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ORIGINAL PAPER

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Adult quality of life and associated factors in adolescent onset schizophrenia and affective psychotic disorders

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Abstract *Background* Subjects in treatment for affective disorders are usually less satisfied with life compared to subjects with schizophrenia. *Aims* The aims of this study were to compare subjective quality of life (QoL) at adult age of adolescent onset psychotic disorders and analyse associated factors. *Method* Fifty-three patients with adolescent onset psychotic disorders were followed up at age 25, diagnostically re-evaluated according to the DSM-IV and assessed with the Positive and Negative Symptoms Scale, the Strauss-Carpenter Scale and the Lancashire Quality of Life Profile. *Results* Subjects diagnosed with schizophrenia or schizoaffective disorder (n = 27) experienced significantly lower overall QoL than subjects with psychotic mood disorders (n = 26). Overall QoL was strongly associated to depressed mood ($R^2 = 0.49$) in the schizophrenia group and to degree of employment ($R^2 = 0.39$) in the mood disordered group. *Conclusion* Depression is a major concern in the evaluation and treatment of patients with schizophrenia, while vocational support seems particularly important after an episode of psychotic mood disorder.

Key words quality of life – schizophrenia – bipolar disorder – affective disorder

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Introduction

Studies comparing QoL in schizophrenia and in depression have found a lower subjective QoL in depression (Atkinson et al. 1997; Gupta et al. 1998; Koivumaa-Honkanen et al. 1999), or no difference between the diagnostic groups (Carpiniello et al. 1997) as opposed to objective QoL measures where individuals with schizophrenia were in a more impaired situation (Atkinson et al. 1997; Koivumaa-Honkanen et al. 1999). Comparative reports on QoL in bipolar disorder are scarce and divergent (Atkinson et al. 1997; Ritsner et al. 2000; Russo et al. 1997). The most prominent factors associated to QoL in schizophrenia have been psychosocial (Hansson et al. 1999; Ritsner et al. 2000) or clinical factors and particularly depression (Awad et al. 1997; Gaite et al. 2002; Hansson et al. 2001), while personality characteristics (Ritsner et al. 2000; Koivumaa-Honkanen et al. 1999) or depression (Koivumaa-Honkanen et al. 1999) and severity of disorder (Ritsner et al. 2000) contributed in mood disorders. Patients have been recruited during admission (Ritsner et al. 2000; Russo et al. 1997) or as current out-patients (Koivumaa-Honkanen et al. 1999), which tended to exclude those with a benign clinical course. The aims of this study were to examine and compare QoL at a 10-year follow-up of adolescent onset schizophrenia and affective psychotic disorders and to cross-sectionally analyse associated factors.

Subjects and methods

All patients admitted to the in-patient unit at the department of Child and Adolescent Psychiatry, University Hospital of Lund, Sweden, between 1982 and 1993 with a retrospectively assessed first episode of a DSM-IV (American Psychiatric Association 1994) psychotic disorder (n = 88) were considered for this study. The subjects were located by a national register and asked about being interviewed in a follow-up project. The same interviewer (HJ) conducted all interviews in one visit. A lifetime best estimate DSM-IV diagnosis was formulated after follow-up. This included a semistructured personal interview, interviews with parents, case managers or psychiatrists and information

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from available medical records adopted to the Structured Clinical Interview for DSM-III-R diagnosis (SCID) interview for psychotic or affective syndromes (Spitzer 1989) after minor changes for meeting the DSM-IV criteria. When there had not been any subsequent episode, the initial diagnosis was used as the lifetime diagnosis. Procedures and interrater reliability are described elsewhere (Jarbin et al. 2003a; Jarbin and von Knorring 2003b).

This sample consisted of four groups: subjects with a best estimate lifetime DSM-IV diagnosis of schizophrenia (DSM-IV code 295.0–3, 295.6, 295.9, n = 20), schizoaffective disorder (DSM-IV code 295.7, n = 7), bipolar disorder (DSM-IV code 296.0, 296.4–296.89, n = 17) or major depressive disorder with psychotic features (DSM-IV code 296.24 + 296.34, n = 9). Reasons for drop-out were: other best estimate lifetime DSM-IV diagnosis (n = 7), deceased (n = 4), not consenting to personal interview (n = 20) or highly unreliable quality of life interview (n = 4).

The department had a primary responsibility for a population of 550,000 and served as a secondary level to another 900,000 inhabitants. Of the 53 patients in this report, 46 were local and 7 patients were referred from the secondary uptake area. All patients admitted to the department with a first psychotic episode were, with one exception, below 18 years of age. Hospitalisation at this unit was the rule for all patients with a first episode of psychosis from this geographical area at the time.

The excluded subjects with a lifetime schizophrenia and schizoaffective diagnosis (n = 15) had a longer duration of time between first admission and follow-up (12.4 sd 3.7 vs. 9.3 sd 3.4 years, $p = 0.01$) compared to the included subjects with the same lifetime diagnosis. They also had a lower GAF at follow-up (28.9 sd 9.6 vs. 43.6 sd 15.0, $p < 0.01$), a lower score on S-C employment (0.6 sd 0.8 vs. 1.5 sd 1.4, $p < 0.05$) and a higher load on PANSS positive subscale (17.2 sd 4.8 vs. 12.2 sd 5.9, $p < 0.05$) and PANSS negative subscale (30.8 sd 14 vs. 19.1 sd 8.4, $p < 0.05$). The excluded subjects with a lifetime diagnosis of bipolar disorder or major depressive disorder with psychotic features (n = 8) were, in most cases, lacking outcome data precluding a drop-out analysis.

Psychopathology

Psychopathology was assessed with the 30 item Positive and Negative Symptom Scale (PANSS) (von Knorring and Lindström 1992), which covers positive, negative and general symptoms (1, no symptom, to 7, severe symptoms) and with Strauss-Carpenter (Strauss and Carpenter 1972) symptom subscale (0, no symptoms, to 4, continuous and severe symptoms the preceding month). IQ (< 80 vs. > 80) and duration since first psychotic episode were also analysed.

Psychosocial function

Psychosocial function was assessed with the Strauss-Carpenter employment subscale (0, no housework, no sheltered employment and no day-centre activities, to 4, fully employed or studying the preceding year); the Strauss-Carpenter social contacts subscale (0, no contacts except for family members or caregivers, to 4, seeing friends every week the preceding year); the Strauss-Carpenter hospitalisation subscale (0, hospitalised more than 9 months, to 4, not hospitalised the preceding year); Global Assessment of Functioning (GAF) from the DSM-IV (American Psychiatric Association 1994) for the best 3 months the year before follow-up and whether supported by a disability pension or not. Among objective life conditions, data on parental origin (both parents immigrants vs. not) and sex were also analysed.

Quality of life

Quality of life was assessed with the Lancashire Quality of Life Profile (LQoLP) (Oliver et al. 1997). The LQoLP is a structured self-report interview to be administered by trained interviewers. It assesses objective quality of life and subjective life satisfaction in nine life domains: work (including rehabilitation or being on a disability pension if applicable), leisure, religion, finances, living situation, safety, family relations, social relations and health. It also includes a global well-being scale, a patient global assessment of quality of life (Cantril's ladder), and an interviewer assessment of the individual's global quality of life, an affect balance scale, a self-esteem scale and a happiness scale. Objective quality of life and personal characteristics are assessed by categorical or continuous measures depending on the content of the item. They include having a close friend; having a reliable friend; having seen a friend last week; living independently vs. with parents, in sheltered apartments or in other treatment facilities; being married or in a steady relationship and frequency of contact with family of origin (1, daily, to 5, less than once a year). Subjective quality of life ratings are made on a seven-point Likert-type scale (1, couldn't be worse, to 7, couldn't be better). The LQoLP has been used in a number of international studies. It has been translated into several languages including Swedish. The LQoLP has shown satisfactory results in reliability and validity tests (Hansson et al. 1998; Oliver et al. 1997; van Nieuwenhuizen et al. 1998).

Differences between groups were evaluated with Student's t-test. Differences in frequency of categorical variables were examined with chi-square tests.

Subjects with schizoaffective disorder (n = 7) had similar ratings to subjects with schizophrenia (n = 20) on the perceived overall QoL. However, they were significantly less satisfied on perceived overall QoL than both subjects with bipolar disorder (n = 17) (4.8 sd 0.5 vs. 5.3 sd 0.5, $df = 22$, $p < 0.05$) and subjects with major depression with psychotic features (n = 9) (4.8 sd 0.5 vs. 5.6 sd 0.6, $df = 14$, $p < 0.05$). Since subjects with schizophrenia and schizoaffective disorder also had similar ratings on all QoL domains as well as more negative symptoms and lower GAF compared to the bipolar or major depressive group, we joined these two subgroups for analyses below. Likewise, subjects with bipolar and major depressive disorder had similar ratings on perceived overall QoL and all domains and were merged into a mood disordered group.

Multivariate regression analyses were used for predicting the perceived overall QoL from the above-mentioned 49 clinical, psychosocial and background variables. Prior to testing in a forward stepwise regression model, we selected only variables with a significant correlation in a Spearman's rank correlation test to the dependent factor in order to reduce the number of predictors in the models. A significance level of 5% was used.

Results

Sample characteristics

The 53 subjects included in the analyses were 25 males and 28 females. The first psychotic symptom was observed at 15.8 years (sd 1.6). The first admittance with a psychotic disorder occurred at the age of 16.0 years (sd 1.7) and they were interviewed 9.6 years (sd 3.5) later. At follow-up, patients with schizophrenia or schizoaffective disorder, as compared to those with psychotic mood disorders, were less often living independently, were more often supported by a disability pension, had a lower score on GAF and on all subscales of the Strauss-Carpenter scale and a higher PANSS score on both positive, negative and general subscales (Table 1).

Quality of life

Individuals with schizophrenia were most satisfied with the domains safety and religion and least satisfied with social relations and living conditions. Individuals with

Table 1 Characteristics of patients and objective outcome measures

Characteristic	Schizophrenia (n = 27)	Mood disorder (n = 26)	Statistics		
			χ^2 or t	df	p
Age of onset of psychosis, years (sd)	15.8 (1.8)	15.8 (1.4)	0.124	51	0.90
Duration of illness, years (sd)	9.3 (3.4)	10.0 (3.5)	0.829	51	0.41
Age at present examination, years (sd)	25.4 (3.4)	25.9 (3.6)	0.59	51	0.56
Male, n (%)	14 (52)	11 (42)	0.48	1	0.49
Both parents immigrants, n (%)	5 (19)	3 (12)	0.50	1	0.48
Living independently, n (%)	13 (48)	23 (88)	9.9	1	0.002
Married or living together, n (%)	5 (19)	11 (42)	3.6	1	0.059
Disability pension, n (%)	24 (89)	4 (15)	28.7	1	0.000
Global Assessment of Functioning, mean (sd)	44 (15)	79 (14)	8.5	51	0.000
Strauss-Carpenter scale					
Employment, mean (sd)	1.5 (1.4)	3.5 (1.0)	5.8	51	0.000
Hospitalisation, mean (sd)	3.6 (0.6)	3.8 (0.4)	2.0	51	0.049
Symptoms, mean (sd)	2.4 (1.5)	3.8 (0.6)	4.3	51	0.000
Social contacts, mean (sd)	2.6 (1.5)	3.8 (0.7)	3.7	51	0.001
Positive and Negative Symptom Scale					
Positive subscale, mean (sd)	12.2 (5.9)	7.4 (0.8)	4.1	51	0.000
Negative subscale, mean (sd)	19.1 (8.4)	8.2 (1.9)	6.4	51	0.000
General subscale, mean (sd)	32.4 (9.8)	18.8 (3.9)	6.5	51	0.000
Depressive mood, mean (sd)	2.7 (1.6)	1.5 (0.9)	3.1	51	0.003

psychotic mood disorders were most satisfied with the domains safety and health and least satisfied with finances and work (see Table 2). A comparison of the diagnostic groups found that people with psychotic mood disorders were more satisfied with perceived overall quality of life compared to people with schizophrenia. They were also more satisfied with the domains leisure, health, social relations, living and safety, while there was not any significant difference concerning work, religion, finances or family relations.

Factors associated to QoL

For the schizophrenia group, we found the depressed mood item from PANSS to overshadow all other contributions and to explain 49 % of the total variance in perceived QoL ($R^2adj = 0.49$, $F = 25.9$, $p < 0.001$). For the mood disordered group, the predictive model included only the item employment from the Strauss-Carpenter scale explaining 39 % of the total variance in perceived QoL ($R^2adj = 0.39$, $F = 16.8$, $p < 0.001$).

Discussion

In this sample of adolescent onset psychotic disorders followed up at age 26 years, subjects with mood disorders were more satisfied with life and in better objective life conditions compared to subjects with schizophrenia spectrum disorder. Overall subjective QoL was strongly associated to concurrent degree of employ-

Table 2 Mean scores for subjective life domains in the Lancashire quality of life profile for patients with adolescent onset psychotic disorder

Domain	Schizophrenia (n = 27)		Mood disorder (n = 26)		Statistics		
	Mean	sd	Mean	sd	t	df	p
Work	5.0	1.1	4.85	1.1	0.43	49	0.67
Leisure	4.7	1.0	5.6	0.6	3.7	51	0.001
Religion	5.6	0.9	5.7	1.1	0.44	50	0.66
Finances	4.9	1.2	4.75	1.4	0.49	51	0.62
Living	4.6	0.8	5.2	0.8	2.8	51	0.007
Safety	5.5	1.0	6.0	0.7	2.1	51	0.041
Family relations	5.0	1.4	5.6	0.8	2.0	51	0.055
Social relations	4.4	1.4	5.4	1.1	2.9	51	0.006
Health	4.7	1.3	5.8	0.9	3.5	51	0.001
Perceived overall quality of life	4.9	0.6	5.4	0.5	3.3	51	0.002

ment in mood disorders and to depression in schizophrenia.

There are several methodological limitations of this study. The schizophrenia cohort excluded those with the most severe course where QoL ratings possibly would be different and associated with different factors. Still the GAF rating in our schizophrenia cohort is lower than in any other QoL study (Gaite et al. 2002; Hansson et al. 1999, 2001; Koivumaa-Honkanen et al. 1999; Voruganti et al. 1998). Most importantly, the study is rather small and exploratory in its nature. An analysis of associated factors to the domains of QoL was omitted due to insufficient power. However, the main association to perceived overall QoL in both schizophrenia and in mood disorders would still be significant after correcting for the 49 covariates according to Bonferroni $p = 0.001$. The main strength of this study was the composition of the cohort. This included a consecutive cohort from a defined catchment area and establishment of QoL in a stable phase and not in connection with hospitalisation or out-patient care. This sampling procedure allows for a more population-based study of QoL at adult age in early onset cases of these disorders.

In line with other studies (Atkinson et al. 1997; Koivumaa-Honkanen et al. 1999), individuals with schizophrenia or schizoaffective disorder were markedly impoverished in objective life conditions compared to those with psychotic mood disorders, i. e. functional level, employment, need for disability pension, social contacts and in living independently.

The EPSILON study (Gaite et al. 2002) provides comparative QoL domain scores measured with the LQoLP for patients with schizophrenia from various parts of Europe. In that study, patients from Copenhagen were significantly more satisfied on the overall score. Our schizophrenia patients were similarly satisfied to those from neighbouring Copenhagen in spite of a lower functional level. The domains of greatest dissatisfaction among schizophrenia patients in Europe were work and finances. These domains did not cause dissatisfaction in the Copenhagen centre or in our schizophrenia group. These findings could be attributed to the more generous social welfare systems in the Scandinavian countries as many of our patients with schizophrenia had a meaningful daily activity. The low satisfaction with social relations in our schizophrenia patients was similar to the findings in other European centres. On the other hand, our patients with a former episode of psychotic mood disorder were most dissatisfied with the domains work and finances. This finding can reflect the burden on the professional career and subsequent economical difficulties from episodes of mood disorder.

Individuals with schizophrenia or schizoaffective disorder experienced a significantly lower QoL in six of nine domains and in the perceived overall score compared to individuals with a lifetime diagnosis of bipolar disorder or major depression with psychotic features. Differences were most striking in the areas of leisure, health and overall score. This finding is in sharp contrast to earlier studies of chronic or hospitalised mood disordered patients (Atkinson et al. 1997; Carpiniello et al. 1997; Koivumaa-Honkanen et al. 1999; Ritsner et al. 2000; Russo et al. 1997). Our subjects with an early onset of mood disorder were, at follow-up at age 26, mostly working or studying half to full time and only a small minority were supported by a disability pension. They had a low symptom load and a remarkably high functional level. This positive clinical and functional outcome seems to have greatly improved subjective QoL in these individuals with a former episode of psychotic mood disorder. The areas where satisfaction was lower and no better than in subjects with schizophrenia were work and finances.

The clinical factor depressed mood determined half of the variation in the schizophrenia group. This is in line with most earlier studies (Awad et al. 1997; Gaite et al. 2002; Hansson et al. 2001; Koivumaa-Honkanen et al. 1999; Voruganti et al. 1998) but opposed to others (Hansson et al. 1999; Ritsner et al. 2000). Subjects with schizophrenia suffered from a considerable amount of depressive symptoms at follow-up. This finding is in line with previous work (Corrigan and Buican 1995; Dickerson et al. 1998; Gaite et al. 2002; Hansson et al. 1999; Huppert et al. 2001; Huxley et al. 2001; Mechanic et al. 1994; Ritsner et al. 2000) on the importance of symptoms of depression and anxiety for the subjective appraisal of QoL in schizophrenia. Our sample was comparable in symptoms of anxiety, of depression and of psychosis to the EPSILON study (Gaite et al. 2002), where the association to psychotic symptoms was weak and substantially smaller than the relation to anxiety/depression. Furthermore, two studies (Huxley et al. 2001; Priebe et al. 2000) have reported a reduction in anxiety/depression to be the only significant correlation with a positive change in subjective QoL over time in patients with schizophrenia. Depressed mood should be a major concern in the evaluation and treatment after an episode of schizophrenia.

Individuals in the mood disordered group were almost free from psychiatric symptoms and even from symptoms of depression as assessed by the PANSS and reported in Table 1. Thus, there was not much of a symptom load to possibly be associated to QoL. The striking finding of a strong association with degree of employment to perceived overall QoL suggests the importance of positive experiences from participation in society. The individuals with a psychotic mood disorder also rated their satisfaction with working and finances as the lowest. These findings suggest rehabilitation efforts in mood disorders to be focused on employment and education. However, as there was no comparison to normal controls, we do not know if this finding really is dependent on the disorder.

Future studies should pay attention to the association of QoL to more detailed aspects of depression. Another area of future research is the association between participation and adjustment in work/studies to perceived QoL. Furthermore, studies to measure change in QoL in

association to occupational rehabilitative measures in affective psychotic disorders and to antidepressive interventions in schizophrenia would be of great interest.

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