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# Stigma and discrimination experienced by people with schizophrenia living in the community in Guangzhou, China



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## ABSTRACT

The aims of this study were to investigate experienced stigma and discrimination and their associated factors in people with schizophrenia who live in the community in Guangzhou, China. A total of 384 people with schizophrenia were randomly recruited from four districts of Guangzhou and completed the scales and questionnaires: Internalized Stigma of Mental Illness scale (ISMI), Self-Esteem Scale (SES), Discrimination and Stigma Scale (DISC-12), Brief Psychiatric Rating Scale (BPRS), PANSS negative scale (PANSS-N), Global Assessment of Functioning (GAF) and Schizophrenia Quality of Life Scale (SQLS). Insight and medication compliance were evaluated by psychiatrists. Data were analyzed by using descriptive statistics, Pearson correlation and multi-variable linear regression. We found a significant positive correlation between BPRS score and PANSS-N score, GAF score was significantly negative correlated with SQLS score, Insight score was significantly negative correlated with medication compliance score, ISMI score was significantly positive correlated with SES score and experienced discrimination score. Multivariable linear regression found SQLS, SES and experienced discrimination were the main independent variables of ISMI and experienced discrimination was the most important factor of ISMI. Our findings suggest that people with schizophrenia often experienced stigma and discrimination in this Chinese population, and more anti-stigma interventions should be provided.

## 1. Introduction

Schizophrenia is a serious and highly stigmatized mental disorder (Link et al., 2006; Sharaf et al., 2012). People with schizophrenia are often incorrectly thought to be more dangerous, aggressive and prone to crime (Yilmaz et al., 2015). The condition has a profound effect on the individuals affected, for example, high rates of unemployment and a reduced life expectancy of around 10–20 years (Owen et al., 2016). Schizophrenia accounts for 7.4% of global disability-adjusted life years (DALYs) reported in the 2010 Global Burden of Disease Study (Patel et al., 2014). Stigma and discrimination are complicating features of psychiatric disorders and treatment, especially for schizophrenia.

Stigma was first defined as “an attribute that is deeply discrediting” (Semrau et al., 2015); however, this concept received criticism for being too individually focused and loosely defined. Recently, it is documented that stigma contains labeling, stereotyping, separation, status loss, and discrimination (Link et al., 2001; Omori et al., 2014).

Moreover, Corrigan categorized stigma as public stigma and self-stigma (Brohan et al., 2010b). Stigma has been defined as comprising three elements: problems of knowledge (ignorance or misinformation), problems of attitudes (prejudice), and problems of behaviour (discrimination) (Brohan et al., 2010b; Mosanya et al., 2014; Thornicroft et al., 2007). This conceptualisation provides a new direction focusing on how discrimination is experienced and establishing an evidence base of effective interventions.

Stigma and discrimination have been associated with poor quality of life, low self-esteem, and social withdrawal in people with schizophrenia (Brohan et al., 2011; Rusch et al., 2005). As a result, people with schizophrenia often try to hide their illness or stop themselves from taking on opportunities (Koschorke et al., 2014). Discrimination also disadvantages individuals in several ways, such as unemployment, loss of income, reduced access to education, housing or health care (Thornicroft et al., 2016; Yin et al., 2014). Patients with schizophrenia may have less investment of health-care resources allocated than those

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with physical illnesses, and a low use of diagnostic procedures when the patients have physical illness (Sartorius, 2007). With such a poor health care, people with schizophrenia might delay or stop seeking treatment or terminate treatment prematurely. Arguably, stigma and discrimination are the most important obstacles to the provision of mental health care and to the development of mental health programs (Beldie et al., 2012; Sartorius, 2013).

The way people experienced stigma and discrimination may be different because of the different cultural contexts (Koschorke et al., 2014). From the historical perspective, people with mental disorders in Europe were sometimes thought to be possessed by “evil spirits”, which may well have been associated with high levels of stigma and discrimination. However, people would receive relatively human treatment in some Muslim societies. The main sources of reported experienced stigma and discrimination recently are from high-income countries (HICs), displaying high rates of stigma and discrimination in making friends, job-seeking (Thornicroft et al., 2009), and self-stigma (Brohan et al., 2010a). For the negative consequences of stigma and discrimination, schizophrenia has been selected as the central focus of the World Psychiatric Association's global anti-stigma programme entitled “Open the Doors” (Biffu et al., 2014; Stuart, 2008). In order to deliver primary health-care effectively, HICs have executed community based programs, which rely on shifting tasks from specialists to non-specialists (Kakuma et al., 2011).

However, people with mental illness who live in the community (where services tend to be more established) still experience stigma and discrimination (Semrau et al., 2011). While there still a lack of studies in low- and middle-income countries (LMICs), where about 85% of the world's population live (Jacob et al., 2007). One international study using population-wide data from 16 countries found even higher rates of reported stigma among people with mental disorders in developing (31.2%) than in developed (20%) countries (Alonso et al., 2008).

In China, an estimated 173 million Chinese people have been diagnosed with psychiatric disorder, but among them 158 million have never received any treatment (Xiang et al., 2012). Most studies have focused on investigation of social stigma in people with schizophrenia (Lee et al., 2005), and the knowledge and attitudes of medical students (Rong et al., 2011) or family members (Phillips et al., 2002) toward patients with mental illness. Few studies have emphasized behaviors that help people to deal with the stigma and discrimination of mental illness in LMICs.

Guangzhou is the capital city of Guangdong province, near to Hong Kong and the adjusted lifetime prevalence rate of mental disorders is about 15.76% (Zhao et al., 2009). More than 20,000 patients with schizophrenia are registered in the system of Guangzhou severe mental disorders management database. Guangzhou Huiai Hospital (also known as Guangzhou Brain Hospital) has been in charge of management of people with mental illness for more than half a century. Several studies have reported the level of stigma (Li et al., 2014b) and the knowledge and attitude among community mental health staff (Li et al., 2014a). However, no assessment about the experiences of stigma, especially discrimination among people with schizophrenia in community has been reported.

The aims of this study therefore are to assess the experiences of stigma and discrimination among individuals with schizophrenia in community of Guangzhou, China, and to investigate the factors associated with a higher likelihood of experiencing stigma and discrimination. Also, we want to emphasize that this study is a part of the Policy, Training, Services and Assessment (PTSA), also called “Guangzhou Mental Health Model” (Li et al., 2015), which aims at overcoming the deficiency of the serious human resource shortage and huge treatment gap, and providing effective community mental health services in real situations. In this way, the study will provide baseline information for the further research of interventions.

## 2. Method

### 2.1. Study design and participants

The cross-sectional study was conducted at Guangzhou Huiai Hospital in a sample of patients with schizophrenia, who were registered in the system of Guangzhou severe mental disorders management database. More than 50,000 people have been registered in the system, about 20,000 of whom have a clinical diagnosis of schizophrenia. We first divided the 12 administrative districts in Guangzhou City into 2 clusters (6 central districts and 6 suburban districts) according to their geographical location. Then we randomly chose two central districts (Tianhe and Liwan) and two suburban districts (Huadu and Nansha) from the 2 clusters. The sample size was calculated by the formula (Li et al., 2015). And then 120 participants from each district were randomly recruited. All participants were screened based on the inclusion criteria and exclusion criteria described below.

Inclusion criteria included: (1) Participants were diagnosed as having schizophrenia by certified psychiatrists according to ICD-10 DCR criteria; (2) Aged between 18 and 50 years old; (3) Participants had at least full primary school education; (4) Participants were taking antipsychotic drugs, and had a stable condition; (5) Participants lived in the local community during the study. Exclusion criteria included: (1) hospitalized due to substance abuse prior to the study, acute risk of suicide and violence, severely intellectually challenged with learning difficulties; (2) severe and unstable physical disease such as cerebrovascular diseases, etc; (3) patients who were pregnant and / or lactating. A total of 384 patients were enrolled. 96 participants were excluded, and the main reasons were: (1) though the diagnosis in the computer system was given as schizophrenia, this was not the clinical diagnosis given about the project senior psychiatric staff; (2) patients with serious physical comorbid conditions; or (3) those who did not consent to participate.

The survey was conducted from April 2015 to July 2015. The study protocol was approved by Research Ethics Committee of Guangzhou Huiai Hospital (Number 012, 2015). Written informed consent was obtained from each participant after the procedure had been fully explained.

### 2.2. Measurements

The Brief Psychiatric Rating Scale (BPRS): developed by Overall and Gorham, was used to assess the severity and change of psychotic and some depressive symptoms in schizophrenia and other psychotic disorders (Altintas et al., 2016). The scale has been translated into Chinese and is the most frequently used measure of assessing psychopathology. It has good validity and inter-rater reliability (Zhang et al., 1983). It consists of 18 items, each being rated for symptom severity ranging from 1 (not present) to 7 (extremely severe). Factor analysis results suggested different symptom clusters in this scale: the set of negative symptoms (emotional withdrawal, blunted affect, and motor retardation) and the set of positive symptoms (conceptual disorganization, hallucinations, and unusual thought content). Scores obtained from the BPRS rating range from 18 to 126. A higher total score represents more severe psychotic symptoms experienced by the participants.

The Positive and Negative Syndrome Scale for Schizophrenia (PANSS): developed by Stanley R. Kay, was used to assess positive and negative symptoms as well as general psychopathology and to measure the levels of these symptoms in case of schizophrenia or any other psychotic disorder (Brain et al., 2014). The scale has been translated into Chinese and has good validity and inter-rater reliability (Si et al., 2004).

The scale consists of 30 items rated from 0 (absent) to 7 (extreme) that represent increasing levels of psychopathology. Seven items are related to positive symptom subscale, seven items are related to negative symptom subscale, and the remaining 16 items are related to

general psychopathology subscale. This study only used the negative symptom subscale. The main reason was that this paper was a baseline study, our main purpose was to investigate whether the negative symptoms could be improved after interventions (see another paper which is in submitting), which was associated with the social function. And PANSS-N could increase the sensitivity to analysis negative symptoms. Another reason was the limitation of human resources. A higher total score represents more serious psychopathology. Insight and medication compliance were assessed by senior psychiatrists at the same time. Both insight and medication compliance consist of three items. The severity of insight was rated from 1 (no insight) to 3 (complete insight). A higher score of insight represents better insight. The severity of medication compliance rated from 1 (complete medication compliance) to 3 (no medication compliance). The types of medication compliance were distinguished as below: complete compliance = takes antipsychotic drugs according to the doctor's advice completely during the last month; part compliance = takes antipsychotic drugs according to the doctor's advice more than 15 days during the last month; no compliance = takes antipsychotic drugs according to the doctor's advice less than 15 days during the last month. A lower score of medication compliance represents better medication compliance.

The Global Assessment of Functioning (GAF): developed by the American Psychiatric Association, was used to assess psychological, social and occupational functioning in case of schizophrenia or any other psychotic disorder (Fung et al., 2011). The scale has been translated into Chinese and has good validity and inter-rater reliability. It is a single-item questionnaire rated from 0 to 100. A higher score represents better psychological, social and occupational functioning.

The Schizophrenia Quality of Life Scale (SQLS): developed by Wilkinson, was used to assess patients' quality of life (Wilkinson et al., 2000). The scale has been translated into Chinese and has good validity and inter-rater reliability. The SQLS is a schizophrenia-specific quality-of-life instrument that measures quality of life according to the patients' perspective (Li et al., 2003). The SQLS is a self-administered scale comprising 30 items. All except four items are scored on a 5-point Likert scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often, and 4 = always), with the exceptional four items being reverse-coded, and the total score is calculated. A lower score represents a better quality of life, while a higher score indicates a poorer quality of life.

The Internalized Stigma of Mental illness scale (ISMI): developed by Ritsher, was used to assess service users' experience of internalized stigma (Ritsher et al., 2003). The scale has been translated into Chinese and has good validity and inter-rater reliability (Li et al., 2009). The scale consists of 29 items and uses a Likert scale from 1 = strongly disagree to 4 = strongly agree. This instrument comprises of five subscales: alienation, stereotype, discrimination experience, social withdrawal and stigma resistance. The items of the subscale stigma resistance are scored in reverse. A higher score of ISMI represents higher internalized stigma.

The Self-Esteem Scale (SES): developed by Rosenberg, was used to indicate the degree of patients' agreement or disagreement with statements about their self-esteem and self-deprecation (Rosenberg et al., 1978). The scale has been translated into Chinese and has good validity and inter-rater reliability (Shen et al., 2008). This scale consists of 10 items and uses a Likert scale from 1 = strongly agree to 4 = strongly disagree. Items are summed into a total score such that a higher score indicates a lower self-esteem.

The Discrimination and Stigma Scale (DISC-12): developed by Thornicroft et al., was used to assess the patients' past experiences of stigma since the first appearance of a mental health problem by the research psychiatrist at the 12 month endpoint visit (Brohan et al., 2013). The scale has been translated into Chinese and has good validity and test-retest reliability (Li et al., 2016). The scale consists of 32 items, four subscales and scores on a 4-point scale from 0 (not at all) to 3 (a lot). The four DISC-12 subscales are as follows: patient experienced

discrimination (Item 1–21), defined as unfair treatment and unjust distinction in how different people are being treated by others. A higher score indicates greater experienced discrimination.

Anticipated discrimination (Item 22–25), refers to the extent to which the patients limit their involvement in important aspects of daily life, such as intimate relationships and work, because of anticipation that stigma might occur. A higher score indicates greater limitation in their daily life. Two items on overcoming stigma (Item 26–27), assess the coping mechanisms patients use to overcome discrimination. A higher score indicates more methods know to overcome discrimination. Positive treatment due to the mental illness (Item 28–32), meaning reported positive treatment received by others as a result of their mental illness. A higher positive treatment score indicates more positive treatment being reported.

### 2.3. Statistical analysis

Statistical analysis was conducted using IBM SPSS Statistics (version 21.0; IBM Corporation, Armonk, NY, USA). Descriptive statistics including the mean, standard deviation (SD), frequency and proportion were used to summarize the demographics, subscale scores and mean scores of rating scales. Item-total correlations were calculated with Pearson correlation coefficient. Multivariable linear regression was used to assess the association of relative factors with stigma and discrimination. Unadjusted regression coefficients (b), adjusted regression coefficients (b<sub>ad</sub>) and 95% confidence intervals (95%CI) were calculated. We adjusted for the following covariates: sex, age, marital status, education level, number of hospitalization and duration of illness. Statistical significance was set at the level  $P < 0.05$ .

## 3. Results

### 3.1. Socio-demographic characteristics

Social and demographic characteristics of participants are summarized in Table 1. 384 participants with schizophrenia from the community of Guangzhou were included to this study and all responded to the survey. Almost all participants reported Han nationality (99%). 197 (51.3%) were males and 187 (48.7%) females. The average age was 39.96 (SD = 7.69) years and average education years 10.13 (SD = 2.60). They had an average duration of illness of 14.54 (SD = 7.97) years and 2.48 (SD = 3.03) hospitalization times. 198 (51.6%) participants were single, 146 (38.0%) married, and 40 (10.4%) others divorced or widowed. Most (n = 272, 70.8%) were unemployed.

**Table 1**  
Social and demographic characteristics.

Characteristics	Total group (n = 384)
Age (years) (Mean ± SD)	39.96 ± 7.69
Race (Han) n (%)	380 (99.0)
Sex n (%)	
Male	197 (51.3)
Female	187 (48.7)
Marital status n (%)	
Single	198 (51.6)
Married	146 (38.0)
Divorce/Widowed	40 (10.4)
Occupation n (%)	
Yes	112 (29.2)
No	272 (70.8)
Education level (Mean ± SD)	10.13 ± 2.60
Duration of illness(years) (Mean ± SD)	14.54 ± 7.97
Number of hospitalization (Mean ± SD)	2.48 ± 3.03



**Table 2**  
Measurements among participants.

Measurements	
BPRS total score (Mean ± SD)	27.33 ± 7.16
PANSS Negative subscale (Mean ± SD)	17.15 ± 5.40
Medication compliance	
Complete compliance n (%)	292(76%)
Part compliance n (%)	88(22.9%)
No compliance n (%)	4(1.0%)
Insight	
Complete insight n (%)	100(26%)
Part insight n (%)	238(62%)
No insight n (%)	46(12%)
GAF total score (Mean ± SD)	62.72 ± 11.47
SQLS total score (Mean ± SD)	31.79 ± 15.83
Psychosocial	30.06 ± 19.99
Motivation/energy	46.30 ± 16.17
Symptoms /side effects	22.35 ± 17.03
ISMI total score (Mean ± SD)	2.30 ± 0.39
Alienation	2.31 ± 0.60
Stereotype	1.06 ± 0.78
Discrimination experience	2.31 ± 0.54
Social withdrawal	2.34 ± 0.53
Stigma resistance	2.28 ± 0.46
DISC-12 subscales (Mean ± SD)	
Experienced discrimination	0.20 ± 0.27
Anticipated discrimination	0.79 ± 0.72
Overcoming stigma	0.75 ± 0.69
Positive treatment	0.73 ± 0.63
SES total score (Mean ± SD)	23.14 ± 3.90

3.2. Clinical characteristics and clinical symptoms

Clinical Characteristics of participants are summarized in Table 2. The mean total score of the BPRS was 27.33 (SD = 7.16), and 17.15 (SD = 5.40) for the PANSS negative subscale score. Pearson correlation showed a positive correlation between BPRS total score and PANSS negative score ( $r = 0.448, P < 0.01$ ).

The medication compliance scale showed that 292 (76%) participants were fully compliant with prescribed medication, 88 (22.9%) partial compliance, and 4 (1.0%) no compliance, suggesting that most of the participants had high medication compliance. In addition, the insight scale showed that 100 (26%) participants had full insight, 238 (62%) partial insight and 46 (12%) no insight, suggesting that most of the participants had insight. Pearson correlation showed a negative correlation between medication compliance score and insight score ( $r = -0.356, P < 0.01$ ).

3.3. Social function and quality of life with participants

Social Function and Quality of Life in participants are summarized in Table 2. The mean total scores of the GAF and SQLS were 62.72 (SD = 11.47) and 31.79 (SD = 15.83), respectively. Mean scores on the three SQLS subscales were: 30.06 (SD = 19.99) for psychosocial, 46.30 (SD = 16.17) for motivation/energy, and 22.35 (SD = 17.03) for symptoms/side effects. Pearson correlation showed a negative correlation between GAF total score and SQLS total score ( $r = -0.129, P = 0.01$ ).

3.4. Stigma and discrimination and self-esteem levels in participants

Stigma and Discrimination and Self-esteem Levels in participants are summarized in Table 2. Mean scores on the ISMI were: 2.30 (SD = 0.39) for total score, 2.31 (SD = 0.60) for alienation, 1.06 (SD = 0.78) for stereotype, 2.31 (SD = 0.54) for discrimination experience and 2.34 (SD = 0.53) for social withdrawal and 2.28 (SD = 0.46) for stigma resistance, indicating internalized stigma in the participants.

Mean scores on the DISC-12 were: 0.20 (SD = 0.27) for Experienced

**Table 3**  
Multivariate regression coefficients and 95% confidence intervals for the association between ISMI and other measurements among participants.

Characteristics	b (95%CI)	b <sub>ad</sub> (95%CI) <sup>#</sup>
BPRS total score	0.012(0.007–0.018)***	–
PANSS-N	0.007(0.000–0.014)	–
GAF total score	–0.005(–0.008 to 0.001)**	–
SQLS total score	0.013(0.011–0.015)***	0.007(0.004–0.010)***
SES total score	0.055(0.047–0.064)***	0.032(0.021–0.042)***
Experienced discrimination	0.421(0.283–0.559)***	0.141(0.015–0.268)*
Anticipated discrimination	0.106(0.052–0.160)***	–
Overcoming stigma	–0.024(–0.082 to 0.033)	–
Positive treatment	0.011(–0.051 to 0.073)	–

Stepwise multiple regression analysis used the ISMI total score as dependent variable with BPRS, PANSS-N, GAF, SQLS, SES total scores and four DISC-12 subscales that showed p-value greater than 0.05 in correlation analyses as the independent variables. Covariates in these stepwise forward entry models included sex, age, marital status, education level, number of hospitalization and duration of illness. R<sup>2</sup> of the multiple linear regression model was 0.409.

–: Variables were not significant after controlling for above characteristics.

\*  $P < 0.05$ .

\*\*  $P < 0.01$ .

\*\*\*  $P < 0.001$ .

<sup>#</sup> Adjusted for participants' sex, age, marital status, number of hospitalization and duration of illness.

discrimination, 0.79 (SD = 0.72) for Anticipated discrimination, 0.75 (SD = 0.69) for Overcoming stigma and 0.73 (SD = 0.63) for Positive treatment. The mean total score of SES was 23.14 (SD = 3.90), suggesting a loss of self-esteem in the participants. Pearson correlation showed that the ISMI total score was positively correlated with experienced discrimination ( $r = 0.294, P < 0.01$ ), anticipated discrimination ( $r = 0.195, P < 0.01$ ), and SES total score( $r = 0.55, P < 0.01$ ).

3.5. Multivariable linear regression

The results of multivariable linear regression are summarized in Table 3. Stepwise multiple regression analysis used the ISMI total score as dependent variable with BPRS, PANSS-N, GAF, SQLS, SES total scores and four DISC-12 subscales that showed p-value greater than 0.05 in correlation analyses as the independent variables. Covariates in these stepwise forward entry models included sex, age, marital status, education level, number of hospitalization and duration of illness. R<sup>2</sup> of the multiple linear regression model was 0.409. The result revealed that ISMI total score was independently associated with SQLS ( $b_{ad} = 0.007, P < 0.01$ ), SES ( $b_{ad} = 0.032, P < 0.01$ ) and experienced discrimination ( $b_{ad} = 0.141, P < 0.05$ ), suggesting that the experienced discrimination was the factor most significantly associated with stigma.

4. Discussion

Stigma and discrimination in mental health are issues of vital importance, since they act as barriers to limit the recognition and treatment of people with first-episode psychosis, or to the reduced use of services and reduced engagement in leisure activities for patients (Wright et al., 2015). To the best of our knowledge, this is the first study to report the experienced stigma and discrimination in patients with schizophrenia in local community of Guangzhou, China, which will provide the possible comparison to those studies from different countries and cultures.

Our study showed that patients with schizophrenia generally experienced high levels of stigma; however, discrimination experiences were comparatively less than often described. Our results were not consistent with the previous studies (Brohan et al., 2010a; Brain et al.,

2014). The possible reasons may be related to the clinical characteristics of the participants. For example, our participants had been hospitalized for more than two times. Having at least one lifetime psychiatric hospital admission is a strong predictor of illness severity (Thornicroft et al., 2009). And they had a long duration of illness and most of them had more than 14 years. Thus, the participants' situation may have been exposed to the community and they won't concern about discrimination. What's more, responses to questions in the DISC-12 could also explain this phenomenon. For example, Item 21 in the subscale of experienced discrimination: Have you been avoided or shunned by people who know that you have a mental health problem? 106 (28.4%) participants answered yes. That means more than half participants reported that they had not been avoided or shunned. However, this pattern of experienced discrimination could be presented in work-related affairs (Oshodi et al., 2014). In our study, 272 (70.8%) were unemployed, which is consistent with previous studies, showing a significant impact of discrimination on job-seeking (Daumerie et al., 2012). Unemployment may be the result of combination of public discrimination and patients' perceived stigma (Hansson et al., 2014). A survey of 74 American outpatients diagnosed with schizophrenia found that 50% of respondents reported that they had "at least sometimes" been treated as less competent by others, and 42% patients reported similar frequencies of having been "shunned or avoided" when others learned of their psychiatric treatment (Yang, 2007). Item 25 in the subscale of anticipated discrimination: Have you concealed or hidden your mental health problem from others? 244 (63.5%) participants answered yes. The explanation of this behavioral pattern could be due to fear of discrimination, since schizophrenia patients usually prefer to hide their diagnosis.

Discrimination appears to be a universal phenomenon (Yang et al., 2007). We consider that the actual rate could be underestimated because of "face" (also called *mianzi*). Face is a crucial aspect of social identity and represents power and standing in the Chinese social hierarchy. Thus, diagnosis of schizophrenia results in a "loss of face" for the individual, and having a mental illness is regarded as extremely shameful in Chinese society (Lv et al., 2013). Hence, patients with schizophrenia prefer non-disclosure to their condition. Non-disclosure, or maintaining secrecy, may protect them from discrimination, but is associated with negative long-term outcomes, since the threat of discovery can be a constant stressor (Rusch et al., 2014).

Also, non-disclosure might be a barrier for seeking and receiving effective treatment. People with schizophrenia might avoid treatment because of the concern that they will be negatively judged or discriminated by other people, whereas others might avoid addressing issues related to their disorder because of its potential effect on their self-esteem, which has already been compromised by internalized stigma (Lasalvia et al., 2013). Therefore, there is a pressing need to develop the interventions to support people with mental illness in their disclosure decisions.

Item 27 in the DISC-12 subscale of overcoming stigma: Have you been able to use your personal skills in coping with stigma and discrimination? 131 (34.1%) participants answered yes. The result indicated that patients had few skills for coping with stigma, which is consistent with the previous studies (Carr et al., 2013). A previous study showed that experienced stigma was associated with more severe depressive symptoms and negative mood, which may affect the use of specific coping strategies in people with schizophrenia (Holubova et al., 2016). Hence, psychiatrists should incorporate coping strategies into treatment plans for patients to deal with stigma and discrimination. Indeed our results showed that experienced discrimination had the strongest association with stigma. So further studies should shift the focus to discrimination, and campaigns on anti-discrimination should be initiated.

Since a recent study showed that lower comfort of disclosing one's mental illness was related to lower well-being (Rusch et al., 2014), we examined whether experienced discrimination might have impact on

the levels of patients' quality of life, self-esteem, symptom severity and psychosocial functioning. We found that the participants had relatively mild symptoms based on their mean total scores of BPRS and PANSS-N. This approach targets an important group of patients when evaluating the long-term management of individuals with schizophrenia and our sample is likely comparable to stable patients treated in similar settings in other countries. Our results of SQLS and SES indicated a poor quality of life and diminished self-esteem in patients with schizophrenia.

The result of the GAF also indicated poor psychosocial function, according to the category of GAF scores (Link et al., 1997). More psychotic symptoms may also be misunderstood as signs of danger or incompetence. It is difficult for participants to seek a job. In our study, more than half of the respondents were unemployed. It's also challenging for participants to communicate with others because many people in the general public have negative attitudes and perceive people with schizophrenia as dangerous. In our study, only 38% of the respondents were married, which is consistent with others (Hopper et al., 2007; Harangozo et al., 2014) suggesting that many of them had little chance of having their own family. Our result of multivariable linear regression indicated that SQLS, SES were main independent determinants of ISMI, which is consistent with previous studies showing that high levels of internalized stigma were associated with poorer self-esteem and decreased quality of life (Sibitz et al., 2011; Wang et al., 2016).

These results mean that when patients felt misunderstood, separated and different from others, they were angry, embarrassed, ashamed, and afraid. These negative emotions lead to a feeling of inferiority and significantly influence the internalization of negative stereotypes, thereby increasing feelings of stigma and negative consequences. Furthermore, we also found that patients had better insight and medication compliance, and insight and medication compliance were highly correlated in patients with schizophrenia. A possible reason may be that psychiatric symptoms were controlled by anti-psychotic medications and patients were willing to adhere to their medications because of a gradual recovery of insight.

The outcomes we found were enlightened. From the cross-cultural perspective, Chinese culture was different from the Euro-American culture. The former was mainly affected by Confucianism, while the latter was impressed by the culture of the ancient Greece and Christian. Though the culture background was significantly different, the high level of stigma patients with schizophrenia experienced was very similar. This revealed a phenomenon that the culture universality was superior to the culture particularity in the field of stigma and discrimination. Furthermore, the findings in this study were meaningful for the future interventions. For example, the better outcomes of insight and medication compliance implicated the importance of medication management and autonomous control. The poor outcomes of stigma, social function, quality of life and self-esteem in patients with schizophrenia suggested more trainings, social skills and anti-stigma strategies should be integrated together in the later interventions. Fortunately, all these approaches are integral and essential components of our PTSA programme, which hasn't been completely operated at present, except the training courses in Guangzhou community-settings (Li et al., 2014a). Now is good time to fight against stigma and discrimination in LMICs, especially in China.

Several limitations of the study should be taken into consideration. Firstly, discrimination and stigma are complex concepts influenced by multiple factors, which influence each other. Secondly, assessment of the factors was performed by the same examiner, which may have increased the interrelationship of the variables. Finally, the data were collected from a cross-sectional study, and more data will be needed to fully understand the relationship between these variables. Therefore, future studies should be conducted in a larger multi-center or multi-region sample, using cohort study to improve the accuracy and generalizability of our results in the present study.

In summary, our findings show that people with schizophrenia living in the community often experience both stigma and

discrimination, which are barriers to social participation and successful vocational integration. Disadvantages such as unemployment and pessimistic marriage prospects suggest that it is time to fight against stigma and discrimination, and interventions are needed to address discrimination and stigma, but also to help service users with specific vulnerabilities and concerns regarding discrimination.

#### Declaration of interests

SEL has received consulting fees from Lundbeck unrelated to this work. The other authors declare no conflicts of interest.

#### Authors' contributions

JL designed and led the study, drafted the manuscript. YBG contributed to the study design, YGH and JWJ helped with data collection and WC conducted the main data analysis. XYZ was involved in the data analysis and editing the manuscript. GT and SEL contributed to the scale support and critically appraised the manuscript. All authors read and approved the final manuscript. GT is supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research (RP-PG-0606-1053) and Care South London at Kings College London Foundation Trust. SEL is funded by the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013)/ERC Grant agreement no [337673]. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health. GT acknowledges financial support from the Department of Health via the National Institute for Health Research (NIHR) Biomedical Research Center and Dementia Unit awarded to South London and Maudsley NHS Foundation Trust in partnership with King's College London and King's College Hospital NHS Foundation Trust. GT is supported by the European Union Seventh Framework Programme (FP7/2007-2013) Emerald project.

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