

A Survey of Patients with Mental Disorder and Their Caregivers Using the World Health Organization Quality of Life Instrument

Yuka ISHIZAKI,¹ Yoshibumi NAKANE^{1,2}

¹Division of Neuropsychiatry, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

²Department of Human Sociology, Nagasaki International University, Sasebo, Nagasaki Japan

We compared the quality of life among patients with mental disorders, their caregivers and general population using the 26-item short form of the World Health Organization Quality of Life (WHOQOL-26). The WHOQOL-26 score was significantly lower in the patients with mental disorders as compared to their caregivers ($p=0.021$) and the general population ($p<0.001$); the values of the mean (\pm standard deviation) of WHOQOL-26 score in the respective groups were 3.00 ± 0.54 , 3.18 ± 0.59 and 3.26 ± 0.40 . A significantly ($p<0.001$) negative correlation was observed between the score of the 12-item short form of the General Health Questionnaire (GHQ-12) and WHOQOL-26 score in each of the three groups; the respective correlation coefficients were -0.681 , -0.560 and -0.376 in the patients with mental disorders, their caregivers and the general population. Furthermore, the WHOQOL-26 scores in physical and psychological domains were both significantly ($p<0.001$) lower in the patients with mental disorders as compared to the caregivers or the general population. The caregiver group scored significantly ($p<0.001$) highest in the WHOQOL-26 social relationship domain, suggesting that they are satisfied with caregiving role or that they receive social support. No significant difference was observed among three groups regarding the WHOQOL-26 score in the environment domain.

ACTA MEDICA NAGASAKIENSIA 49: 143–147, 2004

Keywords: Quality of Life; QOL; WHOQOL-26; General Health Questionnaire; GHQ; Schizophrenia; Depression

Introduction

In recent years, there has been a significant increase in the number of studies assessing the Quality of Life (QOL) of mental health patients. Although hundreds of instruments for measuring QOL have been developed in the last two decades, many problems in these tools have been driven from the lack of the unique definition of the term "quality of life." Thus the standardized instrument for measuring QOL has been expected.

The World Health Organization (WHO) produced a generic assessment instrument for measuring QOL.^{1,3} In 1992 the WHOQOL group adopted a system that several countries simultaneously select and develop questionnaire items. In 1993 they compiled the results and published WHOQOL, which has subsequently been translated into various languages.¹ The WHOQOL-26 is a practical and accessible tool for the clinical assessment of QOL. It has been used in various cultural settings and its validity across cultures has been confirmed.^{1,3}

In the area of mental illness, comprehensive studies of QOL were

few in Japan and some other countries until about 10 years ago, while recent studies have underscored the importance of subjective reports of QOL.^{4,7} With the advent of new atypical antipsychotic drugs possessing better side-effect profiles, interest in the QOL of patients with schizophrenia has increased.^{8,15} However, the measures used in these studies were developed and designed leaving cross-cultural use out of consideration; the WHOQOL is the unique instrument which has been translated into various languages and adapted for concurrent use in multiple countries.² We use the WHOQOL-26 because it incorporates experience in various cultures and populations (including our collaborative center), giving rise to results that are both culturally meaningful and comparable across cultures. The Japanese version of the WHOQOL-26 has become available since 1997.¹⁶

The proportion of patients with schizophrenia living with their family varies among countries; 40% in US, 90% in China, and 50–70% in Japan.^{17,18} It should be noted that psychological distress in patients' relatives does not decrease even if the patients do not live with them.¹⁹ The majority of patients with chronic mental illness are

Address correspondence: Yuka Ishizaki, M.D., Division of Neuropsychiatry, Nagasaki University Graduate School of Biomedical Sciences, 1-7-1 Sakamoto, Nagasaki 852-8501 JAPAN

TEL: +81-(0)95-849-7293, FAX: +81-(0)95-849-7296, E-mail: myky-I@ngs2.cncm.ne.jp

Received July 20, 2004; Accepted December 26, 2004

cared for at home by family members.²⁰ The importance of care at home will be increased hereafter with progress in treatment and the advent of new drugs. However, little attention has been paid to the burden and the QOL of caregivers of psychiatric patient who have to cope with very challenging conditions. Identification of the adverse effects of caregiving will enable mental health professionals to support better the caregivers of the mentally ill.

The purpose of the present study was to compare patients with mental disorders and their caregivers to general population from the viewpoint of quality of life as a whole as well as within physical, psychological, social relationship and environmental domains.

Subjects and Methods

Subjects

The present study included three groups. The first group, which we call the patient group, consisted of inpatients and outpatients with the diagnosis of schizophrenia or depression according to ICD-10F,²¹ who were found at four public hospitals in Nagasaki, Japan from 1999 to 2000. They were aged over 18 years. The second group, which we call the caregiver group, consisted of caregivers of the above-mentioned patients. The last group, which we call the control group, consisted of 297 residents of Nagasaki city who were surveyed by Nakane and his co-workers^{22,23} in 1998.

The purpose of the study was explained to the patients and their caregivers, and informed consent was sought. Only those consenting were interviewed further; no follow-up studies were performed on those who did not consent. Finally, 95 patients, 74 caregivers and 297 residents of Nagasaki city were studied.

Instruments and data collection

Validity of the instruments used in the present study have been proven in various populations and cultural settings.¹⁻³

A. The World Health Organization Quality of Life Brief Scale (WHOQOL BREF: WHOQOL-26)

The WHOQOL-26 consists of 24 items classified into the four domains, i.e., physical, psychological, social relationship and environment (Table 1), and 2 items about QOL as a whole. Each item was rated on a 5 point scale with corresponding qualifiers: 1-"very poor," 2-"poor," 3-"neither poor nor good," 4-"good," and 5-"very good." Subjects were asked to assign points evaluating QOL as experienced in the last two weeks. The WHOQOL-26 score was defined as the mean of the above-defined points of 26 items, and the domain specific WHOQOL score was defined similarly for the items in the respective domains. The WHOQOL-26 was administered to each patient by assistant staff member trained by the authors, while it was self-completed by subjects of the caregiver and control groups.

Table 1. The World Health Organization Quality of Life (WHOQOL-26) Instrument

Domain	Item
Physical domain	Activities of daily living
	Dependence on medical substances and medical aids
	Energy and fatigue
	Mobility
	Pain and discomfort
	Sleep and rest
	Work capacity
Psychological domain	Bodily image and appearance
	Negative feelings
	Positive feelings
	Self-esteem
	Spirituality/Religion/Personal beliefs
Social relationship	Thinking, learning, memory and concentration
	Personal relations
	Practical social support
Environment	Sexual activity
	Financial resources
	Physical safety and security
	Health and social care: accessibility and quality
	Home environment
	Opportunities for acquiring new information and skills
	Participation in and opportunities for recreation/leisure activities
Physical environment: pollution/noise/traffic/climate	
Transport	

Note: In addition to the 24 items in the 4 domains, the instrument includes the following two items: Overall Quality of Life and General Health.

B. The General Health Questionnaire

The 12-item version of the General Health Questionnaire (GHQ-12) was used as a screening instrument to detect psychological distress and psychiatric morbidity. The GHQ-12, which is rated on a 4-point scale, asks the subject to rate severity of symptoms of psychological distress over the past week. We assigned the scores of 0 and 1 to the first and the last two points, respectively, and defined the GHQ-12 score as the sum of these 12 scores. We used the GHQ-12 because it is a brief scale, has adequate psychometric properties, and has been used in diverse cultural settings.²⁴⁻²⁶ The GHQ-12 was administered to each subject exactly in the same way as the WHOQOL-26.

C. Socio-demographic and psychosocial status

The socio-demographic and psychosocial status of each subject (education, social support, economic status, work, family, place of treatment, course of illness, treatment received and compliance) was surveyed using a questionnaire. The questionnaire was administered to each patient by the treating psychiatrist or collaborating investigator, while it was self-completed by subjects of the caregiver and control groups.

Statistical analysis

The distribution of continuous variables such as age was compared between two groups by Wilcoxon rank-sum test, while the frequency was compared between two groups by the chi-square test. The association between WHOQOL-26 score and GHQ-12 score was evaluated by Pearson's correlation coefficient. The SPSS (for Windows, version 10.0J) was used for the calculations.

Results

Characteristics of the subjects

Out of 95 patients, 65 were diagnosed as schizophrenia and 30 were diagnosed as depression. Their characteristics are presented in Table 2. The male to female ratio was 1.5 in both of schizophrenia and depression. The ages at survey and onset were both significantly ($p < 0.001$ and $p < 0.001$, respectively) younger in schizophrenia than in depression. However, no significant difference was observed between the schizophrenia and depression regarding total duration of either illness ($p = 0.743$) or education ($p = 0.954$). No significant difference ($p = 0.687$) was observed in the inpatient and outpatient ratio between schizophrenia (0.41) and depression (0.50). The proportion of married people was significantly ($p < 0.001$) lower in schizophrenia (9.4%) than in depression (71.4%). The proportion of currently employed people was also significantly ($p < 0.001$) lower in schizophrenia (9.2%) than in depression (53.3%).

The breakdown of patients with schizophrenia was as follows: 43 (66.2%) were paranoid schizophrenia (ICD-10: F20.0); 13 (20.0%) were hebephrenic schizophrenia (F20.1); and 9 (13.8%) were oth-

ers (F20.3, F20.4, F20.5, F20.6, F20.8 and F20.9). The breakdown of patients with depression was as follows: 8 (26.7%) were bipolar affective disorder (F31); 12 (40.0%) were depressive episode (F32) and 10 (33.3%) were recurrent depressive disorder (F33).

Out of 74 caregivers studied, 48 (9 males, 38 females and 1 unknown gender) and 26 (10 males, 14 females and 2 unknown gender) were taking care of patients with schizophrenia and depression, respectively. A significant difference ($p = 0.043$) was observed in the female and male ratio between the caregivers of the patients with schizophrenia (4.2) and depression (1.4). However, no significant difference ($p = 0.126$) was observed in the age at survey (mean \pm standard deviation) between the caregivers of the patients with schizophrenia (58.5 \pm 11.2 years) and depression (53.8 \pm 15.0 years).

The control group consisted of 137 males and 160 females, and there was no significant difference ($p = 0.817$) in the age at survey between males (47.9 \pm 16.0 years) and females (48.3 \pm 15.1 years).

The age at survey was significantly younger in the patient group (38.9 \pm 13.1 years) as compared to the caregiver group (56.9 \pm 12.7 years, $p < 0.001$) and the control group (48.1 \pm 15.5 years, $p < 0.001$), though the last group was surveyed on or two years earlier than the other two groups.

WHOQOL-26 and GHQ-12 scores

Table 3 presents the distribution of WHOQOL-26 score and GHQ-12 score in the three groups. The WHOQOL-26 score was significantly lower in the patient group than in the caregiver group ($p = 0.021$) and the control group ($p < 0.001$), while it was not significantly between the caregiver group and the control group ($p = 0.446$). The GHQ-12 score was significantly higher in the patient group than in the caregiver group ($p = 0.005$) and the control group ($p < 0.001$). Furthermore, the GHQ-12 score in the caregiver group was significantly higher GHQ-12 score than that in the control group ($p < 0.001$).

The GHQ-12 score and WHOQOL-26 score showed a significantly ($p < 0.001$) negative correlation in the three groups; the Pearson's correlation coefficient was -0.681, -0.560 and -0.376 in the patient group, caregiver group and control group, respectively.

Domain-specific WHOQOL-26 score

The distribution of WHOQOL-26 score in the 4 domains (physical, psychological, social relationship and environment) evaluated in the 3 groups is presented in Table 4. The physical domain specific WHOQOL-26 score was significantly lower in the patient group than

Table 2. Characteristics of the patient group

Factor	Patient		Total
	Schizophrenia	Depression	
Number (male/female)	65 (39/26)	30 (18/12)	95 (57/38)
Age at survey (in years)	34.2 \pm 10.1 ^a	49.0 \pm 13.4	38.9 \pm 13.1
Age at onset (in years)	23.4 \pm 7.6	40.9 \pm 12.8	28.7 \pm 12.4
Total duration of illness (in years)	11.0 \pm 9.0	8.9 \pm 8.2	10.4 \pm 8.8
Total duration of education (in years)	12.7 \pm 2.1	12.4 \pm 2.6	12.7 \pm 2.3
Marital status (married/never married/divorced)	6/54/4	20/7/1	26/61/5
Hospital (inpatient/outpatient)	19/46	10/20	29/66
Current employment (yes/no)	6/59	16/14	22/73

^aMean \pm standard deviation.

Table 3. Distribution of WHOQOL-26 score and GHQ-12 score by group and gender

Instrument	Patient group			Caregiver group			Control group		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
WHOQOL-26	2.99 \pm 0.54 ^a	3.00 \pm 0.44	3.00 \pm 0.54	3.55 \pm 0.55	3.04 \pm 0.56	3.18 \pm 0.59	3.22 \pm 0.42	3.30 \pm 0.45	3.26 \pm 0.40
GHQ-12	4.1 \pm 3.5	4.2 \pm 3.8	4.2 \pm 3.6	1.8 \pm 2.9	3.0 \pm 3.0	2.6 \pm 3.0	1.2 \pm 2.3	1.1 \pm 2.5	1.2 \pm 2.4

^aMean \pm standard deviation.

in the caregiver group ($p=0.003$) and the control group ($p<0.001$). It was also lower in the caregiver group than in control group, but the difference was not significant ($p=0.107$). The psychological domain specific WHOQOL-26 score also showed a similar tendency; it was significantly lower in the patient group than in the caregiver group ($p=0.002$) and the control group ($p<0.001$), and was lower in the caregiver group than in control group, although the difference was marginally significant ($p=0.060$). The social relationship specific WHOQOL-26 score was significantly higher in the caregiver group than in the patient group ($p<0.001$) and the control group ($p<0.001$); although it was higher in the control group than in the patient group, the difference was not significant ($p=0.168$). No difference by group was observed in the environment specific WHOQOL-26 score.

Table 4. Distribution of domain-specific WHOQOL-26 score by group

Domain	Group		
	Patient	Caregiver	Control
Physical	3.03±0.65 ^a	3.35±0.68	3.49±0.53
Psychological	2.82±0.65	3.13±0.66	3.27±0.55
Social relationship	3.01±0.71	3.39±0.76	3.19±0.58
Environment	3.12±0.57	3.08±0.55	3.15±0.53

^aMean±standard deviation.

Discussion

The aim of the present study was to evaluate the influence of chronic mental illness on patient's QOL and to compare the QOL of caregiver of the mentally ill to that of general population. The literature^{4,7} suggests that patients with mental illness are competent to self-report their QOL and that measurement of QOL is important and useful. The present study confirmed the reliability, validity and usefulness of the WHOQOL-26 in assessing the QOL of patients with mental illness.

Previous studies reported low levels of QOL in patients with mental illness.⁷ The present study confirmed the significantly low QOL of the mentally ill patients compared to their caregivers and the general population. Subjects with mental illness had significantly lower WHOQOL-26 scores in physical and psychological domains than both caregivers and the general population. Interestingly, in contrast to other studies reporting lower social relationship domain scores in the mentally ill,^{7,27-31} our study did not find a significant difference in the social relationship domain score between the patient group and the general population. This was due to relatively high values (3.13±0.79) of the social relationship domain specific WHOQOL-26 score in the patients with depression; it was significantly lower (2.95±0.67) in the patients with schizophrenia than in the control group ($p=0.012$).

The findings of the present study that the WHOQOL-26 score did not differ significantly ($p=0.446$) between the caregiver and control groups contradict the popularly held notion that the burden of

caregiving decreases caregivers' QOL. Katshing et al.³² reported in the study of Austrian caregivers of mentally ill people that 45% of caregivers reported having benefited from the experience of caregiving. The benefits were quite diverse, including a better understanding of the human condition, having found new friends among fellow-caregivers, the satisfaction of being needed by someone, satisfaction from having a task in one's old age, meeting a challenge, greater family solidarity in the face of adversity, becoming closer to one's partner, and finding solace in religion. However, a literature search failed to reveal any studies of cultural factors that may influence the QOL scores of the Japanese caregivers of mentally ill patients. Moreover, WHOQOL-26 score in the caregiver group of the present study was higher than that reported by Nakane et al.²⁷ in the study of the QOL in caregivers of patients with dementia.

The caregiver group of the present study probably represents a typical one. Indeed, the characteristics of the caregivers of the present study were similar to those suggested by the survey of the Federation of European Associations of Families of the Mentally Ill (EUFAMI)³³ that most caregiver populations are aged and dominated by females (72 to 88%), and have health status worse than that of the general population of the same age. The findings of the present study that the WHOQOL-26 did not score significantly lower in the caregiver group than in the control group, therefore, necessitate further examinations; the present results in the caregivers may have been due to Hawthorne effect.³⁴

No significant difference observed in the environment specific WHOQOL-26 score among the three groups may either reflect a culturally specific worldview or a lack of awareness about available resources (e.g. community-based mental health services).

It is of great interest that the social relationship domain specific WHOQOL-26 was scored significantly highest by the caregiver group; this has not previously been reported. Although caregivers certainly face unique challenges, they appear to experience some positive attributes as well. Caregivers may derive a sense of fulfillment from caregiving or receive additional support in their lives. In this study, however, we could not obtain more details about factors, which may influence the experience of caregivers, such as support from medical professionals, available support services, coping strategies, etc.

While the assessment of the QOL of patients has received attention in recent years, studies on the QOL of the caregivers of the mentally ill are rare in Japan. The few systematic studies of caregivers that have been carried out have tended to concentrate on caregivers of the aged and the chronically physically disabled.

Reports of QOL by patients with mental illness is probably a crucial clinical measure of treatment efficacy. The WHOQOL-26, then, can be considered a highly important and effective instrument. Development and validation of instrument is still an ongoing process in the field of QOL, with many studies in progress and considerable emerging data. With a standardized scale and approach, certain analyses including meta-analysis would be possible. It will be emphasized in the field of mental health that QOL of patients influenced by multiple factors should be investigated comprehensively

from various points of view.

Some of the results obtained up to this time and those predicted at present will probably be disproved by future studies. Nonetheless, the evaluation of QOL occupies an important position and will be paid more attention in the field of mental health.

Conclusion

Our study confirmed significantly worse QOL in patients with mental disorders compared to caregivers or the general population, especially in the physical and psychological domains. However, we could not confirm lower global QOL in caregivers compared to the general population. Our study found the caregiver group had a higher level of QOL in the domain of social relationship than the general population, as well as lower levels of physical and psychological QOL.

Current studies of QOL are ongoing, with efforts to develop consistent definitions, scoring, and concepts. No current QOL instrument is entirely sufficient to be considered completely standardized. QOL measurements warrant further study so that clinicians may ultimately be able to accurately and universally assess QOL as an outcome measure of treatment efficacy.

Acknowledgments

Collaborating investigators of the present study are Drs Miyako Tazaki, Hiroshi Utsunomiya, Katsuro Takahashi, Toshihiro Ohtuka, Hiroyuki Sugasaki, Keiko Hatada, Kazuyasu Yoshitake, Yoshihiro Imamura, Miki Kikuchi and Hirohisa Kinoshita. We thank Dr. Yoshito Hamada for the great contribution to this study, especially in the development of the questionnaire including the assessment of the length of interview. The present study was supported by the Grand-in-Aid for Scientific Research No. 11470202 from the Ministry of Education, Science and Culture, Japan.

References

1. The WHOQOL Group. Study protocol for the World Health Organization project to develop a quality of life assessment instrument (WHOQOL). *Qual Life Res* 2: 153-159, 1993
2. The WHOQOL Group. Development of the WHOQOL; rationale and current status. *Int J Ment Health* 23: 24-56, 1994
3. Orley J, Kuyken W. *Quality of Life Assessment: International Perspectives* (in German). Springer-Verlag, Berlin, 1994
4. Lehman AF. The effects of psychiatric symptoms on quality of life assessments among the chronic mentally ill. *Eval Program Plann* 6: 143-151, 1983
5. Lehman AF, Postrado LT, Rachoba LT. Convergent validation of quality of life assessment for persons with severe mental illness. *Qual Life Res* 2: 327-333, 1993
6. Skantze K, Maim U, Dencker SJ et al. Comparison of quality of life with standard of living in schizophrenic outpatients. *Brit J Psychiatry* 161: 797-801, 1992
7. Katschnig H, Freeman H, Sartorius N. *Quality of Life in Mental Health*. John Wiley & Sons, Inc., West Sussex, UK, 1995 (Japanese version was published by Nakane Y, Tazaki M, Ishizaki Y. from Medical Science International Ltd., Tokyo, 2002)
8. Barcia D, Ayuso JL, Herraiz ML et al. Quality of life of patients treated with Risperidone. *An Psiquiatria* 12: 134-141, 1996
9. Meltzer HY. Dimensions of outcome with clozapine. *Br J Psychiatry* 160 (Suppl 17): 46-53, 1992
10. Meltzer HY, Burnett S, Bastani B et al. Effects of six months of clozapine treatment of the quality of life of chronic schizophrenic patients. *Hosp Comm Psychiatry* 41: 892-897, 1990
11. Bobes J, Gutierrez M, Gibert J et al. Quality of life in schizophrenia: long-term follow-up in 362 chronic Spanish schizophrenic outpatients undergoing risperidone maintenance treatment. *Eur Psychiatry* 13: 158-163, 1998
12. Franz M, Lis S, Pluddemann K et al. Conventional versus atypical neuroleptics: subjective quality of life in schizophrenic patients. *Br J Psychiatry* 170: 422-425, 1997
13. Revicki DA, Genduso LA, Hamilton SH et al. Olanzapine versus haloperidol in the treatment of schizophrenia and other psychotic disorders: quality of life and clinical outcomes of a randomized clinical trial. *Qual Life Res* 8: 417-426, 1999
14. Browne S, Roe M, Lane A et al. Quality of life in schizophrenia: Relationship to sociodemographic factors: symptomatology and tardive dyskinesia. *Acta Psychiatr Scand* 94: 118-124, 1996
15. Larsen EB, Gerlach J. Subjective experience of treatment, side-effects, mental state and quality of life in schizophrenic out-patients treated with depot neuroleptics. *Acta Psychiatr Scand* 93: 381-388, 1996
16. Tasaki M, Nakane Y. *A Guide to WHOQOL-26*. (in Japanese) Kaneko Shobo, Tokyo, 1997
17. Torrey EF, Wolfe SM. *Care of the Seriously Mentally Ill: A Rating of State Programs*. Public Citizen Health Research Group, Washington D.C., 1986
18. Xiong W, Phillips MR, Hu X et al. Family-based intervention for schizophrenic patients in China: a randomized controlled trial. *Br J Psychiatry* 165: 239-247, 1994
19. Winefield HR, Harvey EJ. Determinations of psychological distress in relatives of people with chronic schizophrenia. *Schizophrenia Bulletin* 19: 619-625, 1993
20. Health and Welfare Statistics Association. Care of the disabled. (in Japanese) *Journal of Health and Welfare Statistics* 50 (9 Suppl): 152-156, 2003
21. World Health Organization. *The ICD-10 Classification of Mental and Behavioral Disorders: Clinical Descriptions and Diagnostic Guidelines*. World Health Organization, Geneva, 1992
22. Nakane Y, Tazaki M, Miyamoto E. WHOQOL-BREF survey of general population. (in Japanese) *Iryou To Shakai* 9: 123-131, 1999
23. Ishizaki Y, Nakane Y, Tazaki M. WHOQOL in Japan: The characteristics of WHOQOL-26 in general population. (in Japanese) Medical Science International, Tokyo, 2002; 277-291.
24. Goldberg DP, Blackwell B. Psychiatric illness in general practice: a detailed study using a new method of case identification. *Br Med J* 1: 439-443, 1970
25. Kitamura T, Sugawara M, Aoki M. Validity of the Japanese version of the GHQ among antenatal clinic attendants. *Psychol Med* 19: 507-511, 1989.
26. Ohta Y, Kawasaki N, Araki K. The factor structure of the General Health Questionnaire (GHQ-30) in Japanese middle-aged and elderly resident. *Int Soc Psychiatry* 41: 268-275, 1995
27. Nakane Y, Tazaki M, Chaturvedi SK eds. *Quality of Life of Caregivers of People with Dementia. Report of An International Collaborative Study*. *Acta Med Nagasaki* 44 (Suppl), 1999
28. Bobes J, Gonzalez MP, Wallace DH et al. Quality of life instruments in schizophrenia: a comparative study. *Eur Psychiatry* 11 (Suppl 4): 228, 1996
29. Browne S, Roe M, Lane A et al. Quality of life in schizophrenia: relationship to socio-demographic factors, symptomatology and tardive dyskinesia. *Acta Psychiatr Scand* 94: 118-124, 1996
30. Sullivan GS, Wells KB, Leake B. Clinical factors associated with better quality of life in a seriously mentally ill population. *Hosp Comm Psychiatry* 43: 794-798, 1992
31. Caron J, Tempier R, Mercier C et al. Components of social support and quality of life in severely mentally ill, low income individuals and a general population group. *Community Ment Health J* 34: 459-475, 1998
32. Katschnig H, Kramer B, Simon MD. *Austrian Questionnaire Survey of Relatives of the Mentally Ill*. Ludwig-Boltzmann Institute for Social Psychiatry, Vienna, Austria, 1993
33. Hogman G. *European Questionnaire Survey of Carers*. European Federation of Families of the Mentally Ill (EUFAMI), Heverlee, Belgium, 1994
34. Last JM ed. *A Dictionary of Epidemiology 4th ed*. Oxford University Press, Oxford, 2001