

FREQUENCY OF SEASONAL AFFECTIVE DISORDER AMONG INDIVIDUALS  
SEEKING TREATMENT AT A NORTHERN CANADIAN MENTAL HEALTH CENTRE

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## **SUMMARY**

The frequency of seasonal affective disorder (SAD) was examined in clients receiving treatment for recurrent mood disturbances in a northern Canadian site. Approximately one-fifth of these individuals were identified as having SAD using file histories and a statistical criterion as the basis for assessment. The failure to find a higher prevalence rate at this latitude may be due to other studies' reliance on client self-report, a tendency for individuals with SAD to relocate south, or a greater tendency for SAD to be seen by general practitioners and alcohol treatment centres in the north.

**KEY WORDS:** seasonal affective disorder, prevalence, cabin fever

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## INTRODUCTION

Seasonal affective disorder (SAD) is a condition characterized by regular seasonally related changes in mood, most often fall or winter depressions that remit by spring or summer (Wehr & Rosenthal, 1989). Winter depressions appear to be caused by light deficiency, which explains the therapeutic value of phototherapy in its treatment (Wehr & Rosenthal, 1989, Terman, Terman, Quitkin, et al., 1989).

The prevalence of this condition is unclear. In the general population the prevalence has been estimated to be as low as .04% (Lingjaerde, Bratlid, Hansen, et al., 1986) to as high as 10.2% (Rosen, Targum, Terman, et al., 1990). Amongst individuals receiving treatment for recurrent depression, the prevalence has been estimated to be, 10-15% (Gupta, 1988), 15.6% (Thase, 1986), 23% (Rosenthal, Sack, Gillin et al., 1984), 29% (Montplaisir, 1991), and 38% (Garvey, Wesner & Godes, 1988). Some of the variability in these estimates is due to differing assessment methodologies. However, another source of variability may be the different latitudes where these studies were conducted. The population surveys of Lingjaerde et al. (1986) and Rosen et al. (1990) show an increasing frequency of seasonally related mood swings in higher latitudes having shorter winter days and colder winters that limit outdoor exposure to daylight.

If this is the case, then SAD should be particularly common in Canada, which is at a higher latitude than any of the previous studies except the population survey of Lingjaerde et al. (1986). The purpose of the present investigation was to determine the prevalence of seasonal affective disorder among individuals receiving treatment for recurrent mood disturbances in a northern Canadian site. Although "cabin fever" is a commonly talked about winter/spring malaise in the north, it is typically attributed to the coldness and duration of the winters, rather than the amount of light received. The present study examined whether northern Manitobans with recurrent mood disturbances do in fact have higher rates of seasonally related mood changes.

## METHOD

The province of Manitoba has a regional Health and Family Services centre located in the city of Thompson, providing mental health services to a client population ranging from the 54th to 60th parallel, a catchment area of 23000. All mental health files active between March 31 1988 and March 31 1990 were examined by the Mental Health Coordinator to identify clients with a documented history of two or more significant mood disturbances. The file of each of these latter individuals was then examined by the Regional Psychologist (RW) who noted the dates of major depression onsets, manic or hypomanic onsets, and remission dates (remissions defined as either two months of normalcy or a change to the opposite mood state). These dates were based on the weekly to monthly case notes of the mental health worker, psychiatric assessments, dates of file openings and closures, hospital admission records, and the client's reported history of mental health problems. When file information was incomplete

or ambiguous, the individual was interviewed to clarify the information. Clients were excluded from the analysis if the nature, number and chronology of their episodes could not be clearly established for at least two-thirds of their total history of mood disturbances. For individuals remaining in the analysis, their sex, age, race, latitude of birthplace, length of northern residency, urban versus rural residency and formal psychiatric diagnosis was recorded. All subjects were also asked to indicate to what extent they experienced seasonal mood changes (not at all, just a little, moderately, very much), and the season that these mood changes occurred.

Two methods were used to determine whether an individual had seasonal affective disorder. The first used DSM-III-R criteria for Depressive or Bipolar Disorders with a seasonal pattern. The second method used a statistical criterion. A contingency table for each individual recorded the number of endogenous depressions, depression remissions, manic episodes, and manic remissions occurring in the fall and winter versus the spring and summer (i.e. a 2 x 2 table for individuals with just depressions and a 2 x 4 table for individuals with depressions and manic episodes). A significant seasonal relationship was assessed if a Chi-Square Goodness-of-Fit Test (3 or 7 df) determined that the season of depression onsets, depression remissions, manic onsets, or manic remissions was not evenly distributed by a probability of  $< .05$ .

## RESULTS

One hundred and twenty-one clients were treated for a mood disturbance during this two year period. Of these, forty-one had a history of recurrent mood disturbances. Of these, thirty-one had sufficiently detailed files to clearly establish the nature, number and chronology of their recurrent depressive and/or manic episodes. (The ten excluded subjects did not differ from nonexcluded subjects in their self-report of the seasonality of their mood changes). These numbers are low for a catchment area of this size (23000) because only a minority of people with depression seek treatment, those that do tend to see their physician, and the very high rate of alcoholism in the north masks a lot of depressive disorders.

Of this group of 31, three clients met DSM-III-R criteria for a seasonal pattern of mood disturbances. Using the statistical method of assessment, six clients (including the three meeting the DSM-III-R criteria) had a significant seasonal relationship to their mood changes. The three individuals who met the statistical criterion but failed to meet the DSM-III-R criteria did not have their onsets and/or offsets regularly occurring in the same 60 day period, as is required. Of the six individuals meeting the statistical criterion, four had fall/winter depressions and spring/summer remissions, one had summer manias and fall remissions, and one had winter depressions and spring/summer depressive remissions and manic onsets.

Characteristics of the six individuals meeting the statistical criterion as compared to the 25 with nonseasonally related mood disturbances are reported in Table 1. All comparisons were nonsignificant except for latitude of birth. However, the small sample sizes involved limited the statistical power of these comparisons.

Of the six individuals meeting the statistical criterion, only one failed to report that he "very much" experienced seasonal mood changes. This individual reported no seasonal relationship to his moods. Of the 25 individuals with nonseasonally related mood changes, five reported they "very much" experienced seasonal mood changes, with worse moods during the winter.

## DISCUSSION

The results indicate that approximately one-fifth of individuals seeking treatment for recurrent mood disturbances in northern Manitoba have seasonal affective disorder. The small sample size of the present study makes it difficult to make comparisons with the results of other studies. Nevertheless, it is instructive to note that this prevalence figure falls within the range reported in the literature (10 - 38%) (Garvey et al., 1988; Gupta, 1988; Montplaisir, 1991; Rosenthal et al., 1984; Thase, 1986), but is lower than expected considering the latitude of the current study (54 - 60 degrees north) is considerably higher than the latitudes of the above studies (27 - 47 degrees north).

There are several possible explanations why a higher prevalence rate was not found in this study. One possibility is that there may be a self-selection bias in population migration patterns over time. Those least able to tolerate the winters may move south, leaving a core population self-selected for tolerating winter conditions. Large numbers of people leave the north each year, with the severe climate being one of the main reasons.

Another consideration is the large number of people with seasonal health problems that are seen by general practitioners. A recent study by Schlager, Haffe, Froom et al. (1992) found that a very high proportion of patients seen in the winter at a primary care clinic had seasonal depression and functional impairment. A related consideration is the high rates of alcoholism in the north which mask a lot of depressive disorders. The implication here is that significant increases in the prevalence of seasonal health problems in a population may only result in small increases in the number of individuals seen at mental health centres. This is relevant to the present study, as the number of individuals identified as having recurrent depression was small for a catchment area of 23000.

A final possibility concerns different assessment methodologies. The prevalence rates of other studies may be overestimates because they assessed SAD on the basis of the client's self-report, and required fewer episodes to assess a seasonal relationship. For example, Garvey et al. (1988), who obtained a prevalence of 38%, defined SAD as anyone reporting two or more depressive episodes starting during the same season with no depressions starting at other times. The primary reason the statistical methodology was used in the present study was because of the imperfect relationship between self-report and actual clinical history. This is illustrated by the fact that one out of the six SAD clients failed to recognize any seasonal relationship with his moods, and five out of the twenty-five non-SAD individuals reported a significant seasonal relationship (winter depressions) despite file evidence to the contrary. It is of interest to note that the DSM-III-R criteria for SAD were introduced to reduce false

positive identifications (Spitzer & Williams, 1989). However, these criteria appeared to be overrestrictive in the present study because of their requirement that onsets and offsets regularly occur in the same 60 day period.

This study identified six previously unrecognized cases of SAD. All of them were being treated with anti-depressant medication and counselling rather than light therapy. A few of them were already aware of the benefits of light and routinely took southern vacations in the winter. Because of the apparent prevalence of SAD and its potential amenability to light therapy (Wehr & Rosenthal, 1989, Terman, Terman, Quitkin, et al., 1989), it would be advisable for all mental health facilities to routinely examine the seasonality of clients with a history of mood swings.

Of final note, individuals with SAD did not differ from individuals without SAD in terms of age, sex, race, urban versus rural residency, proportion of Bipolar cases, or years of northern residency, although the sample sizes used for these comparisons were small. However, there was a significant tendency for individuals with SAD to have been born at more southern latitudes. Three individuals with SAD were born in southern Manitoba, one in India, one in Germany, and one in northern Manitoba.

## REFERENCES

- Garvey, M.J., Wesner, R., & Godes, M. Comparison of seasonal and nonseasonal affective disorders. American Journal of Psychiatry, 145: 100-102, 1988.
- Gupta, R. Alternative patterns of seasonal affective disorder: Three case reports from north India. American Journal of Psychiatry, 145: 515-516, 1988.
- Lingjaerde, O., Bratlid, T., Hansen, T., and Gotestam, K.G. Seasonal affective disorder and midwinter insomnia in the far north: Studies on two related chronobiological disorders in Norway. Proceedings of the Collegium Internationale Neuro-Psychopharmacologicum, 9: 187-189, 1986.
- Montplaisir, J. Sleep in depression, schizophrenia, and narcolepsy. In: Macher, J.P. and Crocq, M.A., eds., The Bio-Clinical Interface: Sleep and Psychiatry. Basel: Aesopus, 1991.
- Rosen, L.N., Targum, S.D., Terman, M., Bryant, M.J., Hoffman, H., Kasper, S.F., Hamovit, J.R., Docherty, J.P., Welch, B., and Rosenthal, N.E. Prevalence of seasonal affective disorder at four latitudes. Psychiatry Research, 31: 131-144, 1990.
- Rosenthal, N.E., Sack, D.A., Gillin, J.C., Lewy, A.J., Goodwin, F.K., Davenport, Y., Mueller, P.S., Newsome, D.A., and Wehr, T.A.. Seasonal affective disorder: a description of the syndrome and preliminary findings with light therapy. Archives of General Psychiatry, 41: 72-80, 1984.
- Schlager, D., Jaffe, A., Froom, J., Steneker, S., Feigenbaum, D., Yao, S.L., and Wu, S.Y. Winter depression and disability in 685 primary care patients at 41°N latitude. Soc. Light Treatment Biol. Rhythms Abst., 4: 7, 1992.
- Spitzer, R.L. and Williams, J.B.W. The validity of seasonal affective disorder. In: Rosenthal, N.E. and Blehar, M.C., eds., Seasonal affective disorders and phototherapy. New York: Guilford, 1989, pp. 79-84.
- Terman, M., Terman, J.S., Quitkin, F.M., McGrath, P.J., Stewart, J.W. and Rafferty, B. Light therapy for seasonal affective disorders: a review of efficacy. Neuropsychopharmacology, 2: 1-22, 1989.
- Thase, M. Defining and treating seasonal affective disorder. Psychiatric Annals, 16: 733-737, 1986.

Wehr, T.A. and Rosenthal, N.E. Seasonality and affective illness. American Journal of Psychiatry, 146: 829-839, 1989.



Table 1: Characteristics of Individuals with Nonseasonal versus Seasonal Mood Changes

	NONSEASONAL MOOD CHANGES (n = 25)	SEASONAL MOOD CHANGES (n = 6)	
SEX	72.0% female	66.7% female	ns <sup>a</sup>
RACE	70.8% Caucasian	83.3% Caucasian	ns <sup>a</sup>
URBAN/RURAL <sup>b</sup>	72.0% urban	83.3% urban	ns <sup>a</sup>
PSYCHIATRIC DIAGNOSIS	24.0% Bipolar	33.3% Bipolar	ns <sup>a</sup>
AGE	40.4 ± 12.5	45.2 ± 13.4	t(29) = -.83; ns
YEARS NORTHERN RESIDENCY <sup>c</sup>	23.1 ± 11.0	18.8 ± 11.0	t(28) = .85; ns
LATITUDE OF BIRTHPLACE	51.7 ± 3.6	45.7 ± 14.9	t(28) = 1.86; p = .04 (1 tail)

<sup>a</sup> Fisher's exact test

<sup>b</sup> Thompson residency being urban and all other locations being rural

<sup>c</sup> above the 54th parallel