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Seasonality in affective disorders in Switzerland

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Objective: To estimate the prevalence of seasonal affective disorder (SAD) and its subsyndromal form (S-SAD) in Switzerland (47°N).
Method: A representative sample from all three language areas of Switzerland ($n = 980$) were given a structured telephone interview using the extended Seasonal Pattern Assessment Questionnaire (SPAQ+). A smaller, but also representative sample in the city of Basel filled in the SPAQ+ form as well as undergoing a structured diagnostic interview.
Results: In this Swiss sample, 2.2% of the population presented with symptom severity of SAD, 8.9% with S-SAD. In Basel, a much higher prevalence of SAD was found. Seasonal problems occurred more often in patients with the Diagnostic and Statistical Manual (DSM)-III diagnosis of major affective disorders than in those with pure anxiety disorders or no psychiatric diagnosis.
Conclusion: These estimates for SAD in Switzerland are similar to those found in the Zürich Study, using other methods, and for populations in the UK, with the limitations inherent in retrospective questionnaire studies.

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Key words: epidemiology; seasonal affective disorder

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> 'Of seasons of the year, the autumn is most melancholy.' Robert Burton, *The Anatomy of Melancholy* (1621) Part I, Section 1: Mem 3, Subs. 2.

Seasonality ancient and modern

In the course of evolution, most organisms have adapted to the geophysical cycles of day and night and their modulation across the year in order to survive, function efficiently and reproduce. Humans also have circadian rhythms in behaviour and physiology, driven by the biological clock whose temporal programme responds to, and integrates, seasonal change in day-length. In addition, seasonal vulnerability is a characteristic of many illnesses, and such environmental influences have been a theme in writings on depression across the centuries.

The incidence of depressive symptoms, hospitalization, prescription for antidepressants and suicide peaks twice a year in spring and autumn; mania occurs more often in summer (1). These are cross-sectional data. Longitudinal studies of individuals who suffer from recurrent depressive episodes find them linked particularly to the autumn–winter season. Seasonal affective disorder (SAD), or winter depression, is not uncommon at temperate latitudes (2). In addition to the diagnosis of major depression, SAD patients are characterized by atypical symptoms of augmented sleep need, appetite, carbohydrate craving and weight gain. The reason why SAD has been much researched – particularly in the northern latitudes of Scandinavia, Russia and Canada – and included rapidly in the diagnostic manuals, may be attributed to the remarkable success of a non-pharmacological treatment that is efficacious, fast and simple to use without side-effects: bright light.

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Epidemiology of SAD

The majority of studies investigating the prevalence of SAD and its subsyndromal form (S-SAD) have used the original questionnaire developed at the National Institute for Mental Health (NIMH), the Seasonal Pattern Assessment Questionnaire (SPAQ). Seasonal variations in mood, energy, social contact, sleep, appetite and weight are codified and added together to give a 'global seasonality score' (GSS); this, together with a rating on the extent of seasonal problems, provides criteria for cases (3). Prevalence estimates in community-based surveys range from 1.4 to 9.7% in Northern America, 1.3–3.0% in Europe and 0–0.9% in Asia (4). There is partial dependence on latitude, as would be expected of a syndrome vulnerable to long dark winter nights (2). Nearly all prospective population studies document seasonal variations in mood, with depressive symptoms usually peaking in winter. Seasonal exacerbations and remissions are not limited to mood disorders: they may be present in premenstrual depression, bulimia nervosa and other psychiatric illnesses.

Seasonality in Switzerland

The remarkable longitudinal Zürich Study carried out over decades by Jules Angst has also addressed the question of seasonal patterns in psychiatric syndromes (5). Interviews in young adults 27–28 years of age reported increased susceptibility in autumn and/or winter in 23% of those diagnosed with depression. Followed-up over two consecutive years, 10.4% were found to suffer from seasonal depression or subsyndromal seasonal difficulties. However, the atypical symptoms of hypersomnia, increased appetite and weight gain were not consistently associated with seasonal depression in this study.

Our own study was carried out during the same period, but with different methods. We used a telephone and not a personal interview, over a wide age range (20–89 years), and a representative sample of the entire country using the 'Berne sampling plan'.

Switzerland (47°N) has no latitude cline, but quite different climates within a small area. We hypothesized that the incidence of seasonal problems would correlate with the hours of available sunshine in different regions.

Subjects ($n = 980$) were interviewed by telephone in French, German or Italian as appropriate, using an extended version of the SPAQ that included questions on sleep, eating patterns and light-orientated behaviour. The SPAQ-derived scores are summarized in Table 1. Using the Kasper criteria (3), 2.2% of this population were classified as SAD, 8.9% as subsyndromal-SAD. The combined group of 11.1% is denoted henceforth 'seasonals'. This prevalence is lower than found in an analogous telephone survey in Maryland, USA (4.3% SAD and 13.5% S-SAD) (3), but similar to a Canadian telephone survey (2.9% SAD) (4). Diagnostic interview protocols have shown community prevalence rates of SAD of 1% in the USA (6), 3.5% in Scotland (7) and 2.4% in North Wales (8).

Table 1. Summary of SPAQ +scores (mean ± SD) in two representative populations

	n	Global seasonality score	Seasonal problem score
Swiss study	980		
'Seasonals'	109	10.5 ± 5.8	1.3 ± 1.3
'Non-seasonals'	871	3.4 ± 5.5	0.3 ± 0.5
Basel study	202		
Affective disorders	25	9.4 ± 4.4	1.4 ± 0.3
Anxiety disorders	21	5.8 ± 3.7	0.4 ± 0.8
'Normals'	156	6.4 ± 4.5	0.5 ± 0.9

There was no significant difference in the prevalence of seasonality between the three Swiss language and hence cultural regions.

To provide an overall picture of the seasonal patterns in behaviour, the SPAQ items were subsumed under two functional categories: vegetative symptoms – Σ scores for appetite, sleep duration, body weight changes; and psychological symptoms – Σ scores for mood, social contact and energy changes (Fig. 1). Seasonal rhythms were present in all individual as well as grouped symptoms, supporting the concept that humans retain the capacity to respond to seasonal change, in spite of artificial light and winter heating which keep day-length and temperature relatively constant throughout the year. The amplitude of change in symptoms throughout the year was much greater in the 'seasonals' than in the remaining population.

Similar to patients diagnosed as SAD, we found that more 'seasonals' were women (61%). 'Seasonals' had a greater amplitude of change of appetite throughout the year ($P < 0.0001$). In winter, their carbohydrate-rich intake was higher (interaction, $P < 0.0001$) and they slept more, particularly at weekends (9.4 ± 1.6 h vs. 8.9 ± 1.4 h). Women slept longer than men. A remarkable 24.6% of the population took naps, but these did not vary in incidence or duration with gender or season – although napping did increase with age (9).

With respect to our main hypothesis, that hours of available sunshine would influence seasonal

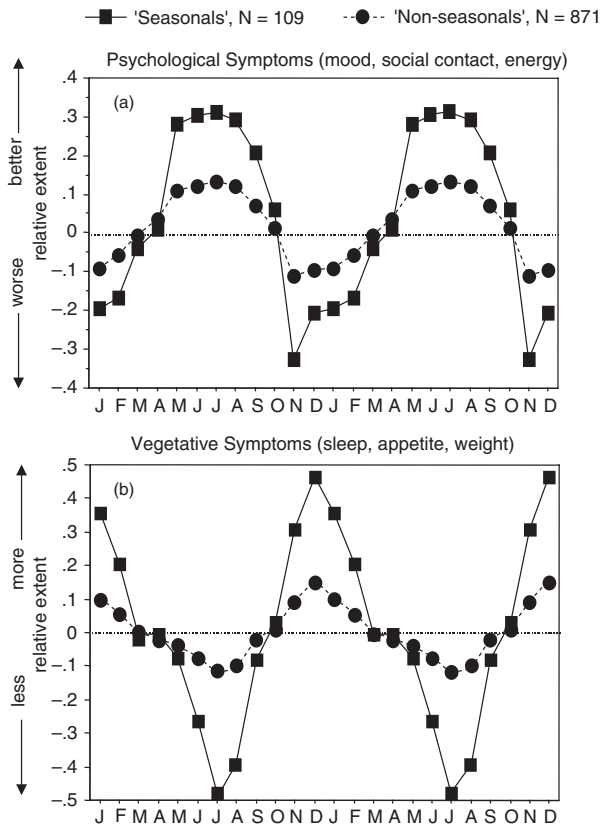

Fig. 1. The extent of seasonal symptoms (amplitude) and their timing in the representative Swiss population ($n = 980$) are shown in a double plot where 1 year's data have been repeated to show the rhythm more clearly. (a) Psychological symptoms: Σ scores for mood, social contact and energy; and (b) vegetative symptoms: Σ scores for appetite, sleep duration, body weight varied more strongly throughout the year in 'seasonals' than in 'non-seasonals' – although the presence of a significant seasonal rhythm in both groups shows that seasonality is a normal phenomenon in humans.

symptoms, we compared the extreme regions with particularly high annual hours of sunshine (>1780) and those with much fewer (<1480), with regions in between. The amount of annual sunshine did not influence seasonality ($\chi^2 = 1.3$, df 2, $P = 0.5$) indicating that a sunny or overcast environment does not, *per se*, determine seasonal problems.

'Seasonals' judged both their natural indoor lighting ($\chi^2 = 11.2$, df 2, $P = 0.004$) and artificial lighting conditions ($\chi^2 = 10.2$, df 2, $P = 0.006$) worse than the 'non-seasonals' in terms of the categories 'good lighting' (66% vs. 77% and 43% vs. 60%, respectively) and 'just sufficient to almost satisfactory' (33% vs. 20% and 53% vs. 38%). The time spent outdoors did not differ between the groups. Thus, lighting conditions may be important for the seasonally vulnerable.

'Seasonality' is correlated with affective and not with anxiety disorders

The evidence for seasonality in affective disorders far outweighs that for seasonality in anxiety disorders. Seasonal variations in anxiety symptoms or disorders have been noted in particular groups or single cases (10–13). The studies cited, however, do not take into account the possible comorbidity of anxiety disorders and affective disorders. We were able to investigate whether subjects suffering from pure anxiety disorders also report seasonal changes of mood and behaviour.

Within the framework of an epidemiological study of the prevalence of anxiety and mood disorders in the city of Basel (14), a representative subset of 202 residents 18–65 years of age was evaluated with the SPAQ+ in addition to establishing a diagnosis [Diagnostic and Statistical Manual (DSM)-III-R Composite International Diagnostic Interview Core Version 1.0, WHO 1990]. No psychiatric diagnosis was found in 77%, designated 'normals', 12.5% had a lifetime diagnosis of affective disorder, and 10.5% pure anxiety disorder. Within these diagnostic categories, the distribution of SAD and S-SAD were defined (3) (Table 1). Subjects diagnosed to have affective disorders had a significantly higher prevalence of SAD and S-SAD compared with both 'normals' or subjects with pure anxiety disorders ($\chi^2 = 10.9$, df 4, $P < 0.03$) (Fig. 2). Thus, seasonality is a dimension not distributed equally among diagnostic categories: it is linked rather with affective disorders than pure anxiety disorders. The higher prevalence of 'seasonals' found in Basel than overall in the larger Swiss population study may be real or may arise from the methodological differences.

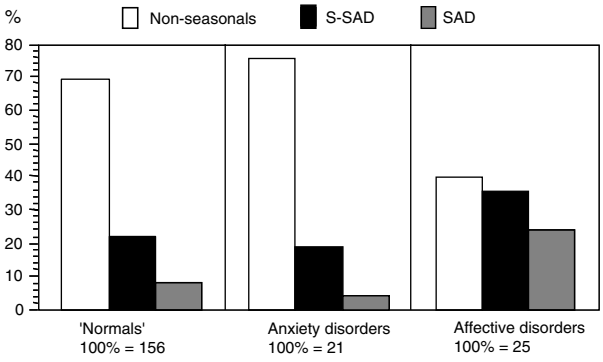

Fig. 2. Data from the Basel study ($n = 202$) are presented in CORE interview-determined diagnostic categories. Within each category, the percentage with SAD and S-SAD were determined using established SPAQ criteria (3). SAD and S-SAD were more prevalent in subjects diagnosed with affective disorders than in 'normals' or subjects with pure anxiety disorders (statistics in text).

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