

## Association of Premorbid Adjustment with Symptom Profile and Quality of Life in First Episode Psychosis in a Tertiary Hospital in Tehran, Iran

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**Objective:** Poor premorbid adjustment has been reported to be a predictor of more severe psychotic symptoms and poor quality of life in such psychotic disorders as schizophrenia. However, most studies were performed on chronic schizophrenic patients, and proposed the likelihood of recall biases and the effect of chronicity. The aim of this study was to investigate these factors in a sample of first episode psychotic patients, as a part of Roozbeh first episode psychosis project (RooF).

**Method:** Premorbid adjustment was assessed using Premorbid Adjustment Scale (PAS) in 48 patients with the first psychotic episode who were admitted to Roozbeh Psychiatric Hospital. The severity of symptoms was measured using Positive and Negative Scale (PANSS) in three subgroups of positive, negative and general subscales. Quality of life was measured using WHO QOL, and Global Assessment of Functioning (GAF) was also measured.

**Results:** The mean age was 24 years. Poor Premorbid adjustment in late adolescence was significantly associated with more severe symptoms according to PANSS negative symptoms ( $p=0.019$ ,  $r=0.44$ ). Furthermore, sociability and peer relationship domains had a positive correlation with PANSS negative subscale scores ( $r=0.531$ ,  $p=0.002$  and  $r=0.385$ ,  $p=0.03$ , respectively). There were no significant differences between males and females in premorbid adjustment. Furthermore, this study failed to show any differences between affective and non-affective psychosis in premorbid functioning.

**Conclusion:** Our study confirms poor premorbid adjustment association with more severe negative symptoms and poor quality of life in a sample of Iranian first episode psychotic patients.

**Keywords:** Psychological adaptation, Psychotic disorders, Symptoms, Quality of Life, Recovery of function

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**P**remorbid psychosocial adjustment has attracted great attention in studies that tried to find factors associated with different clinical course and outcome of patients who were affected by schizophrenia. Kraepelin and Bleuler were the first to note that there are certain social and intellectual impairment in schizophrenic patients long prior to the onset of the psychotic symptoms (1, 2). Since then there has been extensive evidence that poor childhood and adolescent psychosocial adjustment is manifested in many, but not all, patients with schizophrenia (3).

Premorbid adjustment is defined as the ability of a person to make social and intimate relationships as well as their academic achievements before the onset of psychotic symptoms (4). Poor premorbid functioning has been reported to have positive

correlation with early and insidious onset, male sex, poor clinical outcome, negative symptoms, neurocognitive deficits, and poor response to treatment (2, 5-7). Poor premorbid functioning has also been reported to be the strongest overall predictor of outcome (4).

Premorbid psychosocial adjustment proposed neurodevelopmental nature of schizophrenia (7). Some studies suggested that schizophrenic patients with poor premorbid adjustment may represent a special biological subtype of the disorder by some characteristics such as early age of onset, negative symptoms, and poor response to treatment. Data proposed that poor premorbid adjustment reflects the impact of schizophrenia susceptibility genes and might be considered as an intermediate phenotype marker of schizophrenia (2).

Many studies investigated the relationship between premorbid functioning and different aspects of schizophrenia on a sample of chronic schizophrenic patients with a long period of years passed from their illness onset. Gathering information after such a long time increased the likelihood of potential bias and therefore the data became inaccurate and incomplete (8). Thus, it is not yet clear whether the reported association of poor premorbid with poor response to treatment or negative signs is a real association. To predict the outcome of different types of schizophrenia for possible useful interventions, it is critical to find any predictive signs such as poor premorbid.

We designed our study for a sample of first episode psychotic patients to overcome the effect of chronicity of the disorder in reporting the premorbid condition. Furthermore, we tried to assess premorbid functioning and its correlation with age of onset, gender, symptomatology profile, global functioning and quality of life in Iranian patients. This study is a part of Roozbeh First episode psychosis project (Roof).

## Materials and Methods

The study was performed as a part of Roof research project, which has been started from 2006 in Roozbeh hospital (psychiatry university hospital in Tehran). The main aim of this project was to compare two types of managements: the usual interventions, and the standard one in patients with first episode of a psychotic disorder.

### Participants

We included the participants of Roof study in our study in parallel. Therefore, the sampling method, inclusion and exclusion criteria were the same. Accordingly, case selection was based on simple nonrandomized method and included those patients who were admitted to Roozbeh hospital clinics or emergency ward. All subjects were interviewed by a psychiatrist. Those patients who were diagnosed with first episode psychotic disorder in acute phase who lived in Tehran catchments area and needed hospitalization were included in the study.

Exclusion criteria were having a diagnosis of organic brain syndromes, psychotic disorder due to substance abuse, and previously treated with antipsychotic medication more than 30 days.

The sample size, which included 48 persons, was calculated considering alpha level 0.05 based on the statistical formulation. We included the first 48 persons of Roof project who accepted to participate in this study. After providing complete explanation of the study, written informed consent was obtained from the patients or their families. Ethical approval for the study was obtained from the Ethics committee of Tehran University of Medical Sciences.

### Measures

All data were obtained from patients and at least one other informant from their family members.

Information considering demographic characteristics included age, sex, marital status, age of onset, and previous family history of psychiatric disorder.

Premorbid functioning was assessed with the Premorbid Adjustment Scale (PAS) (6). The PAS is designed to measure premorbid functioning according to five psychosocial domains: (i) Sociability/withdrawal, (ii) Peer relationship, (iii) Scholastic performance, (iv) School adaptation, (v) Social-sexual aspects of life.

This 28-item 7-point scale assesses each of these domains in four developmental stages: childhood (up to age 11), early adolescence (12-15 years), late adolescence (16-18 years), and adulthood (19 and up), except for social-sexual domain which is assessed after the age of 15. The PAS also includes a section of nine general items about educational and occupational achievements, changes in work and school performance, establishing independence, and global assessment of highest level of functioning in life.

The PAS is to be administered for life periods up to 1 year before the onset of psychotic illness (9). By using the scoring method developed by Cannon-Spoor et al (10), average score for each life stage was computed by summing the scores of each item and dividing them by the maximum possible score. If no information is available for a specific item, then it would not be scored. Lower scores stand for better premorbid functioning. Each interview lasted about thirty minutes.

To investigate different domains of psychosocial functioning, the score of each PAS domain was calculated by summing the scores of each domain across age levels and then dividing them by the total number of scores (7).

Positive and negative symptoms were assessed using the Positive and Negative Syndrome Scale (PANSS) in three subscales of positive symptoms, negative symptoms and general items.

To measure quality of life, we used WHO Quality of life Questionnaire, and global functioning was assessed using Global Assessment of Functioning (GAF).

All 3 questionnaires were used in their English format.

### Statistical analysis

Statistical analysis was performed using SPSS, 12th ver. Numerical data were expressed as frequency and percentage. Measured data were expressed as means. To compare premorbid functioning in different sexes, a student t-test was used. A Pearson-r correlation analysis was performed to investigate any correlation between PAS scores and PANSS, GAF, and QOL scores including all the subscales analysis. Ninety-five percent confidence interval was computed in all tests. P-value less than 0.05 was considered as statistically significant.

## Results

### Participants' characteristics

A total number of forty-eight persons with a mean age

Table 1: The comparison of subscales mean score between gender groups of participants and the total scores.

|                                    |                        | gender      |             | P value | Total scores |
|------------------------------------|------------------------|-------------|-------------|---------|--------------|
|                                    |                        | Male        | Female      |         |              |
| <b>Psychosocial domains of PAS</b> | Sociability            | 0.96±1.27   | 1.24±1.48   | 0.563   | 1.09±1.36    |
|                                    | Peer relationship      | 1.29±1.18   | 1.88±1.59   | 0.224   | 1.55±1.38    |
|                                    | Scholastic performance | 3.05±1.85   | 2.73±1.53   | 0.609   | 2.91±1.69    |
|                                    | Adaptation to School   | 1.92±1.71   | 0.57±0.64   | 0.010   | 1.31±1.49    |
| <b>Age stages of PAS</b>           | Social-Sexual          | 2.35±1.83   | 3.14±2.21   | 0.286   | 2.7±2.01     |
|                                    | Child hood             | 0.22±0.14   | 0.28±0.21   | 0.355   | 0.25±0.18    |
|                                    | Early adolescent       | 0.32±0.19   | 0.26±0.18   | 0.401   | 0.29±0.19    |
| <b>QOL subscales</b>               | Late adolescent        | 0.43±0.20   | 0.34±0.17   | 0.251   | 0.39±0.19    |
|                                    | physical               | 57.17±18.10 | 64.95±12.52 | 0.164   | 58.53±15.95  |
|                                    | psychological          | 61.77±12.06 | 64.60±14.73 | 0.551   | 61.43±15.28  |
|                                    | social                 | 66.66±15.59 | 72.79±20.68 | 0.337   | 55.60±28.27  |
| <b>PANSS subscales</b>             | environmental          | 63.60±17.81 | 63.78±13.58 | 0.974   | 58.09±18.57  |
|                                    | General                | 8.58±9.05   | 11.83±11.55 | 0.404   | 10.45±11.64  |
|                                    | Positive               | 10.94±7.82  | 16.75±10.10 | 0.092   | 12.56±8.84   |
|                                    | Negative               | 1.58±3.87   | 2.91±7.84   | 0.551   | 2.73±6.88    |
| <b>GAF</b>                         | Total                  | 21.11±16.70 | 31.75±20.80 | 0.139   | 25.79±20.62  |
|                                    | Total                  | 15.85±8.70  | 15.00±6.32  | 0.737   | 15.58±7.97   |

of 24.78±8.21 years were selected for the study. The mean age of the participants at the beginning of their illness was 22.76±8.08. Based on the results, 59% of the participants were male with the mean age of 27.36±8.72, and 41% were female with the mean age of 22.19±6.92 (p=0.039). 20.8% of the patients were married, 4.1% divorced, and 75.1% single. Based on the independent sample T test, the comparison of PAS, QOL and PANSS subscales between the two gender groups showed no statistically significant differences in the subscales (p>0.05) except for adaptation to school subscale of PAS (p=0.01). Table 1 demonstrates these results.

**Premorbid functioning and symptomatology**

PAS score in late adolescence stage had a positive correlation with PANSS negative subscale scores (r=0.441, p=0.019). Furthermore, in analyzing psychosocial domains across the ages, sociability and peer relationship domains had a positive correlation with PANSS negative subscale scores (r=0.531, p=0.002 and r=0.385, p=0.03, respectively). No significant relationship was observed between the positive subscale of PANSS or PANSS total score and any of PAS subscales.

**Premorbid functioning and QOL and GAF**

Quality of life as assessed by WHO QOL questionnaire had a negative correlation with early adolescence PAS scores (r=-0.383, p=0.049) and the sociability domain across ages (r=-0.486, p=0.02). GAF scores had no significant correlation with PAS subscales.

**Discussion**

Several previous studies have reported better premorbid functioning in female patients, but results are not completely consistent (6, 11). Our data failed to show any significant differences in PAS domains or age stages between males and females, except for

school adaptation which is significantly better in females. It means that females had more meaningful obtaining these results.

Consistent with previous reports (3, 12, 13), we found negative symptoms to have correlation with poorer premorbid functioning. The results of previous studies are controversial on the positive symptoms. Some studies reported significant association between premorbid adjustment and severity of positive symptom profile (14, 15), while most studies failed to show this correlation (12, 14, 15).

Our data showed a significant relationship of negative symptoms with premorbid adjustment just in late adolescence. Some researchers (16) noted that this period may represent the prodromal stage of the psychotic disorder and suggested that childhood PAS scores may be a better indicator of premorbid function. In our study, we omitted the stage of adulthood in our analysis as it was too close to onset of illness. The mean age of onset was 20 years in our study. It means a mean of 2 years from the end of late adolescence stage and it seems that we should consider the possibility of a prodromal stage to be started in this phase. Furthermore, we should consider the small sample size as a possible factor affecting the results in earlier stages.

Analyzing premorbid domains, we also found that negative symptoms positively correlate with premorbid adjustment in sociability and peer relationship domains and not with school adaptation or school performance domains. Some researchers (7) suggested that a two dimensional model better explains the premorbid relationships with their teachers and classmates and less conduct behaviors. A relative small sample size should be considered as a contributor factor in functioning. They assumed that social and academic premorbid functioning are two distinct domains.

Social domain is more associative with expression of general psychopathology while academic domain is

more correlated with cognitive deficits in premorbid functioning. Other studies (17) found that poor childhood premorbid functioning in both academic and social domains could predict negative symptoms.

However, in early and late adolescence, a further decline in social function has a significant and strong correlation with developing negative symptoms at the follow-up. Some studies suggest that social anxiety, schizoid or schizotypal personality traits, and deficits in theory of mind may lead to poor sociability in this group of patients (18). Others considered anhedonia, lack of social purpose and the will to contribute as the reasons for lack of sociability (19).

Our sample consisted of first episode psychotic patients regardless of the type of psychosis. The result failed to show any differences between affective and non affective psychosis. Previous studies reported that association of poor premorbid adjustment and negative symptoms is not restricted to schizophrenia, but could be seen in psychotic bipolar disorder and depression (1). Nevertheless, others reported a poorer premorbid in schizophrenia than schizoaffective affected patients (12). A small sample size in our study makes it difficult to have a powerful comparison.

Our study had several limitations. The sample size was small. Our sample was restricted to inpatient setting and could represent more severe patients who needed hospitalization. Though we assessed first episode patients who had a minimum distance from the premorbid stage, the retrospective recall of premorbid functioning was not optimal. Conversely, other studies showed small and non-significant differences between retrospective and contemporaneous ratings of premorbid functioning (19).

### Conflict of interest

The authors have no conflicts of interest.

### Author's Contribution

J. Mahmoudi-gharaei supervised the study and participated in study design, statistical analysis and manuscript preparation. A. Basirnia carried out the design and coordinated the study, participated in most of the experiments and prepared the manuscript. N. Abedi, B. Shadloo, S. Jafari, and N. Salesian participated in the design the study and data gathering. V. Sharifi and M. Jalali participated in study design and coordination. All authors have read and approved the content of the manuscript.

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### References

1. Haim R, Rabinowitz J, Bromet E. The relationship of premorbid functioning to illness course in schizophrenia and psychotic mood disorders during two years following first hospitalization. *J Nerv Ment Dis* 2006; 194: 791-795.
2. Schmael C, Georgi A, Krumm B, Buerger C, Deschner M, Nothen MM, et al. Premorbid adjustment in schizophrenia- an important aspect of phenotype definition. *Schizophr Res* 2007; 92: 50-62.
3. Rabinowitz J, De Smedt G, Harvey PD, Davidson M. Relationship between premorbid functioning and symptom severity as assessed at first episode of psychosis. *Am J Psychiatry* 2002; 159: 2021-2026
4. Torgalsboen AK. Full recovery from schizophrenia: the prognostic role of premorbid adjustment, symptoms at first admission, precipitating events and gender. *Psychiatry Res* 1999; 88: 143-152.
5. Addington J, Addington D. Patterns of premorbid functioning in first episode psychosis: relationship to 2-year outcome. *Acta Psychiatr Scand* 2005; 112: 40-46.
6. Addington J, van Mastrigt S, Addington D. Patterns of premorbid functioning in first episode psychosis: initial presentation. *Schizophr Res* 2003; 62: 23-30.
7. Allen DN, Kelley ME, Miyatake RK, Gurklis JA Jr, Kammen DP. Confirmation of a two-factor model of premorbid adjustment in males with schizophrenia. *Schizophr Bull* 2001; 27:39-46.
8. Strous RD, Alvir JM, Robinson D, Gal G, Sheitman B, Chakos M, et al. Premorbid functioning in schizophrenia: Relation to baseline symptoms, treatment response, and medication side effects. *Schizophr Bull* 2004; 30:265-278.
9. Rabinowitz J, Levine S, Brill N, Bromet E. The Premorbid Adjustment Scale Structured Interview (PAS-SI): Preliminary findings. *Schizophr Res* 2007; 90: 255-257.
10. Cannon-Spoor HE, Potkin SG, Wyatt RJ. Measurement of premorbid adjustment in chronic schizophrenia. *Schizophr Bull* 1982; 8: 470-484.
11. Silverstein ML, Mavrolefteros G, Close D. Premorbid adjustment and neuropsychological performance in schizophrenia. *Schizophr Bull* 2002; 28: 157-165.
12. Norman RM, Malla AK, Manchanda R, Townsend L. Premorbid adjustment in first episode schizophrenia and schizoaffective disorders: a comparison of social and academic domains. *Acta Psychiatr Scand* 2005; 112:30-39.
13. MacBeth A, Gumley A. Premorbid adjustment, symptom development and quality of life in first episode psychosis: a systematic review and critical reappraisal. *Acta Psychiatr Scand* 2008; 117:85-99.

14. Kelly ME, Gilbertson M, Mouton A, Van Kammen DP. Deterioration in premorbid functioning in schizophrenia: a developmental model of negative symptoms in drug-free patients. *Am J Psychiatry* 1992; 149: 1543-1548.
15. Amminger GP, Resch F, Mutschlechner R, Fredrich MH, Ernst E. Premorbid adjustment and remission of positive symptoms in first episode psychosis. *Eur Child Adolesc Psychiatry* 1997; 6: 212-218.
16. Vyas NS, Hadjulic M, Vourdas A, Byrne P, Frangou S. The Maudsley early onset schizophrenia study. Predictors of psychosocial outcome at 4-year follow-up. *Eur Child Adolesc Psychiatry* 2007; 16: 465-470 .
17. Yamazawa R, Nemoto T, Kobayashi H, Chino B, Kashima H, Mizuno M. Association between duration of untreated psychosis, premorbid functioning, and cognitive performance and the outcome of first episode schizophrenia in Japanese patients: prospective study. *Aust N Z J Psychiatry* 2008; 42: 159-165.
18. Simonsen E, Friis S, Haahr U, Johannessen JO, Larsen TK, Melle I, et al. Clinical epidemiologic first episode psychosis: 1-year outcome and predictors. *Acta Psychiatr Scand* 2007; 116:54-61.
19. Malmberg A, Lewis G, David A, Allebeck P. Premorbid adjustment and personality in people with schizophrenia. *Br J Psychiatry* 1998; 172: 308-313.