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Health-Related Quality of Life of Chinese People With Schizophrenia in Hong Kong and Taipei: A Cross-Sectional Analysis

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Abstract: Health-related quality of life is an important outcome indicator of mental health. We assessed the perception of health-related quality of life of persons with schizophrenia in Hong Kong and Taipei. In-person survey interviews were conducted using the Chinese World Health Organization Quality of Life Scale—Brief Version. A convenience sample was recruited from psychiatric outpatient departments: 176 from Hong Kong and 80 from Taipei. We found that both groups were significantly less satisfied with their psychological and social relationship domains compared to other domains. Poor mental health predicted poor perception of health-related quality of life. Schizophrenia has an impact on many aspects of a person's functioning. A rehabilitation model that takes into account symptoms, financial situation, family support, and social functioning is required. Res Nurs Health 30:261–269, 2007

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Schizophrenia is a severe mental disorder. According to the World Health Organization (WHO) (2001) estimation, the worldwide prevalence of schizophrenia ranged from 1.4 to 4.6 per 1,000 population at risk. About 45 million people worldwide are estimated to have schizophrenic disorders, with 33 million in developing countries (WHO). Health-related quality of life (HRQOL) is increasingly used as an outcome measure for health care interventions, and it is an important supplement to traditional psychological or biological measures of health status. This is particularly important for people with severe and persistent mental disorders, such as schizophrenia. A treatment goal for such persons should be the promotion of overall personal well-being, rather than focusing narrowly on symptom control (Dean, 1997).

Although there is debate about what constitutes HRQOL, there is a consensus that HRQOL refers to the ways in which health, illness, and medical treatment influence a person's perception of functioning and well-being (WHO Quality of Life Group, 1998). HRQOL is a multidimensional concept that encompasses satisfaction with multiple aspects of life. The perception of HRQOL is dependent upon persons' evaluations of their lives based on the value that they place on the meaning of life (WHO Quality of Life Group), which implies that HRQOL can only be assessed from self-reports and that culture can influence perception of HRQOL.

Studies in the UK and the US have shown that persons with schizophrenia have a poor perception of their HRQOL (Bobes & Gonzalez, 1997; Ritsner et al., 2000; UK 700 Group, 1999). Investigators in Japan (Kunikata, Mino, & Nakajima, 2005) and Singapore (Tan, Choo, Doshi, Lim, & Kua, 2004) have found that schizophrenic outpatients were more dissatisfied with their HRQOL than general practice outpatients. Yet, there is little research focused on HRQOL in Chinese people with severe mental illness.

Lehman (1983), one of the first researchers in the US to investigate the HRQOL of persons with schizophrenia, found that women, married, and less educated persons were more satisfied with their lives than men, single, and more educated persons. Bobes and Gonzalez (1997) found that neither age, sex, nor martial status influenced perceived HRQOL. Skantze, Malm, Dencker, May, and Corrigan (1992) found no significant differences in the perception of HRQOL related to age, sex, standard of living, or types of accommodation.

The symptoms of schizophrenia are very diverse and they cover a wide range of human thoughts, emotion, and behavior. In general, these symptoms are organized into two categories: positive or negative symptoms. Positive symptoms include those acute psychotic symptoms such as hallucinations, delusions, or thought disorder. Negative symptoms refer to those more chronic symptoms, such as social withdrawal, poverty of speech, or loss or volition. Patterson et al. (1996) found that patients with more positive symptoms, had poorer perception of HRQOL than those with fewer positive symptoms. Corrigan and Buican (1995) and Sullivan, Well, and Leake (1991) found that HRQOL was inversely related to the severity of negative symptoms. Bobes and Gonzalez (1997) concluded that duration of illness influenced HRQOL; the longer the duration of mental illness, the worse the perception of HRQOL. Corrigan and Buican used different methods, making it difficult to compare findings. The influence of socio-demographic and clinical factors on HRQOL is, therefore, uncertain.

Hong Kong and Taipei are both Chinese communities that are strongly influenced by Confucian teaching, which emphasizes kindness, righteousness, loyalty, and filial piety**.** Hong Kong was a British colony for over 100 years. There are a variety of religious practices in Hong Kong including Buddhism, Taoism, Christianity, Islam, Hinduism, Sikhism, and Judaism. All of these religions have a considerable number of adherents. Taipei, the capital city of Taiwan, was occupied by the Japanese for about 50 years. Buddhism is the primary religion in Taipei. Cultural differences in these two places may have an effect on persons' perceptions of HRQOL. The aim of this study was to investigate perception of HRQOL in Chinese people with schizophrenia who were lived in these two diverse Chinese communities. We compared perception of HRQOL of participants in Hong Kong and Taipei, and examined the relationships among HRQOL, and socio-demographic and clinical factors. Findings on HRQOL derived solely from the Hong Kong participants have been previously reported (Chan & Yu, 2004).

The research questions were:

1. Is there a difference in the perception of HRQOL between Hong Kong and Taipei participants?
2. Are there any significant relationships among HRQOL, and socio-demographic and clinical factors?

METHODS

This cross-sectional survey study was conducted between 2004 and 2005 in two regional psychiatric outpatient departments in Hong Kong and Taipei. These two departments were among the largest in their respective regions and had similar functions. The type and size of the population served by the two departments were comparable. Differences did exist, however, in mental health service provision. In Hong Kong, rehabilitation services, such as day hospitals, community psychiatric nursing services, half-way houses, and social clubs, were available in addition to the outpatient departments. In Taipei, such services were only in development. Human subjects committees in these venues approved this study.

We obtained the attendance list of outpatient department patients and selected eligible persons from that list after reviewing case notes and obtaining permission from the attending psychiatrists for patients to participate in this study. We invited patients to participate if they met the inclusion criteria of being Chinese, 18–65 years old, and with a diagnosis of schizophrenia for at least 2 years. They also had to be able and willing to participate in the interview, and understand and complete the questionnaires written in Chinese. Persons were excluded if they had a secondary psychiatric diagnosis. Eligible persons were informed of the purpose of the study, that their participation was voluntary, and that all of the information would be strictly confidential. Their written consent was obtained.

One hundred and seventy-six participants were recruited from Hong Kong and 80 from Taipei. About 20% of the persons (mostly men) in both centers whom we approached refused to participate in this study. Reasons for refusal included lack of interest and no time to participate. Table 1 summarizes their socio-demographic and clinical characteristics. The majority of the participants were in mid-adulthood, single, lived with their families, and had a low income. Approximately half were employed, mostly in sheltered environments. More participants from Taipei were single, had a university education, had a religious affiliation, and lived with their family. The Hong Kong participants had higher incomes. These differences were statistically significant.

Data Collection and Measures

We conducted in-person interviews using a questionnaire. The 28-item Hong Kong Chinese WHO Quality of Life Scale-Brief Version (HK-WHOQOL-BREF) was used to measure the HRQOL of the participants. This scale has been modified from the WHOQOL-100 (World Health Organization Quality of Life Group, 1998), which is a validated multilingual assessment of generic quality of life that has been translated into Chinese (Leung, Tay, Cheng, & Lin, 1997). The Scale is probably the most rigorously tested Chinese HRQOL instrument that is culturally valid. The items are structured in four domains measuring four aspects of HRQOL: physical health, psychological and social relationships, and environment. The items are answered on a 5-point Likert scale with a high score indicating a better quality of life (total score range, 28–140). The psychometric properties of the Chinese translated version have been found to be sound, with Cronbach's alpha coefficients as follows: physical health, .79; psychological relationships, .76; social relationships, .67, and environment, .77 (Leung et al.). Test-retest reliability of items has ranged from .64 to .90 in both the Hong Kong and Taipei study settings (Leung et al.; Yao, Chung, Yu, & Wang, 2002). In our study the Cronbach's alphas were: physical health, .69; psychological relationships, .72; social relationships, .79, and environment, .68.

The mental status of the participants was assessed by the investigators, who are qualified mental health nurses, using the 18-item Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962). This scale has been used widely in studies in Hong Kong and overseas. Content validity was confirmed by a group of expert panel and good interrater reliability has been reported (Chan, Mackenzie, Ng, & Leung, 2000; Chien & Chan, 2004). The mental status of the participants was assessed and rated on a 6-point Likert scale for each item (0 = *not present* to 6 = *extremely severe*). The maximum score of the BPRS is 108 (indicating the presence of extremely severe mental symptoms), and the minimum score is 0 (indicating the absence of mental symptoms). We retrieved the clinical history of the participants, including the duration of illness and number of previous admissions, from their case notes.

Participants were interviewed at a time that was convenient to them in the outpatient department or any other place of their choosing, including parks and restaurants. We first obtained participants' socio-demographic data. Their mental condition was then assessed by the BPRS, followed by the WHOQOL-BREF questionnaire. A copy of the questionnaire was given to each participant. The researcher read the questionnaire items aloud

Table 1. Socio-Demographic and Clinical Characteristics

	Hong Kong ($n=176$)		Taipei ($n=80$)			
	n	%	*n*	%	$\chi^2(df=1)$	*p*
Sex					−1.23	.22
Male	85	48.3	32	40.0		
Female	91	51.7	48	60.0		
Age					−1.29	.19
<35	85	48.3	45	56.3		
36–55	80	46.0	33	41.3		
>55	10	5.7	2	2.5		
Marital status					−4.77	<.01
Single	86	48.9	66	82.5		
Married/cohabiting	49	27.8	8	10.0		
Separated	36	20.5	4	5.0		
Widow/widower	5	2.8	2	2.5		
Education level					−7.99	<.01
University graduate	7	4.0	39	48.8		
Secondary	126	71.6	41	51.3		
Primary	35	19.9	0	0		
Illiterate	8	4.5	0	0		
Employment status					−1.28	.23
Employed	76	43.0	41	51.3		
Unemployed	100	57.0	39	48.8		
Monthly income (US$1 = HK$7.8 = Taiwan$32)					−8.78	<.01
HK$<500	0	0	32	40.0		
HK$500–3,000	100	56.8	28	35.0		
HK$3,001–10,000	67	38.1	17	21.3		
HK$10,001–40,000	8	4.5	3	3.7		
HK$>40,000	1	.6	0	0		
Religious belief					−11.89	<.01
Yes	4	2.3	57	72.6		
No	172	97.7	23	27.4		
Living arrangement					−4.30	<.01
With family	127	72.2	77	96.3		
Alone	27	15.3	1	1.3		
With friends	3	1.7	0	0		
In hostel	19	10.8	0	0		
Other	0	0	2	2.5		
Duration of illness					−.11	.39
2 years	5	2.8	9	11.3		
3–5 years	81	46	30	37.5		
6–10 years	49	27.9	17	21.3		
11–15 years	24	13.6	8	10		
16–20 years	3	1.7	6	7.5		
21–30 years	11	6.3	7	8.7		
>30 years	3	1.7	3	3.7		
History of hospitalization					−1.38	.15
None	15	8.5	6	7.5		
1–3 times	111	63	57	71.3		
4–6 times	13	7.5	10	12.5		
6 or more times	37	21	7	8.7		

as participants read along. Participants were then asked to rate each item; these ratings were noted on the researcher's copy. Each interview took approximately 45 minutes.

Data Analysis

The Statistical Product and Service Solutions (SPSS) for Windows, version 14 (SPSS, Inc.,

Chicago, IL) was used for all analyses. Descriptive statistics were used to summarize the data. The differences in demographic and clinical data between the Hong Kong and Taipei groups were assessed with Chi-square tests. *T*-tests and ANOVAs were used to examine differences between groups with different demographic characteristics. Multivariate analysis of covariance (MANCOVA) was used to test the difference between the two groups in their WHOQOL domains and total scores, while controlling for demographic differences. The Pearson Product Moment Correlation test was used to examine relationships among the WHOQOL domains, total scores, and clinical factors (BPRS total scores, number of hospitalizations, and duration of illness). Variables that had significant correlations were put into a stepwise multiple linear regression to investigate the relative importance of the variables in contributing to the variation in the WHOQOL total score. The level of significance of all statistical tests was set at .05 (2-tailed).

RESULTS

After controlling for demographic differences (i.e., in marital status, education level, monthly income, religious beliefs, and living arrangements), no significant differences were found between the two groups in the domain and the total scores of the WHOQOL-BREF (Table 2). When compared the domain scores within each group, the lowest rating for both groups was in the psychological and social domains and the differences were significant (Hong Kong group: χ^2 (3, $n = 176$) = 112.3, $p < .001$; Taipei group: χ^2 (3, $n = 80$) = 52.2, $p < .001$). There was no significant difference between sex and age groups in perceptions of HRQOL. Employed participants from Hong Kong had significantly higher WHOQOL-BREF total scores than those who were unemployed (Table 3).

The mean ratings of the BPRS for the Hong Kong participants was 6.2 ($SD = 5.3$; range, 0–24), and for the Taipei participants it was 6.4 ($SD = 5.9$; range, 0–26), which indicates that both groups were mentally stable. The mean duration of illness for the Hong Kong participants was 7.8 years ($SD = 6.3$), while for the Taipei participants, it was 9.4 ($SD = 8.4$), indicating that many had persistent illness. The differences between the two groups on clinical factors were not statistically significant (Table 1).

Table 4 shows the correlation between the domain and total scores of the WHOQOL-BREF with the BPRS, duration of illness, and number of previous hospitalizations. For both groups of participants, a severe mental condition correlated with a poorer perception of HRQOL in many areas. For the Hong Kong participants, the duration of illness had a significant moderate negative correlation with all of the domain scores and the total score of the WHOQOL. The number of previous hospital admissions also had a weak negative correlation with the social and environment domain scores and WHOQOL total scores for the Hong Kong participants. There was no correlation among WHOQOL total scores, duration of illness, or number of previous hospitalizations in Taipei participants.

The variables that had significant correlations with the WHOQOL total score were entered into the equation for multiple regression analysis. For the Hong Kong participants, only the BPRS score predicted the WHOQOL total score, accounting for 56% of the variance ($F(1, 176) = 11.4$, $p < .001$). For the Taipei participants, the BPRS score contributed significantly to the variance in the WHOQOL total score, accounting for 78% of the variance ($F(1,$

Table 2. The Domain Rating of the Hong Kong Chinese World Health Organization Quality of Life Scale—Brief Version (WHOQOL)

		Hong Kong ($n = 176$)		Taipei ($n = 80$)			
	WHOQOL Domains	*M*	*SD*	*M*	*SD*	*F*	*p*
Domain totals (range 4–20)	Physical health	13.29	2.9	12.70	2.5	1.82	.13
	Psychological health	12.38	2.8	12.31	2.4	1.10	.35
	Social relationship	12.42	2.8	11.75	13.0	1.60	.18
	Environmental	12.56	2.5	12.79	2.7	1.90	.11
WHOQOL total (range 28–140)		87.06	14.7	86.18	15.2	1.83	.13

Table 3. Results of *T*-Test and ANOVA for Groups With Different Demographic Variables

	Hong Kong ($n=176$)		Taipei ($n=80$)	
	Hong Kong Chinese World Health Organization Quality of Life Scale—Brief Version; Total Score			
	M	*SD*	*M*	*SD*
Male	85.9	13.9	84.1	12.6
Female	91	15.5	87.5	16.6
	$t=.99$ $p=.32$		$t=-1.02$ $p=.31$	
Single/divorced/widow	88.4	14.7	85.9	15.7
Married/cohabited	83.8	14.5	88.1	10.3
	$t=1.86$ $p=.06$		$t=-.38$ $p=.70$	
Employed	90.8	13.1	89	14.5
Unemployed	84.1	15.2	83.1	15.4
	$t=3.04$ $p=.03$		$t=-1.77$ $p=.08$	
Lived with family	88.4	17	91.3	15.4
Not lived with family	84.7	13.2	87	5.5
	$t=-1.61$ $p=.109$		$t=-1.47$ $p=.23$	
With religious belief	87	11	88.8	14.6
No religious belief	85	14.8	85.1	16.5
	$t=-1.45$ $p=.15$		$t=.98$ $p=.33$	
Age				
<35	87.4	15.6	84.4	15.9
36–55	86.2	14.3	88.5	14.4
>55	91.2	10.6	88.5	2.1
	$F=.54$ $p=.58$		$F=.73$ $p=.48$	
Monthly income				
HK\$ <500	86.6	9.8	76.8	15.1
HK\$500–3,000	83.7	16.9	87.2	14
HK\$3,001–10,000	90.7	13.5	83.9	12.3
HK\$10,001–40,000	88	11.3	89.5	11.5
HK\$ $>$ 40,001	91	0	94	3.4
	$F=2.2$ $p=.09$		$F=1.07$ $p=.38$	

176) = 7.7, $p < .001$). For both groups, there was a negative relationship between the BPRS and the WHOQOL total scores. Severe mental disease predicted poor perception of quality of life in both the groups.

DISCUSSION

Our study is one of the few of Chinese persons with severe and persistent mental illness from two distinct Chinese communities. Most of them were

Table 4. Correlation Between Domains of the Hong Kong Chinese World Health Organization Quality of Life Scale—Brief Version (WHOQOL) and Clinical Characteristics

	Hong Kong ($n=176$)			Taipei ($n=80$)		
	BPRS	Duration of Illness	# Previous Hospitalizations	BPRS	Duration of Illness	# Previous Hospitalizations
Domains	*r*	*r*	*r*	*r*	*r*	*r*
Physical	−.12	−.34*	−.02	−.30*	−.14	−.16
Psychological	−.22*	−.52*	−.11	−.35*	−.09	−.05
Social	−.24*	−.41*	−.17**	−.22**	−.16	−.02
Environmental	−.13	−.35*	−.17**	−.36*	−.19	−.15
WHOQOL total score	−.25*	−.29*	−.19**	−.24*	−.05	−.15

* < .01
** < .05.

in mid-adulthood and single, lived with their families, and had low incomes. Chinese persons with schizophrenia had a poor perception of their HRQOL, and both Hong Kong and Taipei participants reported less satisfaction with their psychological and social relationships compared with other domain scores.

Taipei participants were more likely to be single and have lower incomes than the Hong Kong participants, yet, there were no differences between them in perception of HRQOL. These findings may be related to their religious beliefs and their living arrangement. More Taipei participants professed to be religious, with Buddhism the main faith. The belief in Buddhism may be related to the strong influence of Chinese and Japanese tradition in Taipei. Baetz, Larson, Marcoux, Bowen, and Griffin (2002) and Corrigan, McCorkle, Schell, and Kidder (2003) found religious commitment to be associated with well-being in people with mental illness. The findings of our study appear to support this relationship as the Taipei participants, who were more religious but had a lower income, had perceptions of HRQOL similar to Hong Kong participants.

Religious commitment may influence the families' acceptance of mentally ill relatives. The majority of people in Taipei have Buddhism as their main religion, which is very similar to people in Thailand. Rungreangkulkij and Chesla (2001) in Thailand studied on family care of relatives with schizophrenia and suggested that because of Buddhist beliefs, families tended to be more compassionate towards these relatives. There is a general belief that the suffering from this life is pay back for things done in previous lives and that there is a need to endure the suffering. The family, therefore, cares for such relatives, even if it is a difficult task. Those participants who lived with their families had higher WHOQOL total scores compared to those who did not live with their families, although the difference was not statistically significant.

Families played an important role in caregiving, especially for Taipei participants as the majority of them lived with the family. The proportion of participants who were living with their families was much higher than in Western countries (Chien & Chan, 2004). The Chinese place great value on the interdependence of family members, which may account for why the families were willing to take care of their mentally ill relatives. More of the participants in Taipei than in Hong Kong lived with their families, which may be related to the stronger family tradition in Taipei (Wen, 1997), or to the unavailability of other choices of lodging in Taipei, such as half-way houses.

Although both Taipei and Hong Kong families are expected to assume caregiving responsibilities, family members may not have the knowledge and skills to care for a relative with severe and persistent mental illness (Sung, Hixson, & Yorker, 2004). Family members may not be able to manage their relative's mental symptoms, such as loss of volition, which could lead to conflicts (Cheng & Chan, 2005). Providing support, such as psychoeducation and outreach services, to family caregivers is, therefore, especially important in Chinese populations.

Both groups had significantly low score in the social relationship domain. More of the Taipei participants were single, lived with their families and, therefore, may have had a small social circle. There may be conflicts between family members and mentally ill relatives living with them, but these conflicts may arise from such factors as stigma and poverty that may reduce ill relatives' opportunities for establishing social relationships. No study has been conducted comparing Hong Kong and Taipei public attitudes towards mentally ill people, although Sung et al. (2004) found that the stigma in Taipei associated with people who have mental disorders is similar to that found in other parts of the world. Stigma hinders the mentally ill from seeking treatment. Sung and colleagues also found that the need to cope with stigma is high among the learning needs of persons with mental illness and their relatives (Sung et al.). In comparison to Hong Kong, community-based mental health care in Taipei is still at an early stage (Oliver, Huxley, Bridges, & Mohamad, 1996), and services that help mentally ill people to integrate into the community may be insufficient to meet their needs. There is a need to strengthen public education to reduce the stigma associated with mental illness. Services to facilitate patients' social functioning could promote opportunities for them to integrate into the community.

About half of the participants in both groups were unemployed. The majority of the employed participants worked in sheltered employment with low wages. The Hong Kong participants generally had a higher income than the Taipei participants, which could be related to the higher standard of living in Hong Kong or to the difficulties Taipei participants had securing gainful employment. Hong Kong participants who were employed had significantly higher WHOQOL total scores than those who were unemployed, suggesting that employment can be an important factor influencing persons' perception of HRQOL. Vocational

rehabilitation that assists them to secure gainful employment could help to improve perception of HRQOL.

Thirty percent of Taipei participants had no income at all. In Hong Kong, mentally ill persons are eligible to receive Central Social Security Allowance, which is a means-tested social security system. No such system exists in Taipei. More than half of the participants in both groups had an income of less than HK$3,000 (US$385) per month, which suggests that most of the participants lived below the poverty line. There is a need to examine the social welfare system to find better ways to support mentally ill persons in the community.

Participants with severe persistent mental illness had low-HRQOL scores, which is consistent with studies in Western countries (Corrigan & Buican, 1995; Packer, Husted, Cohen, & Tomlinson, 1997; WHO, 2001). Poor mental condition predicted poor perception of HRQOL in both groups. Poor mental condition can lead to stigmatization, unemployment, poverty, and readmission. Admission to hospital causes disruption in relationships and work and, thus, influences perceptions of HRQOL. The number of previous hospitalizations had a negative correlation with the perception of HRQOL in the Hong Kong participants. The duration of illness had a negative correlation with all of the domains and the WHOQOL total scores in the Hong Kong participants. The longer the duration of illness, the more disruption to relationships and work, which adversely influence perceptions of HRQOL. We did not investigate why there was no correlation among the HRQOL, duration of illness, and number of previous hospitalizations in Taipei participants. Further investigation is needed to clarify this phenomenon.

Symptom control was an important part of care provision, as has also been found in previous studies (Corrigan & Buican, 1995; Sullivan et al., 1991). Intensive outreach services in which care is provided by a case manager may help to maintain a person with severe and persistent mental illness in the community (Chan et al., 2000).

Both groups of participants rated lowest in the psychological and social domains, which is consistent with a study in Japan in which a similar HRQOL measure was used (Kunikata et al., 2005). Compared to the HRQOL rating of the general population in Hong Kong (Leung et al., 1997), the participants in this study had a significantly lower rating in all of the domains of the WHOQOL, which concurs with the study in Japan (Kunikata et al.).

Although the participants in our study were mentally stable, the majority had multiple readmissions, were unemployed, and had a low income. The findings of our study suggest that there are other psychosocial factors related to illness chronicity in persons who are severely and persistently mentally ill. Schizophrenia is an illness that has an impact on many aspects of functioning. A holistic rehabilitation model that takes into account symptoms, financial situation, family support, and social functioning is required.

Our study had several limitations, including use of a convenience sample, cross-sectional design, and instrument that may not have been sensitive enough to detect certain aspects of HRQOL in persons with schizophrenia. Yet, the findings may guide healthcare professionals in planning innovative services to improve quality of life in both mentally ill patients and the families that care for them.

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