

Original Research Article

## Gender Difference in Premorbid Adjustment in Schizophrenia- A Comparative Study

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**Abstract**

**Introduction:** Schizophrenia is a severe mental disorder and focusing on factors at period before the onset of disorder would provide ample opportunity for detection and intervention of individuals who later develop schizophrenia.

**Materials and Methods:** A cross sectional study was conducted to compare premorbid adjustment in male and female patients of schizophrenia. 25 male and 25 female subjects were selected by purposive sampling and their family members were interviewed. Qualitative analysis was carried out to identify various factors.

**Results:** Male patients of schizophrenia had earlier age of onset and premorbid adjustment during all stages of assessment- childhood (upto 11years), early adolescence (12-15 years), late adolescence (16-18 years) and adult (above 19 years) and total premorbid adjustment was found significantly poorer in males.

**Conclusions:** There is significant difference in premorbid adjustment in male and female patients of schizophrenia. The difference started from childhood and persisted upto adult stage.

**Keywords:** ICD- 10 DCR- International Classification of Diseases, Classification of Mental and Behavioural Disorders- Diagnostic Criteria for Research.

DSM-V- Diagnostic and Statistical Manual of Mental disorders, 5<sup>th</sup> Edition.

PAS – Premorbid Adjustment Scale.

**Introduction**

Disruption in psychosocial functioning in schizophrenia is a known fact during the acute exacerbation of schizophrenia which persists to a certain degree after improvement in acute episode. But it may be confounded by the disease process

itself. So, focusing on assessment of the individual's psychosocial functioning before onset of the schizophrenia- premorbid period can be more useful. This premorbid psychosocial functioning is called premorbid adjustment.

A patient's premorbid adjustment is determined by the nature and quality of his or her social and sexual relations prior to the onset of illness, such as whether the patient was socially involved with friends from adolescence through early adulthood, or whether he or she dated, had sexual relationships, or married. Individuals who have attained these common milestones before their illness are considered to be more socially competent or to have greater "developmental maturity", since they possess the skills necessary to achieve socially approved life experiences.<sup>[1]</sup>

At the level of measuring premorbid adjustment, sex is an important character in patients of schizophrenia. From school age, behavioral anomalies as antecedents of schizophrenia manifest themselves earlier in boys.<sup>[2]</sup> These anomalies are particularly severe in boys clearly on cognitive impairment.<sup>[3]</sup>

Norms for various prognostic instruments may be different for male and female.<sup>[4]</sup> While gender differences have been reported consistently in the level of premorbid adjustment in patients of schizophrenia, results on the nature of these differences are not entirely consistent.<sup>[5]</sup> Some researchers found no differences,<sup>[6, 7]</sup> while others found males to score better in some domains.<sup>[8]</sup> Only when considering more detailed information, female patients were found to perform better in the subscale "adaptation to school" in comparison to male patients in early and late adolescence using the Premorbid Adjustment Scale (PAS). However, the fact that female patients generally have a later age at onset may have contributed to the previously described findings of a sex-difference, especially when the different life periods have not been evaluated separately. These differences in results have implications for interpretation of the gender differences reported. The two earlier studies would suggest a progressive deterioration in male patients (neurodegenerative),<sup>[9,10]</sup> while the later study would suggest a combination of neurodevelopmental and early neurodegenerative basis in males.<sup>[5]</sup>

## Materials and Methods

This is a hospital based, cross sectional study, conducted at Central Institute of Psychiatry, Ranchi. 25 male and 25 female patients of schizophrenia diagnosed according to criteria in ICD-10 DCR,<sup>[11]</sup> by 2 independent qualified psychiatrists were included in the study. The subjects were at least primary educated with age group 18-50 years and accompanied by guardians. The guardians were having at least 6 years of formal education and in contact with patients for at least a period of 12 months prior to onset of illness. Patients with co morbid mental disorders or neurological disorder were excluded from study. Written informed consent in Hindi given from all the patients and guardians. In case of illiterate patients and guardians, written informed consent was read out in presence of 2 witness and signature or thumb impressions of all of them taken. Ethical clearance was obtained from the Institutional Ethics Committee before the conduct of the study.

A semi structured Performa containing information for social and demographic characteristics of the patients was used to record relevant details of individual patients.

To measure premorbid adjustment modified premorbid Adjustment Scale (PAS) by Mastrigt & Addington was used.<sup>[12]</sup> The PAS scale examines 4 areas of development: sociability and withdrawal, peer relationships, ability to function outside of the nuclear family and capacity to form intimate socio-sexual ties at 4 developmental stages – childhood –upto 11 years, early adolescence- 12-15 years, late adolescence -16-18 years and adulthood -19 years or older. Scoring was done by interview with family members and patient. Premorbid period was defined as 1 year before the appearance of first symptom identifying deviation from normal period of patient and needing attention.

## Results

### Socio-demographic Variables

Significant finding was found in occupational status in which 16% males were unemployed compared to 44% females ( $p=.03$ ). 56% of males were belonging to nuclear family compared to 84% females ( $p=.03$ ). 44% of males were diagnosed of paranoid subtype compared to 84% females, 56% males were diagnosed with undifferentiated subtype compared to 12% females and 4% of females were diagnosed with other types of schizophrenia. Male patients were having earlier age of onset compared to females ( $p=.08$ ). Rests of the findings were not significant although more females (20%) were having family history of affective disorder compared to males (8%).

**Table 1:** Comparison of socio-demographic and clinical variables in male and female patients of schizophrenia

Variables		Male n=25 n (%)	Female n=25 n (%)	p
Religion	Hindu	21(84)	19(76)	.48
	Muslim	4(16)	6(24)	
	Christian	0	0	
Education	Primary	8(32)	9(36)	.84
	Secondary/Higher Secondary	13(52)	11(44)	
	Graduate	4(6)	5(20)	
Occupation	Unemployed	4(16)	11(44)	.03*
	Employed	21(84)	14(56)	
Marital Status	Single	11(44)	7(28)	.41
	Married	12(48)	11(56)	
	Separated/ Divorced	2(8)	4(16)	
Family Income	<5000	11()	12(48)	.91
	5000-10000	10()	10(40)	
	>10000	4()	3(12)	
Family Type	Nuclear	14(56)	21(84)	.03*
	Joint	11(44)	4(16)	
Residence	Rural	13(52)	11(44)	.57
	Urban	12(48)	14(56)	
Previous Consultations	0	6(24)	10(40)	.13
	1	3(12)	6(24)	
	>1	16(64)	9(36)	
Schizophrenia types	Paranoid	11(44)	3(84)	.004*
	Undifferentiated	14(56)	21(12)	
	Others	0	1(4)	
Onset Mode	Abrupt	4(16)	9(36)	.24
	Acute	5(20)	5(20)	
	Insidious	16(64)	11(44)	
Family History	Nil	10(40)	15(60)	.08
	Schizophrenia	7(28)	4(16)	
	Affective	2(8)	5(20)	
	Others	6(24)	1(4)	

### Premorbid Adjustment

In comparison of modified premorbid adjustment scale (PAS) scores across different age groups, males exhibited significantly higher scores in all four developmental age groups e.g.- childhood (upto 11 years), early adolescence (12-15 years), late adolescence (16-18 years), adult (19 years and above). The average total score of the premorbid adjustment was also higher in males. Significance was higher in early adolescence score ( $p=.001$ ), late adolescence score ( $p=.002$ ), adult score ( $p=.008$ ) and total score ( $p=.00$ ) while significance was lower in childhood score ( $p=.05$ ).

**Table 2:** Group differences of modified Cannon Spoor Premorbid Adjustment score in Childhood (upto 11 years), Early adolescence (12-15 years), Late adolescence (16-18 years), Adult (19 years and above) and total score in male and female patients of schizophrenia.

Variables	Male (n=25) (Mean $\pm$ SD)	Female (n=25) (Mean $\pm$ SD)	p
Modified Cannon Spoor childhood score	.43 $\pm$ .13	.35 $\pm$ .16	.05*
Modified Cannon Spoor early adolescence score	.46 $\pm$ .12	.32 $\pm$ .14	.001**
Modified Cannon Spoor late adolescence score	.54 $\pm$ .14	.40 $\pm$ .15	.002**
Modified Cannon Spoor adult score	.44 $\pm$ .17	.32 $\pm$ .11	.008**
Modified Cannon Spoor total score	.48 $\pm$ .09	.34 $\pm$ .10	.00**

\*Significant at  $p \leq 0.05$  (2 tailed)

\*\*Significant at  $p \leq 0.01$  (2 tailed)

### Discussion

Gender difference was present in some of the socio demographic variables indicating also the cultural variation in patients after onset of illness. Significant difference in occupational status, family type and type of schizophrenia diagnosed could be elaborated by the culture and area from which samples are drawn. Less male patients from nuclear family (56%) than females (84%) can be explained by difference in attitude of other family members towards female patients as reported in some of the previous studies in India. Females were more frequently diagnosed as paranoid subtype may indicate better premorbid adjustment to the environment and they may have better

outcome as paranoid subtype is known to have better outcome. However the present classification in DSM-V, <sup>[13]</sup> has removed the sub typing of schizophrenia due to non significant difference in course and outcome of different subtypes in large epidemiological studies. More positive family history of affective disorders in females indirectly suggests that family members of female patients of schizophrenia in particular may have an increased morbid risk of affective disorder.

Premorbid adjustment of the males was consistently poorer suggest that males have poorer social functioning prior to onset of illness. Recent studies have also shown that PMA significantly predicted social cognitive deficit in schizophrenia.

<sup>[14]</sup> Also, score on premorbid adjustment in general, did not improve across developmental stages. So once deterioration occurs in premorbid adjustment, the trend generally remains consistent across time up to late adolescence especially in males. In different studies, ultra high risk individuals to develop schizophrenia, from childhood have lower levels of premorbid adjustment compared to healthy controls, and the difficulties increase with age. <sup>[15]</sup> The present study confirms above finding more distinctively in males if patients with schizophrenia are retrospectively evaluated. Best premorbid adjustment score was in childhood with a progressive worsening to late adolescence indicating accumulation of deficits as the age advances. Studies have confirmed the association between premorbid adjustment and cognitive impairment and possible role of premorbid adjustment on the capacity to recover from cognitive deficits. <sup>[16,17]</sup> It may indicate that males may need earlier clinical attention and more aggressive intervention in case of poorer premorbid adjustment compared to females.

Main strength of present study was modified premorbid adjustment scale in which premorbid period was clearly defined as one year before onset of illness so that prodromal period of illness which is now regarded sometimes as part of illness was excluded clearly. Also PAS

application to different cultures and getting poorer premorbid adjustment in males indicate that schizophrenia is a disease with distinct factors affecting the at risk individuals. Further, the results suggest a complex interplay of various risk factors, supporting the notion of different pathways to psychosis as reported in previous studies.<sup>[18]</sup>

### Conclusion

There was significant difference in premorbid adjustment with poorer adjustment in males. So Gender is an important factor not only after onset of illness, it is also an important factor even before onset of illness. It indicates a continuum from premorbid to prodromal to overt psychosis which has been established in previous studies, <sup>[19]</sup> is more clearly defined in male patients of schizophrenia and strongly suggests earliest intervention. Therefore assessment of premorbid adjustment in high risk or ultra high risk individuals is a useful adjunctive tool for probable development of schizophrenia. Future research in prospective as well as retrospective studies to assess the evolution of symptoms in schizophrenia- incorporating at least yearly structured assessment of "at risk" individuals from birth through the greatest risk for development of schizophrenia would be an ideal effort which would eliminate or at least decrease recall bias.

### References

1. Mueser, K.T., Bellack, A.S., Morrison, R.L., Wixted, J.T. Social competence in schizophrenia: premorbid adjustment, social skill, and domains of functioning. *Journal of Psychiatric Research*. 1990;24(1):51–63.
2. Liddle, P.F., Carpenter, W.T., Crow, T. Syndromes of schizophrenia: classic literature. *British Journal of Psychiatry*. 1994;165:721–727.
3. Castle, D.J., Murray, R.M. The Neurodevelopmental Basis of Sex-Differences in

- Schizophrenia. *Psychological medicine*. 1991;21(3):565–575.
4. Kokes, R.F., Strauss, J.S., Klorman, R. Premorbid adjustment in schizophrenia: Concepts, measures, and implications. Part II. Measuring premorbid adjustment: The instruments and their development. *Schizophrenia Bulletin*. 1977;3:186-213.
  5. Norman, R., Malla, A., Manchanda, R., Townsend, L. Premorbid adjustment in first episode schizophrenia spectrum disorders: a comparison of social and academic domains. *Acta Psychiatrica Scandinavica*. 2005;23(2):132-143.
  6. Fennig, S., Putnam, K., Bromet, E.J., Galambos, N. Gender, premorbid characteristics and negative symptoms in schizophrenia. *Acta Psychiatrica Scandinavica*. 1995;92:173–177.
  7. Schmael, C., Georgi, A., Krumm, B., Buerger, C., Deschner, M., Nothen, M.M., et al. Premorbid adjustment in schizophrenia- an important aspect of phenotype definition. *Schizophrenia Research*. 2007;92:50–62.
  8. Weiser, M., Reichenberg, A., Rabinowitz, J., Kaplan, Z., Mark, M., Nahon, D., et al. Gender differences in premorbid cognitive performance in a national cohort of schizophrenic patients. *Schizophrenia Research*. 2000;45:185–190.
  9. Rabinowitz, J., Haim, R., Reichenberg, A., Weiser, M., Kaplan, Z., Davidson, M., et al. Association between functioning in adolescence prior to first admission for schizophrenia and affective disorders and patterns of hospitalizations thereafter. *Schizophrenia Research* 2005;73:185–191.
  10. Strous, R.D., Alvir, J.M., Robinson, D., Gal, G., Sheitman, B., Chakos, M., et al. Premorbid functioning in schizophrenia: relation to baseline symptoms, treatment response, and medication side effects. *Schizophrenia Bulletin*. 2004;30:265–278.
  11. The ICD-10 Classification of Mental and Behavioural Disorders. Diagnostic Criteria for Research. World Health Organization, Washington, DC; 1992.
  12. Van Mastrigt, S., Addington, J. Assessment of premorbid function in first-episode schizophrenia: modifications to the Prem-orbid Adjustment Scale. *Journal of Psychiatry and Neuroscience*. 2002;27(2):92–101.
  13. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington: American Psychiatric Association; 2013.
  14. Dewangan, R.L., Singh, P. Premorbid Adjustment in Predicting Symptom Severity and Social Cognitive Deficits in Schizophrenia. *East Asian Archives of Psychiatry*. 2018 ;28:75-9.
  15. Dannevang, A.L., Randers, L., Gondan, M., Krakauer, K., Nordholm, D., Nordentoft, M. Premorbid adjustment in individuals at ultra-high risk for developing psychosis: a case-control study. *Early Intervention in Psychiatry*. 2018; 12(5):839-847.
  16. Buonocore, M., Bosinelli, F., Bechi, M., Spangaro, M., Piantanida, M., Cocchi, F., et al. The role of premorbid adjustment in schizophrenia: focus on cognitive remediation outcome. *Neuropsychological Rehabilitation*. 2018; 19: 1–14.
  17. Stefanatou, P., Karatosidi, C.S., Tsompanaki, E., Kattoulas, E., Stefanis, N.C., Smyrnis, N. Premorbid adjustment predictors of cognitive dysfunction in schizophrenia. *Psychiatry Research*. 2018; 267:249-255.
  18. Kilian, S., Burns, J. K., Seedat, S., Asmal, L., Chiliza, B., Du Plessis, S., et al. Factors moderating the relationship between childhood trauma and premorbid adjustment in first-episode schizophrenia. *PLoS One*. 2017; 12:e0170178.

19. Bucci, P., Galderisi, S., Mucci, A., Rossi, A., Rocca, P., Bertolino, A., et al. Premorbid academic and social functioning in patients with schizophrenia and its associations with negative symptoms and cognition. *Acta Psychiatrica Scandinavica*. 2018: 1–14.