Variables Influencing Subjective Well-Being in Patients with Schizophrenia

Jinseung Oh, MD[1], Young-Hoon Ko, MD, PhD[2], Jong-Woo Paik, MD, PhD[3],
Moon-Soo Lee, MD, PhD[1], Changsu Han, MD, PhD[2], Hyun-Ghang Jeong, MD, PhD[1],
Byung-Joo Ham, MD, PhD[3], Yong-Ku Kim, MD, PhD[2] and Seung-Hyun Kim, MD, PhD[1]

[1]Department of Psychiatry, Korea University Guro Hospital, Korea University College of Medicine, Seoul,
[2]Department of Psychiatry, Korea University Ansan Hospital, Korea University College of Medicine, Seoul,
[3]Department of Psychiatry, Korea University Anam Hospital, Korea University College of Medicine, Seoul,
[4]Department of Psychiatry, School of Medicine, Kyung Hee University, Seoul, Korea

Objectives : The purpose of this study was to analyze the relationship between subjective well-being and other clinical parameters such as sociodemographic and clinical variables, which include positive and negative symptoms, depressive symptoms, insight, and side effects.

Methods : Fifty-one outpatients diagnosed with schizophrenia were recruited in this study. Subjective well-being was assessed using a self-rating scale, the Subjective Well-being under Neuroleptics-Short form (SWN-K). Sociodemographic variables were also evaluated and other evaluations were conducted using the Positive and Negative Syndrome Scale (PANSS), Calgary Depression Scale for Schizophrenia (CDSS), Liverpool University Neuroleptic Side Effect Rating Scale (LUNSERS), Korean Version of the Revised Insight Scale for Psychosis (KISP), and Multidimensional Scale of Perceived Social Support (MSPSS). The relationship between subjective well-being and these clinical variables was assessed.

Results : Education years and social support scores were positively correlated with the total SWN-K scores, but severity of illness, severity of depression, severity of side effect, and the scores on insight were negatively correlated. The stepwise multiple regression analyses indicated that the total SWN-K score of the patients with schizophrenia was associated with negative symptoms and insight.

Conclusion : Better insight and more severe negative symptoms in patients with schizophrenia may be associated with worse subjective well-being. Results indicate that careful evaluation of subjective well-being is essential for proper management of patients with schizophrenia. (Korean J Schizophr Res 2014;17:93-99)

Key Words : Schizophrenia · Subjective well-being · SWN-K · Insight · Negative symptom.

Introduction

Schizophrenia is often characterized by an alternation of deterioration and remission, adversely affecting the patients' daily life, including their occupational and educational activities.[1] In the past, the treatment of schizophrenia was focused on the reduction of positive symptoms. These days, due to the wide use of atypical antipsychotics, enhancement of the quality of life of patients has become more important, for instance, minimization of the side effects of the antipsychotics, alleviation of negative symptoms, depressive symptoms, and cognitive dysfunction.[2-4] Although it is not easy to define the concept of quality of life in patients with schizophrenia, the recent studies have suggested that the multi-dimensional concept of subjective well-being is associated with the activities of daily life, including self-management and social roles, social support, treatments, and side effects of the antipsychotics.[5] Subjective well-being in patients with schizophrenia is important because it is recognized as an important shift in the evaluation of treatment goals.[2,6] Schizophrenia patients' subjective well-being is an important index in evaluating the treatment course, and is being widely used in clinical settings. Subjective well-being is closely associated with the patients' quality of life[7-9] and is a predictive factor of complying with antipsychotics as well as of remission and recovery from symptoms.[10-12]

Various sociodemographic and clinical variables can affect

the subjective well-being of the patients with schizophrenia. The severity of the positive and negative symptoms has been known to adversely affect the quality of life in patients with schizophrenia.[13-16] In addition, the severity of anxiety and depressive symptoms was reported to have been associated with the subjective quality of life.[4,17-21] Side effects of antipsychotics are associated with low subjective life satisfaction and quality of life in schizophrenia patients,[11,22] and social support has also been found to affect the same.[23-25] The deterioration in cognitive functions, such as executive function and working memory, negatively affects the quality of life of the patients.[26,27] However, several studies about the effect of schizophrenia patients' insight on their quality of life have shown inconsistent and debatable findings.[3,28-30] Therefore, it is important to measure and analyze the level of subjective well-being of the patients and the clinical variables influencing it with the objective methods.

This study evaluated the subjective well-being of 51 outpatients with schizophrenia under antipsychotics using the Subjective Well-being under Neuroleptics-Short form (SWN-K).[31] In addition, this study assessed social sociodemographic factors, support level, and clinical variables including positive and negative symptoms, depressive symptoms, cognitive function, insight, and side effects. Then it examined which variables among them could be significantly associated with subjective well-being.

Materials and Methods

Study sample and procedure

Subjects were recruited consecutively from outpatient clinics at three university hospitals in Seoul and Gyeonggi Province, Korea (Korea University Guro Hospital, Korea University Ansan Hospital, Kyunghee University Hospital). Inclusion criteria were age between 20 and 65 years, diagnosis of schizophrenia by the psychiatrists according to the Diagnostic and Statistical Manual of Mental Disorders 4th ed. (DSM-IV) criteria, admission to the hospital or emergency room at least once in the past two years, and taking oral antipsychotics. Exclusion criteria were comorbid diagnoses that might influence outcome measures (e.g., mental retardation), alcohol or substance dependence, risk of suicide, pregnancy or lactation, administration of depot antipsychotic injection, administration of electroconvulsive therapy within previous six months, unstable or inadequately treated medical conditions or seizure disorder, and hospitalization within previous three months.

The SWN-K, for measuring the subjective well-being of the patients with schizophrenia who were taking antipsychotic drugs, and the evaluation of their clinical symptoms and cognitive functions were conducted at the start of the study. Formal training for all clinical rating scales was provided at an investigator meeting and supplemented by written training materials. Each assessment was completed by trained inter-rater-reliable clinicians at each hospital site. The Research Ethics Committee of the Medical Faculty of Korea University, approved the study and the patient made an informed consent to participate in the study.

Sociodemographic factors

Through medical-record reviews and interviews with the subjects and their families, the demographic factors of subjects, such as age, gender, marital status, education years, housing status, and occupation, and the clinical factors such as disease duration, onset age, family history, and frequency of hospitalization were investigated.

The Korean-version of the Subjective Well-being under Neuroleptics-Short form (SWN-K)

The SWN is a 38-item self-report scale developed in 1995, and a 20-item contracted version was developed in 2001. The short version has been widely used and was translated into Korean. The reliability and validity of the Korean version in evaluating the schizophrenia patients' quality of life have been demonstrated.[3,4,31-33] The SWN-K consists of 20-item with a 6-point Likert scale. Higher scores on the SWN-K indicate higher subjective well-being of the patient. This study used the SWN-K to evaluate the subjective well-being of patients with schizophrenia.

Evaluation of the clinical symptoms

The Positive and Negative Syndrome Scale (PANSS) was used to evaluate the severity of current psychopathology of the subjects in the present study.[34-36] The Calgary Depression Scale for Schizophrenia (CDSS) was used to evaluate the depression.[37,38] The Korean Version of the Revised Insight Scale for Psychosis (KISP),[39] 10-item, self-report Drug Attitude Inventory (DAI-10),[40,41] Multidimensional Scale of Perceived Social Support (MSPSS),[42] Liverpool University Neuroleptic Side Effect Rating Scale (LUNSERS)[21] were assessed in the patients with schizophrenia. To evaluate the cognitive function of the patients, the digit symbol substitution test, semantic verbal fluency test, and trail-making test were conducted using the Korean Wechsler Intelligence Scale (KWIS).

Statistical analysis

For the analysis of the sociodemographic factors, mean and SD were included as continuous variables, and frequency and percentage as categorical variables. Variables correlated with subjective well-being were identified by using the Pearson's correlation analysis. The stepwise multiple regression analysis was conducted to identify a factor having a significant effect on the subjective well. SPSS version 18.0 was used for the statistical analyses. The statistical significance was set at a two-tailed threshold of $p < 0.05$.

Results

Sociodemographic and clinical characteristics

This study enrolled 51 subjects (22 males and 29 females). The mean age of patients was 38.96 ± 11.57 years. The mean for education years was 12.22 ± 2.99 years. In terms of marital status, majority of the participants were single (n=33, 64.7%), followed by married/couple (n=11, 21.6%), and separated/divorced (n=7, 13.7%). The disease duration of schizophrenia was 10.10 ± 8.07 years. All patients were taking only one antipsychotic such as risperidone (n=11, 21.6%), amisulpride (n=11, 21.6%), olanzapine (n=7, 13.7%) quetiapine (n=7, 13.7%), paliperidone (n=6, 11.8%), aripiprazole (n=5, 9.8%), and ziprasidone (n=4, 7.8%)(Table 1, 2).

Table 1. Sociodemographic characteristics of the subjects (n=51)

	Mean±SD or n (%)
Gender	
Male	22 (43.1%)
Female	29 (56.9%)
Marital status	
Married/living together	11 (21.6%)
Single	33 (64.7%)
Divorced/separated	7 (13.7%)
Occupation	
Unemployed	40 (80.0%)
Employed	11 (20.0%)
Current neuroleptics	
Aripiprazole	5 (9.8%)
Olanzapine	7 (13.7%)
Paliperidone	6 (11.8%)
Risperidone	11 (21.6%)
Ziprasidone	4 (7.8%)
Quetiapine	7 (13.7%)
Amisulpride	11 (21.6%)
Age (years)	38.96±11.57
Educational level (years)	12.22± 2.99
Illness onset age (years)	28.06±11.25
Duration of illness (years)	10.10± 8.07
Frequency of hospitalization	1.39± 1.33

Comparison between the SWN-K scores and sociodemographic variables

There was no significant difference of the SWN-K score according to the gender and educational level. Also, the SWN-K score did not significantly differ between the groups according to the job status or marital status (Table 3).

Correlation between the SWN-K score and sociodemographic, and clinical variables in patients with schizophrenia

The SWN-K score did not significantly correlate with age, onset age and disease duration of schizophrenia. No significant correlation was observed between subjective well-being

Table 2. Clinical characteristics of the subjects (n=51)

	Mean±SD
SWN-K	
Mental functioning	14.55± 4.09
Self-control	15.20± 4.18
Emotional regulation	15.90± 4.06
Physical functioning	15.43± 4.21
Social integration	14.75± 3.83
Total	75.82±16.80
PANSS score	
Positive score	10.67± 3.94
Negative score	14.71± 6.72
General score	26.73± 8.38
Total score	52.10±17.32
CDSS score	2.56± 2.73
LUNSERS	
Extrapyramidal	5.29± 4.59
Psychic	12.43± 7.77
Anticholinergic	3.53± 3.38
Other autonomic	3.45± 3.38
Allergic reaction	1.86± 2.41
Hormonal	2.57± 2.77
Miscellaneous	3.14± 2.31
Red herrings	5.94± 4.79
Total score	32.27±22.10
DAI-10	
Subjective positive score	1.73±3 .25
Subjective negative score	1.78± 2.07
Total score	3.51± 4.19
KISP	13.02± 5.92
MSPSS	
Family score	5.06± 1.55
Friends score	3.56± 1.74
Significant other score	3.95± 1.65
Total score	4.19± 1.20

SWN-K : Subjective Wellbeing on Neuroleptics-Short form, PANSS : Positive and Negative Syndrome Scale, CDSS : Calgary Depression Scale for Schizophrenia, LUNSERS : Liverpool University Neuroleptic Side Effect Rating Scale, DAI-10 : Drug Attitude Inventory-10, KISP : Korean Version of the Revised Insight Scale for Psychosis, MSPSS : Multidimensional Scale of Perceived Social Support

Table 3. Comparison of the SWN-K scores with demographic data

	SWN-K	
	Mean±SD	p-value
Gender		
Male	77.32±20.21	0.585
Female	74.69±13.93	
Job		
Unemployed	76.22±17.48	0.748
Employed	74.36±14.68	
Hospitalization		
Not hospitalized	70.29±18.22	0.149
Hospitalized	77.92±15.98	
Marital status		
Married/living together	83.09±15.75	0.232*
Single	73.12±17.11	
Divorced/Separated	77.14±15.38	
Education level		
High education level[†]	77.05±17.38	0.296
Low education level	70.80±13.78	

p-values were calculated using the Independent samples t-test. * : The one-way ANOVA, Tukey's post-hoc analysis, † : High education level indicates high school graduation or over. SWN-K : Subjective Wellbeing on Neuroleptics-Short form

and the cognitive function tests such as the Digit Symbol Substitution Test, Semantic Verbal Fluency Test, and Trail Making Test A and B, as well as the subjective responses to drugs as measured by the DAI-10. However, there was a significant positive correlation between the SWN-K score and educational year (r=0.286, p=0.042). Significant negative correlations were found between the SWN-K scores and all the total scores and subscores of the PANSS and CDSS. Intermediate or higher-level significant negative correlations were observed between the SWN-K score and the total scores of the LUNSERS, as well as the scores on all its subscales, except for the hormonal items. The KISP, which evaluated the patients' insight, showed a significant negative correlation with the SWN-K score(r=−0.701, p=0.001)/ The KISP score had a significant positive correlation with the CDSS score (r=0.469, p=0.001). In addition, the SWN-K score showed significant positive correlations with the total scores and subscores on the MSPSS. The family score of the MSPSS had a significant correlation with the SWN-K score with a high correlation coefficient (r=0.543, p=0.001) (Table 4).

Multiple regression analysis showed that the scores of the negative symptoms in the PANSS and the KISP had significant negative correlations with the SWN-K score. The regression equation, SWN-K=112.114-1.921*KISP-0.746*PANSS negative score, was significant and explained 57% of the variance in the SWN-K scores (Table 5).

Table 4. Bivariate correlations between the SWN-K scores and clinical measures of the subjects (n=51)

	SWN-K	
	r	p-value
Age (years)	0.142	0.321
Education (years)	0.286	0.042*
Illness onset age (years)	0.142	0.322
Duration of illness (years)	0.021	0.885
PANSS score		
Positive score	−0.407	0.003[†]
Negative score	−0.362	0.009[†]
General score	−0.327	0.019*
Total score	−0.391	0.005[†]
CDSS	−0.457	0.001[†]
LUNSERS		
Extrapyramidal	−0.583	0.001[†]
Psychic	−0.524	0.001[†]
Anticholinergic	−0.461	0.001[†]
Other autonomic	−0.509	0.001[†]
Allergic reaction	−0.324	0.020*
Hormonal	−0.158	0.267
Miscellaneous	−0.532	0.001[†]
Red herrings	−0.549	0.001[†]
Total score	−0.564	0.001[†]
DAI-10	0.202	0.155
KISP	−0.701	0.001[†]
MSPSS		
Family score	0.543	0.001[†]
Friends score	0.323	0.021*
Significant other score	0.286	0.042*
Total score	0.520	0.001[†]
Digit symbol substitution test	0.068	0.640
Verbal fluency test	0.150	0.293
Trail making test A	−0.126	0.382
Trail making test B	0.124	0.390

p-values were calculated using the Pearson's correlation analysis. * : Significant at the 0.05 level (two-tailed), † : Significant at the 0.01 level (two-tailed). SWN-K : Subjective Wellbeing on Neuroleptics-Short form, PANSS : Positive and Negative Syndrome Scale, CDSS : Calgary Depression Scale for Schizophrenia, LUNSERS : Liverpool University Neuroleptic Side Effect Rating Scale, DAI-10 : Drug Attitude Inventory-10, KISP : Korean Version of the Revised Insight Scale for Psychosis, MSPSS : Multidimensional Scale of Perceived Social Support

Table 5. The multiple regression analyses for clinical variables related with subjective wellbeing in the subjects (n=51)

	β	95% C.I.	p-value
KISP	−1.921	−2.477, −1.365	0.001
PANSS negative score	−0.746	−1.255, −0.238	0.005

KISP : Korean Version of the Revised Insight Scale of Psychosis, PANSS : Positive and Negative Syndrome Scale

Discussion

The impact of sociodemographic and clinical factors on the subjective well-being of patients with schizophrenia were in-

vestigated in this study.

This study revealed no significant correlation between the SWN-K score and sociodemographic factors such as age, onset age, and disease duration of schizophrenia. In contrast, there was a significant positive correlation between the SWN-K score and patients' education years, suggesting that patients with more education years showed a higher level of subjective well-being. Further, the more severe depressive symptoms and psychopathological symptoms were found to be significantly associated with the lower subjective well-being. In addition, the severity of the side effects of the antipsychotics and the insight level were found to be negatively correlated with subjective well-being, indicating that an increase in any of these two factors led to a lower subjective well-being. However, there was a significant positive correlation between the degree of social support and subjective well-being. That is, when the degree of social support was lower, subjective well-being was lower.

Patients' quality of life has been shown to be affected by various sociodemographic factors, such as gender, age, marital status, occupation, disease duration, and educational background.[43,44] The present study found that no sociodemographic factors other than education years were correlated with the subjective well-being of the patients. This study revealed that the longer was the duration of education, the higher was the level of subjective well-being in patients, which was in line with previous studies.[45,46]

In this study, the higher was the severity of the patients' depression, the lower was the level of their subjective well-being. This finding coincides with those from the previous studies.[3,17-20] The previous studies used the Beck Depression Inventory or the PANSS for evaluating depressive symptoms of patients with schizophrenia. The present study used the disease-specific scale for depressive symptoms in schizophrenia, CDSS. Therefore, these findings suggest that the evaluation and treatment of the depressive symptoms, which are common comorbidities of patients with schizophrenia, is necessary for enhancing their subjective well-being.

It was also found that the lesser were the side effects of the antipsychotics (e.g., extrapyramidal symptoms) in patients with schizophrenia, the higher was the level of their subjective well-being. This coincides with the results of the previous studies, which found the quality of life of the patients on antipsychotic medication to be associated with the side effects of these drugs.[11,22] When clinicians treat patients with schizophrenia, an exact evaluation of the side effects of the antipsychotics they have prescribed is therefore necessary. Further, in addition to the clinicians' objective appraisal, the patients' subjective eval-

uation on the side effects of antipsychotics is necessary to enhance their subjective quality of life.

The present study also revealed that the higher were the MSPSS scores, the higher was the level of subjective well-being. The subscales of the MSPSS (family, friends, and meaningful others) were also closely associated with the subjective well-being of the patients with schizophrenia. Family and social support have been found to help patients overcome difficulties and provide them with positive emotions and self-esteem.[47,48] This study found that family support among social supports had relative more effect on the subjective well-being of the patients, which indicated that the role of family could be important.

The multiple regression analysis in this study revealed that the higher was the insight of a patient, the lower was the level of subjective well-being. This result is consistent with those of the previous studies.[28-30,49] When the insight of patients with schizophrenia is high, they are likely to accept their diseases as chronic and serious, with poor prognosis, and accordingly, they may lose self-confidence and hope. Further, they realize their limitations, and become intimidated and dissatisfied with their social functions and human relations, causing deterioration in their quality of life. According to the previous studies, depressive symptoms were mediators between insight and subjective well-being of the patients with schizophrenia.[3,29,49] This study observed a high correlation between the CDSS and the KISP. In future, additional studies on the factors that mediate insight and subjective well-being might be necessary. The KISP, which was used in this study, is not only used for psychosis but is also an extensive self-evaluation scale that includes interactions with the environment. Therefore, the formation of the patients' insight and its effect on their subjective well-being may be evaluated through interviews with clinicians and regular observations.

The multiple regression analysis in this study also confirmed that the negative symptoms of the PANSS were significant predictive factors explaining the subjective well-being of patients with schizophrenia. The more severe was the negative symptom of patients with schizophrenia, the lower was the level of their subjective well-being. This finding is in line with that from the previous studies.[10,13,15,16,50-53] However, these studies revealed that the negative symptoms of patients with schizophrenia significantly contributed to their quality of life in stable conditions, but in the stage of aggravating symptoms, the negative symptoms either had an insignificant contribution or no contribution at all.[54,55] The present study showed that the more severe were the psychotic symptoms (including posi-

tive and negative symptoms), the lower was the level of subjective well-being. Further studies on the association between psychopathology and subjective well-being might be necessary. The subjects of this study had the mean disease duration of 10 years, and their mean PANSS score was not very high, which meant that they were in a stable condition during the course of the study. Further large-scale studies targeting patients in the acute and early stages of schizophrenia could be necessary to substantiate these findings.

Recently the promotion of the quality of life of patients with schizophrenia is considered an important goal in their treatment. The present study used the SWN-K scale to measure the subjective well-being of the patients, and it confirmed that their insight and negative symptoms were associated with their subjective well-being. Therefore, to improve the quality of life of patients with schizophrenia, attention should be paid to their insight and negative symptoms. The correlation analyses found education years, depression symptoms, side effects of antipsychotics, and social support as significant variables associated with subjective well-being. It is, therefore, necessary to evaluate the depressive symptoms and side effects of antipsychotics that cause deterioration of the quality of life of patients with schizophrenia, and to provide the patients with appropriate treatments. In addition, the patients' level of social support from family and friends, which can be easily overlooked, needs to be evaluated and a sociopsychiatric approach to treatment is necessary.

However, this study also had some limitations. It was a cross-sectional study where evaluation of cognitive function and clinical symptoms was conducted at the time of the study. Accordingly, although their correlation with subjective wellbeing could be confirmed, their cause-and-effect relationship could not. Further, since the sample size was small and not diverse, the generalization of the results of this study to all patients with schizophrenia may not be appropriate.

Conclusion

This study found that the longer education years and the higher social support the patients with schizophrenia had, the higher was the level of their subjective well-being. In addition, the more severe in the psychopathological symptoms of schizophrenia and depressive symptoms, and the more severe of the side effects associated with the treatment the patients had, lower was the level of their subjective well-being. In the multiple regression analysis, the subjective well-being showed a significantly negative correlation with the severity of the neg-

ative symptoms and the insight. The level of subjective well-being of patients with schizophrenia decreased with increasing insight level and deteriorating negative symptoms. Since insight can be a double-edged sword, appropriate patient education on insight may be necessary for the enhancement of the patients' subjective well-being. Further studies on the additional factors that affect the subjective well-being of patients with schizophrenia may be necessary in future.

REFERENCES

1) Carpenter WT, Buchanan RW. Schizophrenia. N Engl J Med 1994; 330:681-690.
2) Karow A, Naber D. Subjective well-being and quality of life under atypical antipsychotic treatment. Psychopharmacology (Berl) 2002; 162:3-10.
3) Narvaez JM, Twamley EW, McKibbin CL, Heaton RK, Patterson TL. Subjective and objective quality of life in schizophrenia. Schizophr Res 2008;98:201-208.
4) Kim SW, Shin IS, Kim JM, Yoo JA, Ahn YM, Kwon JS, et al. A validation study of the korean version of the subjective well-being under neuroleptic treatment scale-short form. Korean J Psychopharmacol 2007;18:221-230.
5) Spilker B. Quality of life and pharmacoeconomics in clinical trials. 2nd ed. Philadelphia-New York: Lippincott-Raven;1996. p.11-24.
6) Bullinger M, Hasford J. Evaluating quality-of-life measures for clinical trials in germany. Control Clin Trials 1991;12:91-105.
7) Lambert M, Schimmelmann BG, Schacht A, Karow A, Wagner T, Wehmeier PM, et al. Long-term patterns of subjective wellbeing in schizophrenia: cluster, predictors of cluster affiliation, and their relation to recovery criteria in 2842 patients followed over 3 years. Schizophr Res 2009;107:165-172.
8) Wehmeier PM, Kluge M, Schacht A, Helsberg K, Schreiber W. Correlation of physician and patient rated quality of life during antipsychotic treatment in outpatients with schizophrenia. Schizophr Res 2007;91:178-186.
9) Wehmeier PM, Kluge M, Schneider E, Schacht A, Wagner T, Schreiber W. Quality of life and subjective well-being during treatment with antipsychotics in out-patients with schizophrenia. Prog Neuropsychopharmacol Biol Psychiatry 2007;31:703-712.
10) Lambert M, Naber D, Eich F, Schacht M, Linden M, Schimmelmann B. Remission of severely impaired subjective wellbeing in 727 patients with schizophrenia treated with amisulpride. Acta Psychiatr Scand 2007;115:106-113.
11) Karow A, Czekalla J, Dittmann RW, Schacht A, Wagner T, Lambert M, et al. Association of subjective well-being, symptoms, and side effects with compliance after 12 months of treatment in schizophrenia. J Clin Psychiatry 2007;68:75-80.
12) Perkins DO, Johnson JL, Hamer RM, Zipursky RB, Keefe RS, Centorrhino F, et al. Predictors of antipsychotic medication adherence in patients recovering from a first psychotic episode. Schizophr Res 2006;83:53-63.
13) Heslegrave RJ, Awad AG, Voruganti L. The influence of neurocognitive deficits and symptoms on quality of life in schizophrenia. J Psychiatry Neurosci 1997;22:235.
14) Lysaker PH, Davis LW, Warman DM, Strasburger A, Beattie N. Stigma, social function and symptoms in schizophrenia and schizoaffective disorder: associations across 6 months. Psychiatry Res 2007;149:89.
15) Galletly CA, Clark CR, McFarlane AC, Weber DL. Relationships between changes in symptom ratings, neuropsychological test performance and quality of life in schizophrenic patients treated with

clozapine. Psychiatry Res 1997;72:161-166.

16) Packer S, Husted J, Cohen S, Tomlinson G. Psychopathology and quality of life in schizophrenia. J Psychiatry Neurosci 1997;22:231.

17) Karow A, Moritz S, Lambert M, Schoder S, Krausz M. Panss syndromes and quality of life in schizophrenia. Psychopathology 2005;38:320-326.

18) Huppert JD, Weiss KA, Lim R, Pratt S, Smith TE. Quality of life in schizophrenia: contributions of anxiety and depression. Schizophr Res 2001;51:171-180.

19) Kim JH, Ann JH, Kim MJ. The relationship between depressive symptoms and subjective well-being in newly admitted patients with schizophrenia. Compr Psychiatry 2010;51:165-170.

20) Dickerson F, Ringel N, Parente F. Subjective quality of life in out-patients with schizophrenia: clinical and utilization correlates. Acta Psychiatr Scand 1998;98:124-127.

21) Jung HY, Joo YH, Shin HK, Chung EK, Kang UG, Roh MS, et al. A validation study of korean-version of liverpool university neuroleptic side effect rating scale (LUNSERS): liverpool university neuroleptic side effect rating scale (LUNSERS). J Korean Neuropsychiatr Assoc 2002;41:138-145.

22) Ryu SH. Subjective quality of life in patients with schizophrenia receiving antipsychotics: relationship among subjective quality of life, drug attitude, and side-effect profiles of drugs. Korean J Psychopharmacol 2005;16:42-51.

23) Corrigan PW, Buican B. The construct validity of subjective quality of life for the severely mentally ill. J Nerv Ment Dis 1995;183:281-285.

24) Ritsner M. Predicting changes in domain-specific quality of life of schizophrenia patients. J Nerv Ment Dis 2003;191:287-294.

25) Ritsner M, Modai I, Endicott J, Rivkin O, Nechamkin Y, Barak P, et al. Differences in quality of life domains and psychopathologic and psychosocial factors in psychiatric patients. J Clin Psychiatry 2000;61:880-889.

26) Alptekin K, Akvardar Y, Akdede BBK, Dumlu K, Işık D, Pirinçci F, et al. Is quality of life associated with cognitive impairment in schizophrenia? Prog Neuropsychopharmacol Biol Psychiatry 2005;29:239-244.

27) Matsui M, Sumiyoshi T, Arai H, Higuchi Y, Kurachi M. Cognitive functioning related to quality of life in schizophrenia. Prog Neuropsychopharmacol Biol Psychiatry 2008;32:280-287.

28) Karow A, Pajonk FG. Insight and quality of life in schizophrenia: recent findings and treatment implications. Curr Opin Psychiatry 2006;19:637-641.

29) Sim K, Mahendran R, Siris SG, Heckers S, Chong SA. Subjective quality of life in first episode schizophrenia spectrum disorders with comorbid depression. Psychiatry Res 2004;129:141.

30) Hasson-Ohayon I, Kravetz S, Roe D, David AS, Weiser M. Insight into psychosis and quality of life. Compr Psychiatry 2006;47:265-269.

31) Naber D, Moritz S, Lambert M, Rajonk F, Holzbach R, Mass R, et al. Improvement of schizophrenic patients' subjective well-being under atypical antipsychotic drugs. Schizophr Res 2001;50:79-88.

32) Yoon JS, Kook SH, Lee HY, Lee C, Paik IH. The development of a korean modification of the scale to measure subjective well-being under neuroleptic treatment (KmSWN). J Korean Neuropsychiatr Assoc 2000;39:987-998.

33) Naber D. A self-rating to measure subjective effects of neuroleptic drugs, relationships to objective psychopathology, quality of life, compliance and other clinical variables. Int Clin Psychopharmacol 1995;10:133-138.

34) Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull 1987;13:261-276.

35) Kay SR, Opler LA, Lindenmayer JP. The positive and negative syndrome scale (PANSS): Rationale and standardisation. Br J Psychiatry Suppl 1989;155:59-67.

36) Yi JS, Ahn YM, Shin HK, An SK, Joo YH, Kim SH, et al. Reliability and validity of the korean version of the positive and negative syndrome scale. J Korean Neuropsychiatr Assoc 2001;40:1090-1105.

37) Addington D, Addington J, Schissel B. A depression rating scale for schizophrenics. Schizophr Res 1990;3:247-251.

38) Addington D, Addington J, Maticka-Tyndale E, Joyce J. Reliability and validity of a depression rating scale for schizophrenics. Schizophr Res 1992;6:201-208.

39) Kim JH, Yim SJ, Yoon HJ. Assessing the reliability and validity of the korean version of the revised insight scale for psychosis (KISP). Schizophr Clinics 2004;7:15-21.

40) Hogan T, Awad A. Subjective response to neuroleptics and outcome in schizophrenia: A re-examination comparing two measures. Psychol Med 1992;22:347-352.

41) Yoon BH, Bahk WM, Lee KU, Ahn JK, Kim MK. Psychometric properties of korean version of drug attitude inventory (KDAI-10). Korean J Psychopharmacol 2005;16:480-487

42) Eker D, Arkar H. Perceived social support: Psychometric properties of the mspss in normal and pathological groups in a developing country. Soc Psychiatry Psychiatr Epidemiol 1995;30:121-126.

43) Cardoso CS, Caiaffa WT, Bandeira M, Siqueira AL, Abreu MNS, Fonseca JOP. Factors associated with low quality of life in schizophrenia. Cad Saude Publica 2005;21:1338-1340.

44) Röder-Wanner UU, Oliver JP, Priebe S. Does quality of life differ in schizophrenic women and men? An empirical study. Int J Soc Psychiatry 1997;43:129-143.

45) Koivumaa-Honkanen HT, Viinamäki H, Honkanen R, Tanskanen A, Antikainen R, Niskanen L, et al. Correlates of life satisfaction among psychiatric patients. Acta Psychiatr Scand 1996;94:372-378.

46) Huber G, Gross G, Schüttler R. A long-term follow-up study of schizophrenia: psychiatric course of illness and prognosis. Acta Psychiatr Scand 1975;52:49-57.

47) Cobb S. Presidential address-1976. Social support as a moderator of life stress. Psychosom Med 1976;38:300-314.

48) Yang DS, Kook SH, Choi Y, Lee HY. The relations among sociodemographic, clinical and psychological characteristics and quality of life in patients with psychotic disorders and their caregivers. J Korean Neuropsychiatr Assoc 2001;40:1044-1054.

49) Yoo HJ, Yoon DJ, Shin YW, Bahn G, Kim JW. Quality of life and insight in patients with schizophrenia. J Korean Neuropsychiatr Assoc 1999;38:340-348.

50) Ho BC, Nopoulos P, Flaum M, Arndt S, Andreasen NC. Two-year outcome in first-episode schizophrenia: predictive value of symptoms for quality of life. Am J Psychiatry 1998;155:1196-1201.

51) De Haan L, Weisfelt M, Dingemans P, Linszen D, Wouters L. Psychometric properties of the subjective well-being under neuroleptics scale and the subjective deficit syndrome scale. Psychopharmacology (Berl) 2002;162:24-28.

52) Kim KJ, Seol JH, Paik YS, Kim JH. The relationship between quality of life and psychosocial characteristics in patients with schizophrenia. J Korean Neuropsychiatr Assoc 2004;43:603-610.

53) Kim EK, Seo KR, Yoon CY. Effect of clozapine on the quality of life in treatment-resistant schizophrenic patients. J Korean Neuropsychiatr Assoc 1999;38:1447-1458.

54) Pinikahana J, Happell B, Hope J, Keks NA. Quality of life in schizophrenia: a review of the literature from 1995 to 2000. Int J Ment Health Nurs 2002;11:103-111.

55) Suh HS, Kim CH, Lee HS, Jung YC, Choi YH, Huh SY, et al. Quality of life and psychopathology in patients with schizophrenia: subjective and objective assessment. J Korean Neuropsychiatr Assoc 2001;40:1122-1131.