

Mood disorders and season of presentation

A preliminary study of an inpatient sample at Baragwanath Hospital

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The relationship between season and mood is complex. This study attempts to clarify one aspect of the relationship: the impact of season on mood in terms of the hypothesised seasonal variation in the presentation of mood disorders at Baragwanath Hospital. Although a preliminary study, the results show a statistically significant seasonal trend for presentation of mood disorders, confirming the hypothesis and providing a basis for further study of this phenomenon.

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The basis for the study was the observation by staff in the Department of Psychiatry at Baragwanath Hospital that at certain times of the year, specifically in the spring months, patients with bipolar disorder were presenting for admission more frequently.

More specifically, it seemed that a 'spring mania' was being observed. The intention of the study was to attempt to provide an objective basis for this anecdotal observation in a local population. Mood disorders as a broad diagnostic group (according to the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R)*)¹ were looked at, and no attempt was made to delineate the occurrence of specific mood disorders. Reviewing publications on the association between season and its impact on mood, the findings are generally inconsistent but highly suggestive of an association.² However, the nature of the association has not been clearly elucidated and remains complex. Different studies have arrived at different conclusions about the inter-relationship between mood and season, i.e.: (i) season as a factor in the relapse of patients with an established mood disorder;³ (ii) season as a direct precipitant of mood disorders, i.e. seasonal affective disorder (SAD);⁴ and (iii) season as a factor in the mood fluctuations of normal individuals.⁵

In attempting to be systematic in reviewing these findings, it is convenient to look at the inter-relationship between: (i) season and depression; and (ii) season and mania.

Briefly, with reference to depression, while the concept of depression being associated with the winter months has long been a popular one, it is not an exclusive phenomenon; in fact, every other season appears to have been significantly correlated with depression except winter.^{2,6} With reference to mania, the generally observed seasonal peak for admission is spring, with variable peaks in summer and autumn in some studies.^{3,7,8}

It is important to clarify the concept under study in terms of differentiating it from SAD. SAD is a condition where patients experience recurrent episodes of depression, usually atypical, at the same time each year, usually winter. A variant of this disorder with summer depression has also been described.⁹ Hence, SAD refers

to a specific subgroup of mood-disordered patients, whereas the study pertains to mood-disordered patients in general, some of whom may well have SAD. The entity of SAD is certainly appealing, but not without controversy.

Patients and methods

The study was a retrospective one, reviewing the period January - December 1989. Patients with a mood disorder admitted to Baragwanath Hospital during this period were included in the study. All patients seen in the Department of Psychiatry are recorded in a register, from which the essential information was acquired, i.e. month of admission and diagnosis. Monthly totals were then clustered into seasonal totals. The seasons were derived as follows: (i) spring — September, October, November; (ii) summer — December, January, February; (iii) autumn — March, April, May; and (iv) winter — June, July, August.

The basis for the above clustering was twofold: (i) locally, September is regarded as the beginning of spring; and (ii) internationally, a Southern Hemisphere study of a similar nature used the same clustering.¹⁰

The results were then statistically analysed using the SPSS programme (Statistical Package for the Social Sciences). Cross-tabulations on expected versus actual frequencies were compiled and chi-squares computed for the data.

Mood disorder admissions by season were also compared with total admissions by season via the same analysis, i.e. expected versus actual frequencies for mood disorders given total admissions.

Results

For the year 1989, a total of 516 patients was admitted to Baragwanath Hospital with a mood disorder. Each of these cases was noted in terms of month of admission (Fig. 1). The monthly totals were then grouped into seasons (Fig. 2). Cross-tabulations on expected versus actual frequencies were carried out. The results were as follows: $\chi^2 = 8,465$; degrees of freedom (df) = 3; $P = 0,037$ ($< 0,05$) (Fig. 2).

Looking at the results, it is clear that peaks for admission were found in the spring and winter periods; these peaks were statistically significant.

The results for admissions for mood disorders were also compared with figures for total admissions for the year 1989 (R. Thom — personal communication) (Table I).

TABLE I
Mood disorder admissions versus total admissions by seasons

Season	No. of admissions	
	Mood	Total
Spring	150	646
Summer	116	685
Autumn	110	699
Winter	140	643

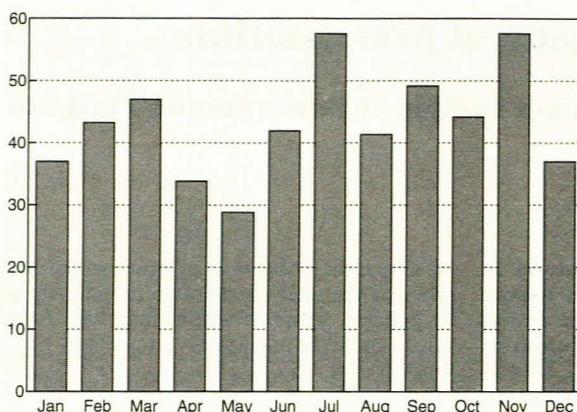


FIG. 1.
Monthly cases, January - December 1989.

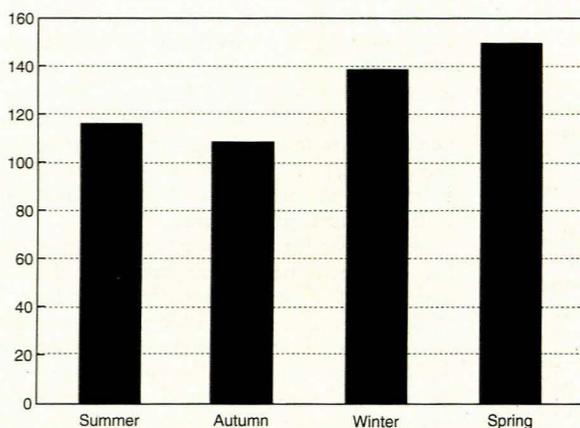


FIG. 2.
Cases by season.

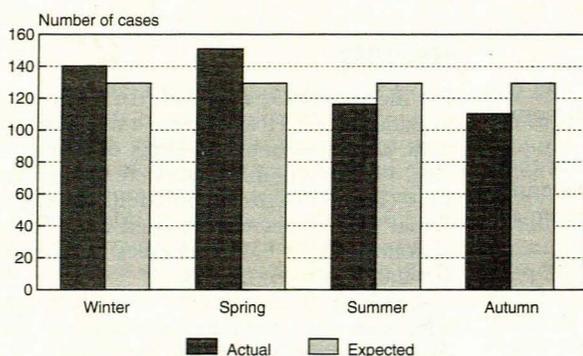


FIG. 3.
Expected (based on no seasonal effect) v. actual cases according to season ($\chi^2 = 8,465$; $P < 0,05$).

The figures for total admissions show the reverse trend to those for mood disorders, i.e. peaking in summer and autumn. Statistically, the winter and spring peaks for mood disorders were found to be significant when comparing actual mood disorder admissions with expected admissions given total admission figures: $\chi^2 = 13,762$; $df = 3$; $P = 0,003$ ($< 0,01$). This result would appear to strengthen the validity of the seasonal peaks for mood disorders noted in the period of review.

Discussion

While the initial hypothesis appears to have been proved in terms of there being specific seasonal peaks for mood disorder presentation, the findings need to be viewed within the context of the limitations of the study: (i) the study is preliminary and at most provides a basis for further research into the phenomenon; however, the basis now seems to be objective rather than anecdotal; (ii) it is a hospital-based study, and hence the patient numbers do not necessarily represent the true incidence of seasonal occurrence of mood disorders, in that patients not requiring admission are excluded (i.e. subthreshold, relapsed or new cases); (iii) inter-rater reliability has not been controlled for in terms of symptom interpretation leading to diagnosis of a mood disorder, despite all medical staff in the department using DSM-III-R criteria in making diagnoses; (iv) the exact time of symptom onset may precede hospital admission by some weeks,¹¹ so that if symptom onset rather than presentation for admission of mood-disordered patients were to be looked at the seasonal pattern may in fact be quite different; (v) the population under study is discrete in terms of race and geographical location; and (vi) the period of review pertains to one year only, so there is no way of knowing whether the pattern recurs yearly or is part of a larger pattern recurring over a number of years. The same applies to the pattern for total admissions.

Notwithstanding the limitations of the study, it appears that the phenomenon under consideration is worthy of further exploration. Future research should look at several areas: (i) community-based studies of a similar nature, so that all points of entry into the system are investigated, not just hospital admissions; (ii) retrospective and prospective hospital studies in the same and other groups over a longer period; (iii) accurate delineation of the specific mood disorders seen within each season which may contribute to the peaks noted; and (iv) attempts to establish the climatic variables associated with the seasonal peaks of presentation; this may bring us closer to deriving the causal basis for the associations noted.

Conclusion

Season and mood appear to be related. To date, the association is correlational with a causative association yet to be established. However, given that the causal basis for mood disorders in general still eludes us, the implication of research in this area is immense.

Our understanding of how environmental factors, i.e. seasonal changes, impact upon the body to induce physiological changes — giving rise to mood disorders — may well enhance our understanding of the pathophysiology of mood disorders in general. With that knowledge a potentially radical revision of the treatment and management of mood-disordered patients may emerge. While this study is only a preliminary one, it appears to be the first of its kind locally and seems to provide a basis for more extensive local research into what may be the next frontier of psychiatry — ‘environmental psychiatry’.¹²

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