The idea that our mood fluctuates with the seasons has been around for many centuries. However it was not until the 1980s when Rosenthal and colleagues performed a series of bright light therapy trials and coined the term ‘seasonal affective disorder’ (SAD) that a new interest in the condition was generated.

History and evolutionary theory

Some of the evolutionary advantages to homo sapiens of this recurrent pattern whereby women in particular (and men to a lesser extent) became withdrawn, ate more and slept more during the winter months, and then in spring they became outgoing and energetic include:

- Outgoing, energetic women (and men) were more likely to procreate in the spring/summer.
- Their babies were more likely to be born (nine months later) when better weather and food supplies would be anticipated.
- Attenuated hibernation saved precious energy resources in winter.
- Pregnant women became fatter in winter with advantages for themselves and for feeding their children.
- 'Depression' in women promoted protective behaviour from male partners, enhancing pair bonding and the protection of children.

In modern industrialised society, SAD is now likely to constitute a reproductive disadvantage.

Epidemiology and aetiology

- The severity of SAD lies on a spectrum. Any cut-off between ‘normal’ seasonal changes and bona fide SAD can be deemed arbitrary. However, two large community prevalence studies in the UK estimated 3.5% (in Aberdeen) and 2.4% (in North Wales) of adults to be affected to a level of clear clinical significance.
- SAD is most common in females of reproductive age. It is relatively rare in children. In the older adult population the ratio between males and females tends to equalise.
- Recent evidence has shown that it is not simply the higher the latitude the higher the prevalence of SAD as was first thought. Rather, it may be more geographically mobile populations moving away from the equator that are at higher risk. Furthermore, geographically stable populations at high latitude are likely to be resistant to SAD (e.g. Icelanders).
- Aetiological theories of SAD include:
  - Daylight or photoperiods – indicated by the seasonal nature of SAD and effects of photoperiods in other mammals; the effects of latitude of residence/moving away from the equator; some evidence that SAD sufferers are less exposed to natural light; and symptom fluctuations with changes in weather, notably daily hours of sunlight.
  - Melatonin - there are possibly greater seasonal fluctuations in melatonin among SAD sufferers.
  - Monoamines – indicated by seasonal fluctuations in serotonin (or metabolites) in platelets, cerebrospinal fluid and post-mortem brains; tryptophan depletion and catecholamine depletion provoke relapse in SAD patients successfully treated with light therapy; and SSRI antidepressants are of established efficacy.
  - Phase shift hypothesis – indicated by SAD patients often finding it difficult to awaken in the morning, the delayed onset of melatonin secretion in depressed patients with SAD and bright light in the morning is an effective treatment.
Symptoms, diagnosis and comorbidity

- Symptoms of winter depression begin during the autumn/winter seasons. There is a cluster of `atypical depressive symptoms` that are characteristic of the condition and are as follows:
  - increased sleep, with associated daytime somnolence
  - increased appetite; in particular carbohydrate and chocolate cravings
  - weight gain.

- As well as the above atypical symptoms, many of the symptoms characteristically seen in non-seasonal depression can occur, e.g. loss of interest in normal activities, decreased energy, decreased motivation, impaired concentration and irritability. Indeed the most common and obvious differential diagnosis is non-seasonal depression and this distinction is important, particularly when considering whether to advise light therapy treatment.

- Symptoms typically resolve during the spring/summer. Moreover, many sufferers will experience some degree of symptoms of elevated mood in the summer time and as many as one third will develop hypomania (although full blown mania is rare).

- The diagnosis is made primarily on clinical grounds and SAD should be considered in all people with recurrent affective disorders. In addition to a full history, there are several questionnaires that have been designed to aid diagnosis. The Seasonal Pattern Assessment Questionnaire (SPAQ) is brief and is the most widely used.

- As is the case with non-seasonal depression, anxiety disorders are a common association with SAD.

Further reading


Terman M, Terman JS (2005) Light therapy for seasonal and nonseasonal depression: efficacy, protocol, safety and side effects. *CNS Spectrums*, **10**: 647-663. [PDF]

