated questionnaires. The results indicated that SAD and control participants had similar psychological and cortisol profiles in summer. However, in winter, SAD participants reported greater depression, stress and anxiety compared with controls. In addition, they showed lower levels of arousal (i.e. more drowsy, tired and sluggish, less alert, active, energetic and stimulated) following awakening in the morning. The control group did not show seasonal changes in the pattern of cortisol secretion. By contrast, the CAR was significantly attenuated in SAD participants during winter months but not during the summer. There was no difference in cortisol levels during the rest of the day for SAD participants in winter. This study contributes to the understanding of the physiology of SAD and provides evidence for potential underlying pathophysiological mechanisms in SAD. It further substantiates the evidence that light therapy following awakening in the morning may be beneficial for SAD sufferers by increasing cortisol to normal levels, which in turn may alleviate symptoms.

Published work:

Thorn, L., Evans, P., Cannon, A., Hucklebridge, F., & Clow, A. (2011). Seasonal differences in the diurnal pattern of cortisol secretion in healthy participants and those with self-assessed seasonal affective disorder. *Psychoneuroendocrinology*, *36*(6), 816–823. doi: 10.1016/j.psyneuen.2010.11.003

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