Quality of life in Chinese patients with schizophrenia treated in primary care

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ABSTRACT

In China, maintenance treatment for clinically stable patients with schizophrenia is usually provided by primary care physicians. This study examined the quality of life (QOL) in patients with schizophrenia treated in primary care and explored the demographic and clinical characteristics associated with QOL. Altogether, 612 patients with schizophrenia treated in 22 randomly selected primary care services in China formed the study sample. QOL, psychotic and depressive symptoms, extra-pyramidal symptoms and insight were assessed using standardized instruments. Data analyses were conducted with the one sample t-test and multiple linear regression analyses. Compared with the normative data for the Chinese general population, significantly lower scores in physical and mental QOL domains were found in the patient group. Older age, being unemployed, major medical conditions, no smoking, more severe depressive and negative symptoms, more frequent insomnia, and suicidality were independently associated with poor physical QOL. Male gender, more severe depressive and anxiety symptoms, more frequent insomnia, and suicidality were independently associated with poor mental QOL. Patients with schizophrenia treated in primary care had lower level of QOL in comparison with general population. Effective measures need to be implemented to improve their QOL.

1. Introduction

During the past decades, quality of life (QOL) has been an important outcome measure in psychiatry because it can comprehensively reflect the effectiveness of psychosocial interventions and/or pharmacotherapy; in addition, QOL could reflect a more holistic view of a person beyond symptom reduction alone (Xiang et al., 2010a; Boyer et al., 2013; Caqueo-Urizar et al., 2016; Picco et al., 2016). Examining the relationships of QOL with socio-demographic and clinical character- istics could help design more effective clinical interventions. Some studies have shown that the QOL among schizophrenia patients was associated with the use of antipsychotic medications, depressive symptoms, extrapyramidal side effects (EPS), insomnia, and suicidality (Foldemo and Bogren, 2002; Hobbs et al., 2002; Bechdolf et al., 2003a; Xiang et al., 2009b).

Most studies on QOL in schizophrenia were conducted in Western countries. There is compelling evidence that QOL is significantly influenced by socio-cultural factors (Pinikahana et al., 2002; Xiang

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et al., 2010a). Therefore, findings reported in Western countries may not be generalized to patients living under different socio-cultural circumstances. Findings of studies examining the correlates of QOL of Chinese patients with schizophrenia (Chan et al., 2003; Law et al., 2005; Xiang et al., 2008b, 2008c, 2009a) are not completely consistent with those reported from the Western world. For example, positive symptoms are negatively associated with overall and physical QOL domains in Chinese patients with schizophrenia (Xiang et al., 2010a), which contrasts with the notion in the West that QOL is not associated with positive symptoms, but more associated with negative symptoms (Corrigan and Buican, 1995; Browne et al., 1996).

Schizophrenia is severe psychiatric disorder that is associated with immeasurable suffering of patients and their families and causes a massive economic burden (Kaplan and Sadock, 2003). In China there are 1.4 billion people and the estimated prevalence of schizophrenia is 0.49% (Xiang et al., 2008a). Therefore, there are approximately 6.9 million patients with schizophrenia nationwide. However, the number of psychiatrists (approximately 20,000) is inadequate to meet this demand (Ng et al., 2009) and the majority of the workforce is concentrated in the urban psychiatric hospitals (Xiang et al., 2012b). China is a developing country which has no well-established community or catchment mental health services that are found in developed countries. (Cook et al., 2012; Wright et al., 2016; Osborn and Stein, 2017). The primary care doctors usually receive regular training in psychiatric hospitals, and provide maintenance treatment for clinically stable patients with schizophrenia in the community.

The objective of this study was to investigate the QOL in Chinese community-dwelling patients with schizophrenia managed in primary care and explore the sociodemographic and clinical characteristics associated with patient QOL.

2. Methods

2.1. Participants and study sites

This study was part of a large-scale project exploring optimal service model for patients with schizophrenia managed by primary care doctors in China. The details have been introduced elsewhere (Hou et al., 2015, 2016a, 2016b, 2016c; Li et al., 2016). Patients were included if they were diagnosed as ICD-10 schizophrenia assessed by a clinical interview, aged 18 years or older, treated by primary care physicians and had ability to comprehend the purpose and content of the interview.

The details of the recruitment process has been described elsewhere (Hou et al., 2016a). Briefly, schizophrenia patients who were managed by primary care services were registered. Of the 92 primary care services in Guangzhou, 22 were randomly selected and all patients in the selected primary care services were invited by their treating physicians by telephone to participate in this study after a detailed introduction about the study protocol. If they agreed to participate in the study, three psychiatrists with over 5-years of clinical experience carried out a face-to-face interview. All the primary care services in Guangzhou followed the same guideline released by the Guangdong health authority. In order to ensure service quality, primary care service-providers are trained regularly. Therefore, the content and quality of the service are similar across the Guangzhou primary care settings.

2.2. Assessment measures

Data of basic demographic and clinical variables were collected with a form designed for this survey following a review of medical records. Chlorpromazine equivalent milligrams (CPZeq) was used to convert doses of antipsychotic drugs (Herz et al., 1997; Kane et al., 1998; Woods, 2003). The QOL was assessed with the validated Chinese version of the 12-Item Short Form Health Survey (SF-12) (Jenkinson and Layte, 1997; Lam et al., 2005) which covers the physical (PCS) and

mental component score (MCS) (Zhang et al., 2011).

Psychotic symptoms were measured using the validated Chinese version of the Brief Psychiatric Rating Scale (BPRS) (Zhang et al., 1983, 1984) with its three factors: positive, negative and anxiety and tension (Bechdolf et al., 2003b). The presence and severity of depressive symptoms were assessed using the validated Chinese version of the Montgomery-Åsberg Depression Rating Scale (MADRS) (Montgomery and Asberg, 1979; Liu et al., 2009). Extra-pyramidal side effects (EPS) were measured with the Simpson-Angus Scale (SAS) (Simpson and Angus, 1970). Insight was evaluated using the validated Chinese version of the Insight and Treatment Attitude Questionnaire (ITAQ) (Gao et al., 1998). The ITAQ is a semi-structured interview scale with 11 items with a higher score indicating a higher insight level.

Insomnia over the past month was assessed by asking three questions: "Do you have difficulties in falling sleep?" for difficulty initiating sleep; "Do you have the difficulties in maintaining sleep and wake up often?" for difficulty maintaining sleep; and for early morning wakening "Do you wake up in the middle of the night or early in the morning and have difficulties in falling sleep again?" There were three answer choices for each question: "no", "sometimes", and "often". Patients were rated as "having insomnia" if they answered "often" to at least one of the three questions (Xiang et al., 2009b).

Suicide-related problems were examined by asking three yes/no questions to determine whether patients had suicidal ideation, suicide plan or suicide attempt in the past two weeks (Chiu et al., 2012): "Have you had suicidal thoughts?", "Have you had a suicide plan and prepared for it?" and "Have you attempted suicide?". If patients answered "yes" to any of the three questions, they were classified as "having suicidality".

All patients provided written informed consents. The study protocol was submitted and approved by the Ethics Panel of Guangdong General Hospital.

2.3. Statistical analysis

Data analyses were conducted using SPSS 20.0. The comparisons of QOL between patients and the normative data of the Chinese general population (Qi, 2014) were conducted using the one sample t-test. Multiple linear regression analysis with the "Enter" method was used to explore the independent relationships of QOL with demographic and clinical characteristics. Each of the QOL domains were dependent variable in separate models. Demographic and clinical variables including age, gender, education, marital status, employment status, medical insurance, monthly income, major medical conditions, smoking, family history of psychiatric disorders, first episode of schizophrenia, age of onset, number of hospitalizations, use of antipsychotics, doses of antipsychotics, psycohtic, depressive and anxiety symptoms, EPS, insomnia and suicidality and insight into illness were entered as the independent variables. The level of significance was set at 0.05 (two-tailed).

3. Results

A total of 656 schizophrenia patients treated in primary care were screened for eligibility and 634 met the study entry criteria. Twenty-two patients did not complete the interview; finally, 612 patients were included for analyses (Fig. 1). Table 1 shows the basic demographic and clinical characteristics of the patients.

The physical and mental domains of QOL in patients had significantly poorer scores in comparison with the normative data obtained for the Chinese general population (Qi, 2014) (Table 2). Multiple linear regression analyses revealed that older age, being unemployed, major medical conditions, no smoking, more severe depressive and negative symptoms, more frequent insomnia, and suicidality were independently associated with poor physical QOL, while male gender, more severe depressive and anxiety symptoms and more frequent insomnia, and
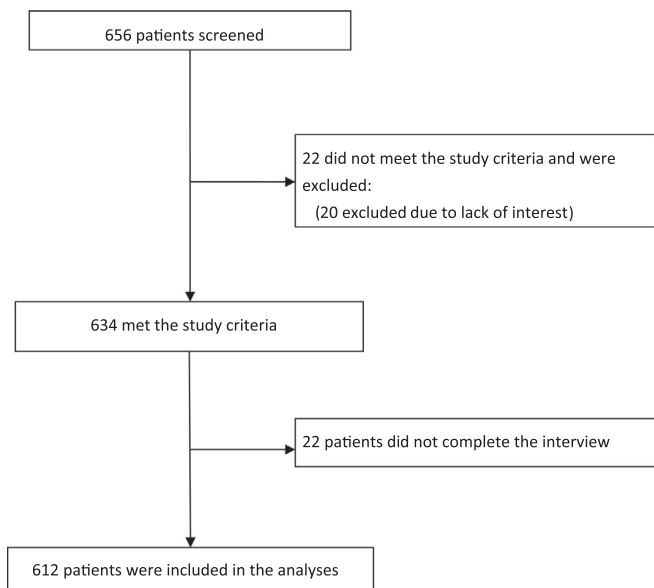
Fig. 1. Flowchart for the recruitment process.

Table 1
Basic demographic and clinical characteristics of patients with schizophrenia treated in primary care[a].

	Total sample (n = 612)	
	N	%
Male	337	55.0
Married	215	35.1
Employed	401	65.5
First episode	181	29.5
No medical insurance	147	24.0
Personal monthly income (< 3000RMB)	588	96.0
Current smoking	147	24.0
Family history of psychiatric disorders	159	25.9
Major medical conditions	235	38.3
On FGA	229	37.4
On SGA	375	61.2
Any type of insomnia	177	28.9
Any type of suicidality	216	35.2
	Mean	SD
Age (years)	47.7	10.3
Education (years)	10.3	2.9
Age of onset (years)	25.7	9.5
Number of hospitalizations	2.2	2.6
CPZeq	431.1	475.0
MADRS	10.3	9.5
BPRS positive	6.2	3.2
BPRS negative	6.3	3.4
BPRS anxiety	3.1	1.6
SAS	12.8	5.1
ITAQ	15.6	5.9

USD = 6.9 RMB; BPRS = Brief Psychiatric Rating Scale; CPZeq = chlorpromazine equivalent milligrams; FGA = first-generation antipsychotics; ITAQ = Insight and Treatment Attitude Questionnaire; MADRS = Montgomery-Åsberg Depression Rating Scale; SAS = Simpson and Angus Scale of Extrapyramidal Symptoms; SGA = second-generation antipsychotics.
[a] Part of the clinical characteristics were reported elsewhere (Hou et al., 2015, 2016b, 2016c; Li et al., 2016).

suicidality were independently associated with poor mental QOL (Table 3).

4. Discussion

In this study, patients had significantly poorer scores in both physical and mental QOL domains than the general Chinese population,

Table 2
Comparison of QOL between Chinese patients with schizophrenia and Chinese general population.

QOL	Patients (n = 612)		Normative data of the Chinese general population (Qi, 2014)		t	p
	Mean	SD	Mean	SD		
PCS	41.7	9.3	50.1	7.5	−21.9	< 0.001
MCS	42.1	11.2	54.8	8.1	−27.7	< 0.001

PCS: physical component summary; MCS: mental component summary.

Table 3
Independent socio-demographic correlates of QOL (multiple linear regression analysis).

	PCS		MCS	
	B	p	B	p
Male	−0.57	0.46	−1.69	**0.04**
Age (years)	−0.17	**< 0.001**	−0.02	0.63
Married	−1.25	0.09	−0.45	0.57
Education (years)	0.03	0.80	0.26	0.05
Employed	2.18	**0.005**	0.07	0.93
No medical insurance	−1.01	0.22	−1.09	0.23
Personal monthly income(< 3000)	−2.05	0.25	2.15	0.27
Major medical conditions	−2.75	**< 0.001**	0.36	0.65
Current smoking	1.95	**0.03**	0.08	0.93
Family history of psychiatric disorders	0.61	0.43	−0.68	0.43
First episode	0.12	0.88	−0.17	0.85
Age of onset (years)	−0.01	0.68	0.005	0.90
Number of hospitalizations	0.02	0.86	0.03	0.84
On FGA	0.98	0.28	−0.28	0.78
On SGA	0.21	0.78	−0.20	0.81
CPZeq	0.00	0.64	0.001	0.31
MADRS	−0.18	**< 0.001**	−0.53	**< 0.001**
BPRS positive	−0.21	0.11	−0.01	0.92
BPRS negative	−0.36	**0.008**	−0.11	0.44
BPRS anxiety	0.08	0.71	−0.69	**0.007**
SAS	−0.07	0.38	0.10	0.23
Any type of insomnia	−1.96	**0.01**	−3.17	**< 0.001**
Any type of suicidality	−2.43	**0.001**	−2.73	**0.001**
ITAQ	−0.06	0.27	−0.01	0.87

Bold values are p < 0.05; BPRS = Brief Psychiatric Rating Scale; CPZeq = chlorpromazine equivalent milligrams; FGA = first-generation antipsychotics; ITAQ = Insight and Treatment Attitude Questionnaire; MADRS = Montgomery-Åsberg Depression Rating Scale; SAS = Simpson and Angus Scale of Extrapyramidal Symptoms; SGA = second-generation antipsychotics; PCS: physical component summary; MCS: mental component summary.

which is consistent with results of previous studies conducted in Western contexts and other Chinese studies in psychiatric settings (Ritsner et al., 2000; Xiang et al., 2007a, 2010b). Patients with schizophrenia usually lack employment opportunities and recreation activities and suffer from poor interpersonal relationships with family and peers (Xiang et al., 2007a). In our study, the majority of patients were unmarried, a third were unemployed, and a third suffered from major medical conditions. According to the QOL satisfaction model (Angermeyer and Kilian, 1997), unmet social needs lowers QOL in patients with schizophrenia even if they are clinically stable. Psychiatric stigma attached to the patients and their families is another reason for the low QOL in China (Lee et al., 2005). In order to maintain the families' honor and avoid public shame and marginalization, patients' families would often deny their family member's illness, which could have a great negative impact on patients' QOL (Chan and Yu, 2004).

We found a number of demographic and clinical characteristics were independently associated with QOL. Male patients with schizophrenia had worse mental QOL which may be related their responsibility and social role. In China, men largely take the responsibility to support their families, and serious mental illness can interfere with this role fulfillment. Due to the high unemployment rate and impaired

functional capacity associated with schizophrenia, men with schizophrenia may not be able to support their families, which could worsen their QOL.

As expected, unemployed status and major medical conditions were negatively associated with QOL (Xiang et al., 2012a). Due to the poor general health and high prevalence of somatic co-morbidity (Uchida et al., 2009), older patients reported lower QOL. Unexpectedly, current smoking was associated with higher QOL, which could perhaps be explained by the possibility that psychotic symptoms and side effects caused by antipsychotics may be alleviated by nicotine through regulating dopaminergic transmission in the nigrostriatal and mesolimbic systems (Lohr and Flynn, 1992; Kumari and Postma, 2005). A previous study however did not find any association between QOL and smoking (Li et al., 2016), which might be due to potential confounders, such as insomnia and insight. In addition, it is likely that some patients who reported not smoking may have recently quit, and this may be negatively affecting their QOL. Depressive symptoms were significantly and negatively associated QOL, underlying the important contributing effect depressive symptoms have on QOL in patients with schizophrenia, which is in line with the results of other studies (Wegener et al., 2005; Xiang et al., 2012a; Hou et al., 2016a). At the same time, severe negative and anxiety symptoms and suicidality were associated with lower QOL. This finding was consistent with previous findings (Xiang et al., 2007b, 2008b). As expected, patients with insomnia had poorer QOL in both physical and mental domains than those without insomnia. Further, there was no association between QOL and use of either first- or second-generation antipsychotics. Our previous studies (Hou et al., 2015, 2016b, 2016c) also did not find significant associations between QOL and use of antipsychotic polypharmacy or clozapine.

There are several limitations in this study. First, this is a cross-sectional study, thus the causality of associations between QOL and its correlates could not be ascertained. Second, insomnia and suicidality, was assessed only by self-report, therefore recall bias could not be excluded. Third, suicidality measured by the study questions on suicidal ideation, suicide plan and attempt in the past two weeks cannot fully reflect suicide risk of schizophrenia patients in primary care. Fourth, some factors related to QOL, such as stigma, were not assessed. Fifth, the SF-12 is a generic QOL instrument and not a schizophrenia-specific measure on QOL. Although the SF-12 could be used any populations including schizophrenia, it is not sensitive enough to detect subtler changes in QOL. Finally, due to logistical reasons, no control group was included in the study. Comparisons were conducted with the reported normative Chinese data derived by the SF-12.

5. Conclusion

Patients with schizophrenia managed in primary care have a lower QOL than the general population in China. The deleterious effects of psychiatric symptoms on QOL suggests that in addition to medication management, primary care outpatient clinics should also offer therapeutic interventions targeting negative, depressive and anxiety symptoms, insomnia, and suicidality in schizophrenia patients.

Disclosure/Conflicts of interest

The authors had no conflicts of interest in conducting this study or preparing the manuscript.

Acknowledgements

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