

Original Research Article

Gender difference in age at onset of schizophrenia among inpatients: a descriptive cross-sectional clinical study

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ABSTRACT

Background: Emil Kraepelin many years ago had observed that there is late age at onset in women for schizophrenia compared to men. This finding has been replicated in later several studies too. But there are no such studies conducted in Kerala to our best knowledge. Thus it is relevant to evaluate gender difference in age at onset of schizophrenia in a hospital-based population in Central Kerala.

Methods: In this descriptive cross sectional clinical study conducted at Jubilee Mission Medical College and Research Institute, Thissur, all schizophrenia patients consecutively admitted with sample size of 100 (50 males and 50 females) and diagnosis confirmed as per mini international neuropsychiatric interview English Version 5.0.0 (M. I. N. I. PLUS) were included. Semi structured questionnaire was used to collect data. To test the significance, Mann-Whitney U test was applied and correlation was tested using Pearson's correlation coefficient.

Results: Our study results shows that mean age at onset of psychotic symptoms, mean age at first contact with a health care provider, mean age at index hospitalization in male patients was approximately 5 years earlier than that of female patients.

Conclusions: Our study results shows a gender difference in age at onset of schizophrenia, with males having an earlier age at onset and lower average age of first admission than females.

Keywords: Schizophrenia, Gender difference, Age at onset

INTRODUCTION

Schizophrenia is a severe psychiatric disorder associated with a chronic disabling course and high social and financial burden affecting around 20 million people worldwide according to World Health Organization (WHO).¹ Nearly 100 years ago, Emil Kraepelin (1909–1915) pointed to the late onset in females by several years at first admission for dementia praecox compared to men.² Since then the finding has been replicated in several studies.³⁻⁵ As early as 1934, Bratoy⁶ emphasized that the gender-dependent variation in age of onset was a problem calling for urgent investigation.

Several studies have observed that females with schizophrenia have an older age at first admission.³⁻⁵ Overall, these studies suggested a difference of three to five years between the sexes for age of onset of the disorder. The International classification of diseases, 10th edition (ICD-10) and the Diagnostic and statistical manual of mental disorders, 4th edition, text revised (DSM-IV TR) also note that females have a later age of onset of schizophrenia.^{7,8} This difference is proposed to be due to both males having an earlier and pronounced peak incidence in their early 20s and females having a second, later peak incidence in their late 40s. Despite the important etiological implications this area was long ignored in

schizophrenia research and only recently has there been growing interest in it.

Knowing the relationship between age at onset and gender can play an important role in early detection as well as its prognosis. In Kerala, no hospital based study has been reported meaningfully the gender difference in age at onset of schizophrenia. So has its relevance and aim of our study is to evaluate the gender difference in age at onset of schizophrenia among inpatients in Psychiatry Department of a tertiary care hospital in Kerala.

METHODS

This was a descriptive cross sectional clinical study conducted in Psychiatry department of tertiary care centre, Thrissur. Total numbers of 100 patients (50 males and 50 females) were recruited in this study. The study duration was for 18 months from January 2018 to June 2019.

All Patients diagnosed with schizophrenia as per ICD-10, consecutively admitted by the consultant to the Department of Psychiatry, JMMC and RI, Thrissur were included in the study. Mini international neuropsychiatric interview English Version 5.0.0 (M. I. N. I. PLUS) used to confirm the diagnosis.

Patients with schizoaffective disorder, substance induced psychotic disorder; organic brain syndrome and acute psychotic disorder are excluded from the study.

The study started upon approval from the Institutional Ethics Committee. Informed Consent was taken from the patient and lawful guardian who are eligible to consent, to participate in the study. Personal data and data of clinical factors collected. Confidentiality was ensured and maintained throughout the study.

Study variables included socio demographic variables such as age, gender, marital status, education, occupation, religion, socioeconomic class and clinical variables such as, age at onset of psychotic symptoms, age at first contact with a health care provider, age at index hospitalization and age at menarche.

Semi structured questionnaire was used to collect details regarding socio demographic and clinical variables.

Operational definitions

Age at first psychotic symptoms is defined as the age when the patients relatives or those in his or her environment first noted psychotic symptoms as elicited by the health care provider. For this definition, gross psychotic symptoms included hallucinations, delusions, gross over-activity, marked psychomotor retardation or catatonic behaviour.

Age at first contact with a health care provider is defined as the age of the patient when a healthcare provider was

first contacted to seek treatment for psychiatric or behavioural complaints.

Age at index hospitalization is defined as the age of the patient when he or she is first admitted in a psychiatry ward.

Statistical analysis

The data was analysed systematically using IBM SPSS Version 25 software. Continuous variables expressed as mean and Standard deviation and categorical variables expressed as frequency and percentages. To test the significance, Mann-Whitney U test was applied. Correlation was tested using Pearson's Correlation coefficient.

RESULTS

The study population consists of 50 males and 50 females.

Socio demographic variables

Among the study group, majority of them belonged to the age group <30 years (36%) and 31-40 years (36%). Rest belonging to the age group 41-50 years (15%) and >50 years (13%). Among the study subjects, majority are married (57%). Among the study subjects, majority were educated only up to high school (40%). Whereas, patients educated up to higher secondary were 34%, upper primary were 16% and degree and above were 10%. Majority of the study subjects are unemployed (56%). Majority of the study subjects belonged to Hindu religion (51%). Rest of the study subjects were Christians (30%) and Muslims (19%). Majority of the study subjects belonged to lower socioeconomic class (58%). Whereas rest of the study subjects belonged to middle socioeconomic class (41%) and upper socioeconomic class (1%).

Clinical variables

In males, mean age at onset of psychotic symptoms was observed to be at 23.96 ± 3.71 years. Whereas in females, the mean age at onset of psychotic symptoms were observed to be at 29.38 ± 9.54 years. Mean difference is 5.42. P value (0.003) was significant. (Table 1)

In males, the mean age at first contact with a health care provider was 24.38 ± 3.901 years. In females, the mean age at first contact with a health care provider was 30.28 ± 9.798 years. Mean difference was 5.9. P value (0.002) was observed to be significant. (Table 2)

In males, mean age at index hospitalization was observed to be 26.22 ± 4.568 years. In females, mean age at index hospitalization was 31.58 ± 10.063 years. Mean difference was 5.36; with P value (0.009) which was significant. (Table 3)

Table 1: Age at onset of Psychotic symptoms.

Sex	N	Age at onset of psychotic symptoms		Mean difference	P Value
		Mean	SD		
Male	50	23.96	3.71	5.42	0.003
Female	50	29.38	9.54		

Table 2: Age at first contact with a health care provider.

Sex	N	Age at first contact with a health care provider		Mean difference	P Value
		Mean	SD		
Male	50	24.38	3.901	5.9	0.002
Female	50	30.28	9.798		

Table 3: Age at index hospitalization.

Sex	N	Age at index hospitalization		Mean difference	P Value
		Mean	SD		
Male	50	26.22	4.568	5.36	0.009
Female	50	31.58	10.063		

Among females, range of age at menarche was observed to be 11-15 years. There is no significant correlation between age at onset of psychotic symptoms and age at menarche. P value (0.486) is not significant. (Table 4)

Table 4: Age at menarche.

Variable	Age at menarche		
	N	Pearson correlation	P value
Age at onset of psychotic symptoms	50	-0.101	0.486

DISCUSSION

This is a descriptive cross sectional clinical study aimed to evaluate the gender difference in age at onset of schizophrenia among inpatients in Psychiatry Department of Tertiary care hospital in Kerala. 100 patients (50 males and 50 females) who satisfied the inclusion criteria were included in the study. The variables we have studied are age at onset of psychotic symptoms, age at first contact with a health care provider and age at index hospitalization, age at menarche.

Gender difference in age at onset of psychotic symptoms

We have mainly focused on the criteria of age at onset of psychotic symptoms, that is the age when the immediate family member first observed the psychotic symptoms in the patient. Our results confirm a gender difference in the age at onset of schizophrenia, with an earlier age at onset in males comparable with results of several major studies. One of the studies described there come a tendency for

earlier onset in males with a peak incidence in the early 20s in contrast with the late 20s or early 30s in females which strongly supports our finding.⁹ One of the studies show males develop illness at age 18-25, while in females, the mean age of onset is 25-35, which corroborates with our finding.¹⁰ Another study examined individuals with first onset schizophrenia and found a preponderance of men in the younger age group and women in the older age group 45-54 years which can be comparable with our results.¹¹ Schizophrenic women have a later age at onset as told by few studies, which are corroborating with our results of late age at onset in women.¹²⁻¹⁴

In contrary to our observations, some studies could find no sex difference in age of onset of the schizophrenia.¹⁵⁻¹⁹ The 25 year follow up study called as "Factors affecting course and outcome of schizophrenia" in the Chennai included 90 first episode patients who fulfilled International Classification of Disease, Ninth Revision (ICD-9) criteria for schizophrenia.²⁰ All subjects who were followed up were administered the same research tools which were done at inclusion, namely the Present State Examination (PSE) and psychiatric and personal history schedule (PPHS). Methodology difference might have attributed for the discrepant findings. In a prospective study done patients attending the outpatient services of the National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, formed the study sample.²¹ It is understood that in communities with poor provision of antenatal and perinatal care, there is a higher attrition of males with such insult, thus nearly eliminating them. In our cultural setting, males are as likely to be sheltered from these hazards and events as females, thus narrowing the differences between the sexes in age at onset in his study.

Gender difference in age at first contact with a health care provider/index hospitalization

In our study, we found the greatest gender difference for 'age at first contact with health care provider' (5.9 years) and the smaller gender difference for 'age at onset of psychotic symptoms' (5.42 years) and 'age at first admission' (5.36 years). We have to be aware that the age difference at first admission might be brought about by differences in true age at onset or only in the time lag between onset and index hospitalization. One of the studies found the difference between men and women at first contact or first admission was between 3.5 and up to six years, with women having a higher age which supports our finding.²² As we know, the time span between first manifestation of psychotic symptoms and hospital admission can be influenced by social perception of the disease and the attitudes prevailing in society towards it especially in a country like India and it might be related to gender. But no gender differences are apparent with regard to the time-lag between first manifestation of schizophrenic symptoms and the time of admission to a hospital as per a study done which is comparable with our results.²³ This might be because our state Kerala being the most literate state in India having more awareness.²⁴ No significant sex difference in the period between onset and first admission as told by a study which is also corroborating with our results. One study showed a shorter period in women which is against our finding.^{25,26} Majority of the studies including our study are based on hospital patients. These hospitalized cases may be more severe or disturbed, and males may be overrepresented as told by a study.²⁷

Age at menarche

Since oestrogen has got protective role over schizophrenia, we are studying the correlation between age at menarche and age at onset of psychotic symptoms.^{28,29} But our study observed no such statistical correlation. One of the studies does not support relationship between age at menarche and age at onset of schizophrenia which corroborate with our finding.²⁸ Another study said that oestrogens increase the density of dopamine type 2 receptors like neuroleptics, and thereby delaying onset in females, which is against our finding.²⁹

It is suggested that influence of gender on schizophrenia in age at onset is not an artefact.

Limitations

This study is a hospital based study that is not representative of the general population. So it would be difficult to generalize the findings of our study. We could include the sample of treated patients only and therefore would have missed untreated patients. Criteria like age at first contact with a health care provider and age at index hospitalization may not be very reliable in our country since due to inadequate facilities and social stigma there

may be a big time gap between the onset of symptoms and seeking treatment.

Another drawback in our study is that, women have a second peak in incidence of schizophrenia in later life, much smaller than the peak in the early twenties. The estimate 'mean age at onset' does not take this into account and may produce skewed mean age at onset to the right for females. Our results cannot determine the causes of gender differences since it is a cross sectional study. No specified criteria used to determine the onset of illness. So we cannot assure accuracy in our results. We were also not able to study the role of important confounders such as family history of schizophrenia, pre-morbid personality, obstetric complications and recall bias. We have not studied the effect of sociodemographic variables in age at onset.

CONCLUSION

Consistent with several earlier studies, our study results also shows a gender difference in age at onset of schizophrenia, with an earlier age at onset in males. Males also have a lower average age of first admission than females.

The study has highlighted a number of areas for future research. Findings must be corroborated by further studies with a greater sample size from developing countries to examine the gender difference in age at onset of schizophrenia.

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