

Articles

Effect of season of birth on schizophrenia

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Abstract

The study was conducted to assess the effect of season of birth on schizophrenia. Out of 78 schizophrenic patients studied, 60.25% were male, 79.48% were within 14-30 years of age and 56.41% came from the urban background. 58.98% were unmarried and 76.92% were literate from primary to graduate level. Unemployment was the highest (42.3%) in occupational group. Among the patients 55.12% were born in winter followed by 20.51% and 17.94% in summer and spring respectively. This study may help to generate hypothesis about the causation of this major psychiatric disorder.

TAJ 1995; 8 : 55-57

Introduction

Schizophrenia is a major psychiatric disorder of multifactorial etiology. Since it has been established that genetic factors increase an individual's risk for schizophrenia, it is not surprising that investigators have tried to understand the seasonal phenomenon in relation to genetic risk. One study reported that hypothesis of fetal or neonatal damage is at present, perhaps, the strongest contenders to explain the season of birth effect on schizophrenia and complications of pregnancy or birth, a dietary deficiency or a viral infection are the most obvious contenders. Considering the world wide prevalence of schizophrenia, of the three, a viral hypothesis has the advantage of being able to explain not only the seasonality of births in schizophrenia but also its seasonality of onset and recurrence.¹

In a rural community survey of Bangladesh, the prevalence rate of schizophrenia was found 2.54/1000 of the population.² The life time expectancy of the disease is 1% of the general population.^{3,4,5}

The present study was designed to assess the effect of season of birth on schizophrenia.

Materials and methods

The study was carried out in the psychiatric outpatient department of Mitford Hospital, Dhaka and Institute of Mental Health & Research, Dhaka from August '93 to October '93 and a total of 78 schizophrenic patients were randomly selected for the study. A multipoint questionnaire which included sociodemo-graphic parameters and season of birth of schizophrenic patients was used. Data was collected by interviewing the patients and their relatives by the authors. The diagnosis was made on the basis of ICD-10.⁶

Results

Table I shows that out of 78 patients, 60.25% were males and 39.74% females. The age of the patients was 24.98 ± 8.5 years (mean \pm SD) and the range was 14 to 50. Majority of the patients (56.41%) came from the urban background and 43.59% from the rural background. Among the patients 58.98%, 42.30% and 76.92% were unmarried, unemployed and literate respectively.

Table II shows that majority of the patients (55.12%) were born in winter and followed by 20.51%, 17.94%, 6.41% were born in summer, spring and rainy season respectively.

Discussion

In present study majority of the patients 55.12% were born in winter followed by 20.51% and 17.94% in summer and spring respectively.

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Table I. Sociodemographic characteristics of the patients

Characteristics	Male (n=47)	Female (n=78)	Total	%
Age				
Upto 20	10	15	25	32.05
21-30	25	12	37	47.43
31-40	10	1	11	14.10
41-50	2	3	5	6.41
Mean age 24.98±8.5 years (mean± SD)				
Habitus				
Urban	26	18	44	56.41
Rural	21	13	34	43.59
Marital status				
Unmarried	27	19	46	58.98
Married	19	9	28	35.90
Divorced	1	3	4	5.12
Occupation				
Student	3	4	7	8.98
House wife	0	10	10	12.82
Service	10	1	11	14.10
Cultivation	6	0	6	7.69
Labour	2	0	2	2.57
Business	2	0	2	2.57
Household work	3	4	7	8.98
Unemployed	21	12	33	42.30
Education				
Illiterate	8	10	18	24.08
Primary	13	9	22	28.20
Secondary	18	9	27	34.61
Higher secondary	5	3	8	10.25
Graduate	3	0	3	3.84

Table II. Season of birth of the patients.

Season	Male (n=47)	Female (n=31)	Total (n=78)	%
Winter	26	17	43	55.12
Summer	10	6	16	20.51
Spring	8	6	14	17.94
Rainy	3	2	5	6.41

These findings are nearly similar with other studies. One study reported that schizophrenic individuals show an unusual seasonal pattern compared with normal population.⁷ A highly significant excess of births in the winter and spring of the order of 5-10% has repeatedly been demonstrated in several northern and some southern hemisphere countries.^{7,8} Other

studies reported that a seasonality of birth has been widely reported for schizophrenic patient and show an over representation of the births of schizophrenic patients during the winter or spring months (as compared with general population) and schizophrenics are more likely to be born in the winter and early spring and less likely to be in the late spring and summer.

The increased risk for schizophrenia in winter born individuals is reported to be 5-15% in most studies.^{8,9,10}

Majority of our patients 55.12% were born in winter. Probably many viruses are more prevalent in winter and schizophrenia is due to virus with a seasonal prevalence. It was found in one study that seasonality of birth can not readily be explained by current genetic models but could be explained if schizophrenia were due to a virus with a seasonal prevalence. Many viruses are more prevalent in winter and early spring, when a winter born child may be at most risk of infection.⁸ It was found in several studies that virus like materials found in the CSF of schizophrenic patients and increased titres of a number of viral antibodies have also been reported in both the serum and CSF of schizophrenic patients.^{4,8} Several investigators reported that an increased prevalence of IgM antibody to CMV in the serum of patients with schizophrenia and suggested that this indicated active infection, reactivation of latent infection or abnormally persistent antibodies from past infection and impaired immunity and an increased perinatal susceptibility to viral infection which might ultimately lead to schizophrenia in later life. Overall all, it would seem that immune function may be slightly reduced in schizophrenia but there is no clear evidence for this being of etiological significance.⁸ One study reported that a seasonally varying factor occurring during either the intrauterine life or the initial postnatal months, alter the central nervous system and increase the risk for schizophrenia for some especially vulnerable group. The seasonally varying factor has been hypothesised to be a virus, a low protein diet or pregnancy complication.^{4,9}

In present study majority of the patients (56.41%) came from the urban background. This finding was similar with another finding where they reported that neonates born in

urban environments are more likely to be exposed to viral infections because individuals living in the city are living at closer proximity to each other.⁹

The way the seasonally varying factor interacts with the genetic risk factors awaits elucidation. One study suggested the following two possibilities for further exploration : (a) That there may be some seasonally varying factor that causes an unusual pattern of conception among those with the schizophrenic genotype and (b) That some seasonally varying complication of pregnancy or birth may be associated with the risk for schizophrenia.⁹

References

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