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# Quality of life among dually diagnosed and non-substance-using male schizophrenia outpatients

**H I Aras**,[1] MD; **M S Yazar**,[2] MD; **K Altınbaş**,[3] MD

[1] *Iğdır State Hospital, Department of Psychiatry, Iğdır, Turkey*
[2] *Bakırköy Research and Training Hospital, Department of Psychiatry, Istanbul, Turkey*
[3] *Çanakkale Onsekiz Mart University Faculty of Medicine, Department of Psychiatry, Çanakkale, Turkey*

***Corresponding author:*** *H I Aras (ipekimer@hotmail.com)*

**Objective.** To assess the quality of life (QoL) in an outpatient setting among male patients dually diagnosed with schizophrenia and substance use disorder (SUD), and non-substance-using male schizophrenia patients.
**Methods.** The study was conducted in an outpatient setting with 52 male schizophrenia patients and 49 male schizophrenia patients with SUD comorbidity, who were admitted to Bakirköy Research and Training Hospital between 1 May 2010 and 30 September 2010. The patients had been in remission for a minimum of 6 months. The subjects were re-evaluated for the persistence of the diagnosis by using the Structural Clinical Interview for DSM-IV Axis I disorders (SCID I) socio-demographic data form, and the World Health Organization Quality of Life Scale Brief Version (WHOQOL-BREF) and positive and negative syndrome scale (PANSS) were administered to detect the factors affecting diagnostic stability and clinical course.
**Results.** Schizophrenia patients with no SUD comorbidity had a significantly earlier age of disease onset than the comorbid group. SUD comorbidity in schizophrenia patients leads to increased rates of unemployment and homicidality. WHOQOL-Bref psychological health scores were significantly lower among patients in the comorbidity group. No statistically significant difference was identified between the groups with regard to the PANSS scores.
**Conclusions.** It is necessary to focus on the treatment challenges for schizophrenia patients with SUD comorbidity, such as the provision of treatment in criminal justice settings, in which a high proportion of such patients are found.

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Clinical and epidemiological studies have reported up to 47% substance-use disorder (SUD) comorbidity in patients with schizophrenia.[1] Addressing SUD comorbidity is clinically relevant since it has a significant impact on the course and prognosis of schizophrenia. For example, it can lead to acute bouts of hospitalisation by reducing patient compliance with antipsychotic treatment.[2] Among psychiatric patients, particularly ones with schizophrenia, comorbidity has been associated with more frequent emergency room visits, criminality, violence, increased fluctuation and severity of psychiatric symptoms, legal problems and family stress.[3-5]

Aside from the pharmacological treatments used for reducing symptoms, researchers have started to place greater importance on patient satisfaction, treatment assessment by the patient, and patients' subjective well-being in the last few years. Thus, researchers' emphasis on evaluating and enhancing quality of life (QoL) in patients with schizophrenia is gradually increasing.[6-8] The World Health Organization Quality of Life Scale Brief Version scale (WHOQOL-BREF) assesses individuals' self-perception of their position in life within the context of the culture and value systems in which they live, and in relation to their goals, expectations and concerns.[9-11]

Few studies describing the QoL of schizophrenia patients have been published to date, and even fewer have compared the QoL of schizophrenia patients with and without SUD comorbidity. Two studies examining the effects of SUD on schizophrenia outpatients identified significantly lower QoL scores in the comorbid group,[12,13] but the paucity of such studies indicates that this question is still under-explored and merits further investigation. Furthermore, there is very little information in Turkey regarding the QoL of the patients with both schizophrenia and SUD.

In this study, we aimed to assess the QoL of patients dually diagnosed with schizophrenia and SUD, and in non-substance-using male schizophrenia outpatients. It was assumed that due to the neurotoxic, physical and medical effects engendered by substance use, the comorbid group would report poorer QoL scores than schizophrenia patients with no SUD.

## Methods and patient characteristics

The study was conducted among 101 schizophrenia patients, of whom 52 (51.8%) were non-comorbid and 49 (48.52%) had SUD comorbidity. All patients had been previously discharged from hospital and had been in remission for a minimum of 6 months.

All patients satisfied the *Diagnostic and Statistical Manual of Mental Disorders IV* (DSM-IV) criteria for schizophrenia, and schizophrenia with SUD comorbidity.[14]

Subjects were excluded if they did not meet these criteria, or if they had any of the following: (*i*) evidence of organic central nervous system disorder; (*ii*) age <18 or >65 years; (*iii*) mental retardation. The study was described to the patients both verbally and in writing, and signed informed consent was obtained from each subject.

The information concerning socio-demographic variables was collected using the Past History and Sociodemographic Data Form, which records information regarding the patient's level of education, employment status, family and residence. The positive and negative syndrome scale (PANSS) was used to ascertain whether the severity of illness differed between the two groups.[15] Differences between the groups' perception of their QoL were determined by analysis of the WHOQOL-BREF scales. The assessment of QoL included 4 aspects: physical, psychological, social and enviromental.[16]

### Statistical analysis

Data were analysed using SPSS software. The data were assessed using descriptive statistical processes such as standard deviations (SDs) and means. In addition, chi-square and Fisher's exact tests were used to compare the rate and frequency of categorical variables. Means of continuous variables in the two groups were compared with Student's *t*-test. Furthermore, the Kruskal-Wallis and Mann-Whitney U tests were used when the parametric assumption was not achieved, and the Spearmen's rank Correlation Analysis was also used. In addition, except where the parametric assumption was not achieved, the Pearson correlation was used for the correlation analyses. Results with $p<0.05$ were considered statistically significant.

## Results

The average age of the participants was 32 years, and the average educational level was 8.80 years (SD ±3.42) in comorbid patients and 9.67 years (SD ±3.34) in non-comorbid patients. Most subjects were single and lived alone. The types of substances used are presented in Table 1; the most common was alcohol and cannabis in combination, used (16; 32.6%), followed by alcohol alone (9; 18.3%).

Non-comorbid patients had a significantly earlier age of disease onset than the comorbid group. The average age of disease onset among non-comorbid patients was 20.52 years (SD ±4.52), and the average total number of hospitalisations was 4.36 years (SD ±5.60). In the comorbid group, the average age at onset was 23.12 years (SD ±5.49) and the average total number of hospitalisations was 4.90 years (SD ±5.13). The difference between the number of hospitalisations of the two groups was not found to be statistically significant ($p>0.05$).

However, the differences in the employment status of the two groups were found to be statistically significant ($p=0.039$), as were the differences in the antipsychotic treatment modalities ($p<0.05$). In other words, non-substance-using schizophrenia patients demonstrated significantly higher levels of employment and used their combination of antipsychotic treatments more frequently. Another statistically significant difference was that the comorbid group displayed higher levels of homicide attempts ($p<0.05$) and criminality ($p<0.01$) than non-substance-using patients.

Table 2 shows the PANSS severity scores of the two groups. There were no significant differences between the two groups.

Table 3 demonstrates the statistically significant difference between the two groups' evaluation of the psychological aspect of their QoL (according to the WHOQOL-BREF). Non-substance-using patients had higher levels of satisfaction than patients with SUD comorbidity ($p<0.05$). No statistically significant differences were identified between the two groups' assessment of physical health, social relationships and environmental QoL.

To investigate whether and how the changes in QoL were related to changes in psychopathology, we correlated the WHOQOL-BREF domain scores with the PANSS scores (the results are presented on Tables 4 and 5).

Table 4 indicates the descriptive statistics for the WHOQOL-BREF and PANSS scores of patients with SUD comorbidity. It was demonstrated that, when levels of symptom

**Table 1. Categories of substances used**

| Substances used (*N*=49) | *n* (%) |
|---|---|
| Alcohol | 9 (18.3) |
| Cannabis | 6 (12.2) |
| Inhalants | 2 (4.1) |
| Others | 5 (10.2) |
| Alcohol and cannabis | 16 (32.6) |
| Alcohol and inhalants | 2 (4.1) |
| Cannabis and inhalants | 4 (8.1) |
| Cannabis and others | 2 (4.1) |
| Alcohol, cannabis and inhalants | 3 (6.1) |

**Table 2. Descriptive statistics of PANSS scores of the two groups***

| | Schizophrenia patients (*N*=101) | | |
|---|---|---|---|
| PANSS | No comorbid substance-use disorder (*N*=52) mean (±SD) | Comorbid substance-use disorder (*N*=49) mean (±SD) | *p*-value |
| Positive | 9.19 (±3.15) | 10.20 (±4.31) | 0.230 |
| Negative | 11.23 (±5.67) | 11.81 (±6.76) | 0.815 |
| General psychopathology | 19.05 (±6.83) | 19.32 (±4.75) | 0.298 |
| Total | 39.48 (±11.96) | 41.34 (±13.78) | 0.461 |

PANSS = positive and negative syndrome scale; SD = standard deviation.
*Results are according to Mann-Whitney U test.

scores were rated lower, the QoL scores were rated higher. In other words, lower symptomatology was associated with higher QoL. Non-substance-using patients' PANSS positive symptoms ($p$<0.01) and general psychopathological symptoms ($p$<0.05) were correlated significantly and negatively with the WHOQOL-BREF physical health scores. PANSS positive symptoms and total scores were correlated significantly and negatively with the WHOQOL-BREF psychological health scores ($p$<0.01). PANSS positive symptoms, negative symptoms, general psychopathological symptoms and total scores were correlated significantly and negatively with the WHOQOL-BREF social relationship scores ($p$<0.01). PANSS positive symptoms, negative symptoms, general psychopathological symptoms ($p$<0.05) and total scores ($p$<0,01) were correlated significantly and negatively with the WHOQOL-BREF environmental QoL scores.

Table 5 indicates the descriptive statistics for the WHOQOL-BREF and PANSS scores of patients with SUD comorbidity. Comorbid patients' PANSS positive symptoms ($p$<0.05), negative symptoms, general psychopathological symptoms and total scores ($p$<0.01) correlated significantly and negatively with the WHOQOL-BREF social relationship scores. PANSS negative symptoms, general psychopathological symptoms ($p$<0.01) and total scores ($p$<0.05) correlated significantly and negatively with WHOQOL-BREF environmental QoL scores. PANSS positive symptoms, negative symptoms, general psychopathological symptoms and total scores did not correlate with the WHOQOL-BREF physical and psychological health scores ($p$>0.05). PANSS positive symptoms did not correlate with the WHOQOL-BREF environmental QoL scores ($p$>0.05).

## Discussion

The study results revealed that the groups did not differ with respect to average age, educational level, marital status and the number of hospitalisations. This was not consistent with studies reporting that dual

**Table 3. Descriptive statistics of WHOQOL-BREF scores of the two groups***

| | Schizophrenia patients ($N$=101) | | |
|---|---|---|---|
| WHOQOL-BREF | No comorbid SUD ($N$=52) mean (±SD) | Comorbid SUD ($N$=49) mean (±SD) | $p$-value |
| Physical health | 14.28 (±2.92) | 13.90 (±2.48) | 0.481 |
| Psychological health | 13.29 (±2.10) | 12.19 (±2.12) | 0.010† |
| Social relationships | 10.64 (±4.20) | 10.58 (±3.11) | 0.939 |
| Environmental QoL | 12.97 (±2.48) | 12.11 (±2.49) | 0.086 |

QoL = quality of life; WHOQOL-BREF = The World Health Organization Quality of Life Scale Brief Version; SUD = substance-use disorder.
*Results are according to Student $t$-test used;
†$p$<0.05 was considered significant.

**Table 4. Descriptive statistics of WHOQOL-BREF and PANSS measures of patients with no comorbid SUD ($N$=52)**

| | WHOQOL-BREF | | | |
|---|---|---|---|---|
| PANSS | Physical health | Psychological health | Social relationships | Environmental QoL |
| Positive | -0.355* | -0.430* | -0.420* | -0.281† |
| Negative | -0.043 | -0.200 | -0.462* | -0.339† |
| General psychopathology | -0.315† | -0.242 | -0.364* | -0.312† |
| Total | -0.238 | -0.357* | -0.540* | -0.436* |

Results are according to Spearman's rank-correlation analysis. PANSS = positive and negative syndrome scale; WHOQOL-BREF = The World Health Organization Quality of Life Scale Brief Version; SUD = substance-use disorder; QoL = quality of life.
*p<0.01 and †p<0.05 were considered significant.

**Table 5. Descriptive statistics of WHOQOL-BREF and PANSS measures of patients with comorbid SUD ($N$=49)**

| | WHOQOL-BREF | | | |
|---|---|---|---|---|
| PANSS | Physical health | Psychological health | Social relationships | Environmental QoL |
| Positive | -0.044 | -0.146 | -0.297† | -0.276 |
| Negative | -0.177 | -0.170 | -0.474* | -0.369* |
| General psychopathology | -0.193 | -0.164 | -0.401* | -0.382* |
| Total | -0.124 | -0.171 | -0.452* | -0.330† |

Results are according to Spearman's rank-correlation analysis. SUD = substance-use disorder; QoL = quality of life.
*p<0.01 and †p<0.05 were considered significant.


diagnosis is associated with younger age, single status, lower educational level and more frequent hospitalisations.[17-21] Schizophrenia patients with no SUD comorbidity showed significantly higher levels of employment, which is consistent with most of the studies in the literature.[20-22]

Substance use is thought to impair occupational activities and function. The primary substances used were alcohol and cannabis. This is typical of other population studies, which indicate that schizophrenia patients prefer drugs that are easier to obtain. Furthermore, the differences in lifetime consumption of certain drugs might be the result of lower social skills and decreased ability to procure certain illicit drugs.[22] Additionally, recent work on individuals' potential biological vulnerability to cannabis might explain the observed variance in the risk of later-developing schizophrenia. This again raises the possibility that the clinical associations that we commonly observe in schizophrenia may have biological and potentially aetiopathological significance.[5]

Non-comorbid patients had a significantly earlier age of disease onset than the comorbid group. This contradicts the findings of some first-episode studies, which indicate earlier ages of onset for individuals with a history of comorbid substance use.[23-28] However, not all studies have shown this.[29-32] One explanation for the earlier age of onset of psychosis in comorbid patients is that the illness is precipitated by substance use. It nevertheless remains uncertain whether this effect is limited to people with a predisposition to psychosis.[33,34] Another possible explanation is that the early onset of symptoms is a risk factor for substance use.[13,35,36] Previous studies explored these hypotheses by examining the temporal relationship between the onset of schizophrenia and substance use. The findings have been mostly inconsistent,[35-37] and, in general, have only addressed the relationship between substance use and the onset of psychotic symptoms, and not the possible relevance of prodromal symptoms. Furthermore, the relatively high proportion of patients who reported lifetime substance use in this and other studies raises the possibility that substance-related symptoms could confound retrospective estimation of onset age. For example, drug-induced phenomena may be mistaken for early symptoms of illness, or substance use may mask psychotic symptoms.[38] In the latter situation, if patients perceive their early psychotic symptoms to be drug-induced, this may delay their request for help and medical assistance. Norman *et al.*[39] propose more generally that substance use by people with psychosis may partly reflect denial of the severity of their illness and of the potential benefit of medical intervention, and may thus be associated with a reduced likelihood of seeking treatment soon after the onset of psychosis. Our findings may support such a view, in that we found schizophrenia patients with no SUD comorbidity to have a significantly earlier age of disease onset than comorbid patients.

A statistically significant difference between the two groups was the higher levels of homicide attempts and criminality among comorbid patients. Swinson *et al.*[40] suggest that there is an increase in drug and alcohol misuse among people with schizophrenia who committed homicide; however, they did not establish any causality to support this claim. A study of 49 homicidal schizophrenia patients reported that 24.5% were using alcohol while 4.1% used cannabis.[41] Nevertheless, Bennet *et al.*[42] contend that the association between homicidal violence and schizophrenia cannot be explained simply on the basis of comorbid substance abuse.

In our study, there were no differences between the groups with regard to negative symptoms, positive symptoms and general psychopathology. Addington and Addington[12] had compatible results in terms of negative symptoms, and found that patients with comorbidity had higher PANSS positive symptoms. In turn, Talamo *et al.*[43] described higher PANSS positive and lower PANSS negative scores in schizophrenia patients with comorbidity, which is also not compatible with our study. Nevertheless, such results are not surprising, as the literature suggests that SUD comorbidity in schizophrenia patients will likely lead to an increase in positive symptoms.[44]

Our study results support the hypothesis that schizophrenia patients with SUD comorbidity will report poorer QoL scores than non-comorbid patients. There are at least 3 potential explanations for this:

- It is possible that these patients are functioning at a lower level in their interpersonal relationships than non-substance-using patients.
- Comorbidity has negative social impacts in schizophrenia patients. The dually diagnosed patients are more prone to stress associated with the daily struggles for survival (such as being exposed to violence and other harms).
- It is possible that non-substance-using schizophrenia patients may have developed better coping and self-management skills over the course of their illness, as well as a greater acceptance of the illness and compliance with treatment. The more frequent use of antipsychotic treatment combinations observed in our study may be the result of their greater level of treatment acceptance.

Patients with schizophrenia who have SUD comorbidity may actually have milder symptoms. Their poorer course is more attributable to the direct effect of drugs on the worsening symptoms, the greater propensity to antipsychotic-related side-effects, and associated medication non-compliance.[17] Similar to the results of our current study, dually diagnosed patients in two studies by Addington and Addington[12,13] had significantly lower QoL scores than non-substance-using patients with schizophrenia. Contrary to our results, dual-diagnosis patients in the study of Herman *et al.*[44] expressed higher levels of satisfaction with their QoL compared with non-comorbid patients. This inconsistency could be related to several factors, such as differences in the samples and the selected QoL measures (WHOQOL-BREF v. the Quality of Life Scale).

### Study limitations

Our results relate to a study population from inner Istanbul, and may not be generalised confidently to populations from suburban or rural areas. The self-reporting nature of the QoL scale used was a potential source of bias, as there may be a lack of awareness as well as a misrepresentation of the symptoms on the patients' part.[45] As observed in the general population,[46] individuals with mental illnesses may selectively under-report the recent misuse of some drugs to their families, health professionals and researchers. This is unfortunate, since the consequences of misuse of these various substances would be expected to differ considerably.

## Conclusions and implications for interventions

In summary, SUD comorbidity in schizophrenia leads to higher rates of unemployment and homicidality among patients. It is necessary to

focus on the treatment challenges for comorbid patients, such as the provision of treatment in criminal justice settings, in which a high proportion of such patients are found.[47]

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