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Characteristics of the Schizophrenic Suicides in Comparison with the Suicides with Other Diagnosed Psychiatric Disorder and without a Psychiatric Disorder¹

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Abstract

Background—There has been much literature on schizophrenia, but very little is known about the characteristics of suicides with schizophrenia in comparison with the suicides with other diagnosed psychiatric disorder and without psychiatric disorders.

Methods—Thirty-eight suicides with schizophrenia, 150 suicides with other psychiatric disorder, and 204 suicides without a psychiatric disorder were entered in current study. Psychological Autopsy (PA) was applied to collect information of the suicides. Social demographic factors and clinical characteristics of the suicides were measured. The well validated standard scales were applied: Beck Hopelessness Scale (BHS), Landerman's Social Support Scale (DSSI), Dickman's Impulsivity Inventory (DII), Spielberger State-Trait Anxiety Inventory (STAI) and Hamilton Depression Scale (HAMD). Suicide intents were appraised by the Beck Suicide Intent Scale (SIS). The SCID based on the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) was applied to assess the psychiatric status of individuals. Demographic characteristics, clinical characteristics, method of suicide and suicide intents of suicides were compared among the three groups (Schizophrenia group, Other psychiatric disorders group, and None psychiatric disorders group).

Results—There were 9.7% of suicides who suffered schizophrenia. The current study found being female was the risk factor for suicides with schizophrenia in rural China, which was

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opposite to the previous studies. The suicides with psychiatric disorder scored higher on hopelessness, anxiety, and depression, but lower on social support and impulsivity than suicides without psychiatric disorder. The suicides with psychiatric disorder were less impulsive than none psychiatric disorders group, too. The schizophrenia group did not show more violence than other psychiatric disorders group.

Conclusions—This research compared the demographic characteristics, clinical characteristics, method of suicide and suicide intents among the suicides with schizophrenia, with other diagnosed psychiatric disorder and without psychiatric disorders. The result indicated that each groups showed their unique characteristics, which gave us new viewpoints to control and prevent the prevalence of suicides according to their different characteristics.

Keywords

Schizophrenia; Suicide; Suicide intents; Clinical characteristics; Method of suicide; Mental disorder; China

1. Introduction

Previous studies show that persons with schizophrenia are at high risk for attempted and completed suicide. One previous study estimated that 4.9% of schizophrenics would commit suicide during their lifetimes (Brian A. Palmer, V et al. 2005), and 20% to 40% of them would attempt suicide. Another review of suicide research indicated that at least 5–13% of schizophrenic patients die by suicide (Pompili, Amador et al. 2007). The average life expectancy of people with schizophrenia is 12 to 15 years less than those without (Van Os and Kapur 2009; Hor and Taylor 2010). Suicide is the primary cause of premature death for sufferers with schizophrenia.

So far, suicide with schizophrenia has been studied by previous researchers. Resch et al. (1989) studied the demographic and psychological features of schizophrenic suicide based on retrospective investigation using hospital records of 44 schizophrenic patients who committed suicide. Another psychologist and epidemiologist studied the risk factors for completed suicide in young Chinese people with schizophrenia (Lui 2009) and the systematic review of rates and risk factors of suicide and schizophrenia (Hor and Taylor 2010). The relationship among suicide, violence, and schizophrenia (Rogers and Fahy 2008) and the characteristics comparison of suicide attempters and non-attempters with schizophrenia in a rural community (Ran, Xiang et al. 2005; Isjanovski, Vukovic et al. 2010) were still researched. Some previous literature reported the relationship between schizophrenia and the gene (Guan, Zhang et al. 2013; Hu, Zhang et al. 2013; Wu, Huang et al. 2013; Yang, Kang et al. 2013) in Chinese populations. The studies on the socio-demographic and clinical characteristics of schizophrenia still have been reported in China (Yan, Xiang et al. 2013; Zhang, Al Jurdi et al. 2013; Zhang, Chen et al. 2013). Julie (2002), Altamura (2003) and Mauri et al. (2013) compared the demographic and clinical characteristics and variables surrounding between the suicide victims with and without schizophrenia, but very little research has been studied to compare the characteristics of completed suicides with schizophrenia, with other diagnosed psychiatric disorder and without psychiatric disorder.

This current study aimed to compare the demographic characteristics, clinical characteristics and suicide intents of completed suicides with schizophrenia (Schizophrenia group), with other diagnosed psychiatric disorder (Other psychiatric disorders group) and without psychiatric disorder (None psychiatric disorders group), so as to find the risk factors and put forward the prevention strategy to decrease the death rate for the schizophrenic individuals.

2. Methods

2.1 Subjects and Data Collection

Data for current study were obtained from a large scale case control epidemiology study in China that consisted of 16 rural counties from three provinces (Liaoning, Hunan, and Shandong) of China. Liaoning, an industrial province, is in northeast China, Hunan, an agricultural province, lies in south China, and Shandong, a province with prosperity in both industry and agriculture, is located in middle east china. The locations and the development of economies ensure that health services in China are reasonably represented by the three provinces.

In each of the 16 counties, a project coordinator from the Disease Control and Prevention (CDC) monitored suicide occurrences. In each of the three provinces, a project director from the provincial CDC or the university was affiliated with requested reports on suicide cases about each month.

Recognizing the need for clearly defined criteria for suicide as a manner of death (Younger, Clark et al. 1990), we excluded cases of accidental or natural death in which suicidal intent was questioned. Since China does not have medical examiner systems and all deaths are supposed to be sent to a health agency for a death certificate, hospitals are the major place for the CDC to locate cases for the study. In the remote rural areas far away from a hospital, village doctors were responsible for furnishing the death certificate and were required to report the death to the *Xiang* (township) health agency. The county CDC oversaw all the hospitals or clinics in the county. Whenever necessary, an investigation with the village board and villagers was conducted by the research team to make sure no suicide cases were either missed or erroneously reported. A total number of 392 completed suicide cases were recruited for the psychological autopsy study.

2.2 Informants interview

The Psychological Autopsy (PA) was applied to collect information of the suicide cases. The term psychological autopsy was first used by Shneidman (Pompili 2010). The method of PA, established by Robins and colleagues in 1959, is a data collection approach in suicide research and is well established in the West as the means for obtaining comprehensive retrospective information about victims of completed suicide (Robin, Murphy et al. 1959; Beskow, Runeson et al. 1990). The PA is focused on what is usually the missing element; namely, the intention of the deceased in relation to his own death (Pompili 2010). PA may be the only cost-effective way to study completed suicide and has been used for suicide of schizophrenic (Neuner, Mehlsteibl et al. 2010). PA is particularly critical in studying Chinese completed suicide because of two other culture-specific reasons: first, there is not yet in today's China a sophisticated medical examination system that could help find the

causes of a non-criminal death, and second there is no established mental health or hospital system, especially in the rural areas, which could let us know the victims' health problems recorded prior to the completed suicide.

In each selected county, completed suicides cases were enrolled and two informants (one family member and one friend) were interviewed to obtain the before death information. In order to greatest extent minimize the information bias; several measurements were taken, which are as following: suicide informants had to be 18 years of age or older and were selected with recommendations from the village head and the village doctor. Meanwhile, we tried to avoid as much as possible husbands or wives and the in-laws of those married suicides triggered by family disputes. Interviewing these people could result in very biased reports, if marital infidelity and family oppression were possible causes of suicide. Informant #1 was always a parent or spouse, or another important family member, and informant #2 was always a friend, co-worker, or a neighbor.

Upon their agreement on the written informed consent, the face to face structure interview was scheduled between two and six months after the suicide incident. Each informant was interviewed separately by one trained interviewer, in a private place of the hospital or the informant's home. We used tape-recording whenever accepted by the interviewee. The average time for each interview was about 2.5 hours.

The study received full approval by the ethics committees of several universities in China and USA, which were the cooperation institutes of this research project.

2.3 Measurements

Social demographic factors included age, gender, education, marital status, living alone, number of family members, status in family, personal annual income, relative poverty in village etc. Table 1 described the demographic characteristics of the suicides among the three different groups based on psychiatric diagnoses in this current study.

The clinical characteristics of the target suicide case, such as physical health status, serious chronic disease, previous suicide behaviors, family history of mental disorder, family history of physical disorder, and family history of suicide behavior were measured by the clinical characteristics scale of completed suicide.

Beck Hopelessness Scale (BHS), Landerman's Social Support Scale (DSSI) and Dickman's Impulsivity Inventory (DII) were applied to assess the suicides' hopelessness level, social support level and impulsivity level separately. Spielberger State-Trait Anxiety Inventory (STAI) was enlisted to measure the target persons' anxiety status. Depression is a major diagnosis among all types of mental disorders that occur before suicide. The Hamilton Depression Scale (HAMD) has been validated and proved to be an excellent measure of depression (Tang 1984), which was used to assess the target persons' depression mood. Suicide intents and suicide method of the completed suicide were appraised by the first 13 items of the Beck Suicide Intent Scale (SIS) (Beck, Schuyler et al. 1974). The negatively formulated items of the scales mentioned above were all reverse recoded before enter the process of analysis.

The Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) was applied to assess the psychiatric status of individuals. Using the data from informants, the clinical psychiatric diagnostic evaluations were implemented by two independent psychiatrists, so as to increase the validity of the final DSM-IV diagnosis.

In current study, the suicides were divided into three groups based on the subjects' psychiatric diagnosis: the group of the suicides with schizophrenia (Schizophrenia group), the group of suicides with other psychiatric disorder (Other psychiatric disorders group), and the group of suicides without a psychiatric disorder (None psychiatric disorders group).

2.4 Data analysis methods

The mean and standard deviation were used to describe the normal distribution quantitative data and Freq. (%) for qualitative data. Chi-square χ^2 test and analysis of variance (ANOVA) were used to compare difference of the qualitative and the numeric variables among three different groups based on psychiatric diagnosis separately. When the variances of numeric demographics variables were not equal, the Kruskal-Wallis test was used to compare the difference. Fisher's exact test was used to compare the difference of the distribution for qualitative data, when the application condition of Chi-square χ^2 was not accorded. LSD-t test and Chi-square segmentation method were respectively used to compare the difference of mean and frequency where $p < 0.05$ between any two groups.

The statistical significance determined was defined by $P < 0.05$, which was necessarily adjusted when compare between any two groups. The adjusted α was defined 0.05/4 that is 0.0125 in current study, when the Chi-square segmentation was used to compare any two groups. All analyses were 2 tailed analyses. SPSS for Windows software (Version 17.0) was performed in the analysis process.

3. Results

3.1 Demographic Characteristics

In the current study, there were 38 (9.7%) suicides with schizophrenia, 150 (38.3%) suicides with other psychiatric disorders and 204 (52.0%) suicides without a psychiatric disorder.

The demographic and personal characteristics were described in Table 1. There was no significant difference among three different groups suicides based on psychiatric diagnosis on education year, marital status, living alone, number of family members, status in family, personal annual income, relative poverty in village, and atheism variables listed in Table 1. However, there was significant difference among three different groups on age, gender variables.

LSD-t test indicated that the age of schizophrenia group (29.03 ± 5.59) was elder than none psychiatric disorders group (25.18 ± 6.36), $P < 0.001$; but there was no significant difference between schizophrenia group and other psychiatric disorders group, $P = 0.659$. There was significant difference on age variable between other psychiatric disorders group (28.53 ± 5.96) and none psychiatric disorders group (25.18 ± 6.36), $P < 0.001$.

There was significant difference among three different groups on gender variable, $P < 0.001$. Further Chi-square segmentation showed that the gender variable were significantly different between schizophrenia group and other psychiatric disorders group ($\chi^2 = 11.056$, $P = 0.001$), between other psychiatric disorders group and none psychiatric disorders group ($\chi^2 = 16.397$, $P < 0.001$). The differences were not significant between schizophrenia group and none psychiatric disorders group ($\chi^2 = 0.742$, $P = 0.389$).

Even now Chi-square test indicated that there were no significant difference among three groups on status in family variable ($\chi^2 = 9.238$, $P = 0.056$), further Chi-square segmentation showed that there was significant difference between other psychiatric disorders group and none psychiatric disorders group ($\chi^2 = 8.973$, $P = 0.012 < \text{Adjusted } \alpha$).

Most of suicides with schizophrenia were female 23 (60.5%). However, most of suicides with other psychiatric disorder were male 103 (68.7%). The gender ratio of suicides in none psychiatric disorders group was similar (Male, 47.1% VS Female, 52.9%).

3.2 Clinical Characteristics

Table 2 showed that there were no significant differences on the family history of physical disorder and family history of suicide behavior variables among three groups. There were significant differences among three groups on physical health, serious chronic disease, mental disorder, previous suicide behaviors, family history of mental disorder and relationship with community variables, with the statistical significance determined by $P < 0.05$. Table 2 still indicated that the hopelessness, social support, impulsivity, anxiety, depression and evaluation from interviewer clinical characteristics were different significantly among the three groups.

Chi-square segmentation method was used to compare the difference between any two groups. The result of Chi-square segmentation showed that schizophrenia group ($\chi^2 = 20.421$, $P < 0.001$) and other psychiatric disorders group ($\chi^2 = 27.565$, $P < 0.001$) both had poorer health status than none psychiatric disorders group. There was no significant differences between schizophrenia group and other psychiatric disorders group ($\chi^2 = 7.585$, $P = 0.108 > \text{Adjusted } \alpha$).

Though schizophrenia group ($\chi^2 = 24.071$, $P < 0.001$) and other psychiatric disorders group ($\chi^2 = 26.359$, $P < 0.001$) hold higher prevalence rate of serious chronic disease than none psychiatric disorders group, there was no significant difference between schizophrenia group and other psychiatric disorders group ($\chi^2 = 2.008$, $P = 0.156$).

Schizophrenia group (36.8%) and other psychiatric disorders group (27.3%) had more previous suicide behaviors than none psychiatric disorders group (12.3%), ($\chi^2 = 14.325$, $P < 0.001$; $\chi^2 = 12.957$, $P < 0.001$), but difference between schizophrenia group and other psychiatric disorders group was not found significantly ($\chi^2 = 1.325$, $P = 0.250$).

Schizophrenia group (27.0%) and other psychiatric disorders group (14.7%) both had higher family history of mental disorder than none psychiatric disorders group (8.4%), ($\chi^2 = 9.117$,

$P=0.003$; $\chi^2=28.211$, $P<0.001$), but there was no significant difference between schizophrenia group and other psychiatric disorders group ($\chi^2=3.197$, $P=0.074$).

Chi-square test indicated that there was no significant difference among three groups on family history of mental disorder ($\chi^2=3.357$, $P=0.187$), but further Chi-square segmentation showed that there was significant difference between schizophrenia group and none psychiatric disorders group ($\chi^2=9.117$, $P=0.003<\text{Adjusted } \alpha$).

Although as Table 2 showed, the community relationship of schizophrenia group was looked like more inhospitable than the other two groups, the further Chi-square segmentation result indicated that there was no significant differences between each two groups, all the P value larger than adjusted α . Meanwhile, the P value for schizophrenia group VS other psychiatric disorders group and other psychiatric disorders group VS none psychiatric disorders group were 0.032 and 0.015 respectively, which were near the value of adjusted α . That means though they were not significant in statistics, the differences may be practical significance.

LSD-t test indicated that schizophrenia group was more hopeless ($P=0.013$), lower social support ($P<0.001$), less impulsive ($P=0.004$), higher anxious ($P<0.001$), and more depressed ($P<0.001$) than none psychiatric disorders group. Other psychiatric disorders group was more hopeless ($P<0.001$), lower social support ($P<0.001$), less impulsive ($P=0.002$), higher anxious ($P<0.001$), and more depressed ($P<0.001$) than none psychiatric disorders group. However, the statistical significant difference not been found between schizophrenia group and other psychiatric disorders group on hopelessness, social support, impulsivity, anxiety and depression variables ($P>0.05$).

Based on the information provided by the informants, the interviewer evaluated the suicides' suicide behaviors before accident. There was difference among the three groups ($P=0.001$, two-tailed Fisher's exact test). Further Chi-square segmentation was applied to compare any two groups. Although the two-tailed Fisher's exact test ($P=0.017$) did not reach the adjusted statistical significance level $\alpha=0.0125$, showed in Table 2, the schizophrenia group (81.1%) expressed more serious suicide attempts than other psychiatric disorders groups (70.7%). The statistical results still indicated that there was significant difference between other psychiatric disorders group (70.7%) and none psychiatric disorders group (59.3%), ($P=0.002$, two-tailed Fisher's exact test), other psychiatric disorders group showed more serious suicide attempt than none psychiatric disorders group before completed suicide.

3.3 Method of Suicide

With respect to the method of suicide used, as showed in Table 3, there were significant difference among the three groups ($\chi^2=14.980$, $P=0.005$). Further Chi-square segmentation method indicated that schizophrenia group and other psychiatric disorders group were more inclined to violent suicide methods than none psychiatric disorders group ($\chi^2=9.557$, $P=0.006$, two-tailed Fisher's exact test; $\chi^2=141.680$, $P<0.001$, respectively). Estimated 15.8% schizophrenia group and 18.0% other psychiatric disorders group chose violent method, but not different significantly between the two groups ($\chi^2=1.571$, $P=0.456$).

But in terms of the difference on violent methods and no-violent methods alone, there were no significant difference among three groups ($P=0.503$, $P=0.062$, two-tailed Fisher's exact test, respectively).

A larger proportion of suicides chose hanging method as the primary violent method to suicide among three groups (10.5%, 13.3%, and 7.8 %, respectively). Pesticides method was the first choice as no-violent method to suicide among the three groups (44.7%, 62.7%, and 72.6 %, respectively).

3.4 Suicide Intent

Suicide intents of the completed suicide were appraised by the Beck Suicide Intent Scale (SIS). The suicide intents of three different groups based on psychiatric diagnoses was showed in Table 4. There were no significant differences on isolation (SIS-1), prevention behavior (SIS-3), posthumous papers (SIS-7) and total scores among three groups. There were significant differences on prevention of time (SIS-2), ask for help (SIS-4), arrange things after life (SIS-5), actively prepare to suicide (SIS-6), and explicitly mentioned suicide attempts (SIS-8).

Further LSD-t test indicated that there were no significant differences between schizophrenia group and other psychiatric disorders group on SIS-2, SIS-4, SIS-5, SIS-6, and SIS-8 (all $P>0.05$).

Difference between schizophrenia group and none psychiatric disorders group ($P=0.285$) was not significant on SIS-2, but other psychiatric disorders group was harder to be prevented on time than none psychiatric disorders group ($P=0.002$).

As to SIS-4, schizophrenia group was more inclined to ask for help than none psychiatric disorders group ($P=0.006$). There was no significant difference between other psychiatric disorders group and none psychiatric disorders group ($P=0.113$) on SIS-4.

For SIS-5, other psychiatric disorders group was more probability to arrange things after life than none psychiatric disorders group ($P=0.001$), but there was no significant difference between schizophrenia group and other psychiatric disorders group ($P=0.268$).

Be concerned SIS-6, there was no significant differences between schizophrenia group and none psychiatric disorders group ($P=0.478$), but the difference was significant between other psychiatric disorders group and none psychiatric disorders group ($P=0.001$), other psychiatric disorders group were more actively prepare to suicide than none psychiatric disorders group.

As far as SIS-8, they were significantly different between schizophrenia group and none psychiatric disorders group ($P=0.038$), other psychiatric disorders group and none psychiatric disorders group ($P<0.001$). Schizophrenia group and other psychiatric disorders group were more explicitly mentioned suicide attempts than none psychiatric disorders group.

4. Discussion

Schizophrenic is a serious mental disorder, and previous literature has reported that suicide was one of main cause of premature death for sufferers with schizophrenia and schizophrenic was major risk factor for complete suicide (Miles 1977; Caldwell and Gottesman 1990). There has been much literature on schizophrenic, but very little previous literature compared the characteristics of complete suicides with schizophrenia, with other diagnosed psychiatric disorder and without psychiatric disorders in rural China.

This study indicates that about 9.7% of all suicides suffered from schizophrenia in rural China. It is higher than what was found in the previous studies in the West, which reported that the lifetime risk of suicide was about 5% (Brian A. Palmer, V et al. 2005; Hor and Taylor 2010). However, it is close to the findings in Pompili's previous study (2007). Many previous studies indicated that young and male are the demographic risk factors for suicide in schizophrenia (Keith and Lesley 2005; Rogers and Fahy 2008), but current study indicated that female is the risk factor for suicide with schizophrenia in rural China, which were showed in Table 1. Though the difference on age variable was not statistical significant, the mean age of schizophrenic group was older than other psychiatric disorders group and none psychiatric disorders group. The current study revealed that the suicides with schizophrenia happen more among the elderly in rural China, which is opposite to the previous literate based on the West sample (Pompili, Amador et al. 2007; Pompili, Serafini et al. 2011). The inconsistent conclusions may be resulted from different research samples, different cultures, and different social surroundings, etc.

With respect to the clinical characteristics, there were not significant difference on almost all clinical characteristics variables between schizophrenia group and other psychiatric disorders group, but the difference between the two groups and none psychiatric disorders group were significant. The schizophrenia group and other psychiatric disorders group scored lower on physical health, mental disorder, scored higher on previous suicide behaviors, family history of mental disorder than none psychiatric disorders group, which indicated that those may be the specific risk factors to suicide individuals with psychiatric disorder. Those results are consistent with previous study (Ran, Xiang et al. 2005; Zhang and Zhou 2011). The result still showed that serious chronic disease less suffer the suicide individuals with psychiatric disorder than without psychiatric disorder, which implicated that the serious chronic disease may be the major reason to suicide for none psychiatric disorders group. Meanwhile, the schizophrenia group was more suffered by family history of physical disorder than none psychiatric disorders group. The reason maybe comes from the enormous economic pressure and mental stress with family member's long-term physical disease.

There were similar on the social and psychological variable, such as social support, hopelessness, impulsivity, anxiety and depression between schizophrenia group and other psychiatric disorders group. The suicides with psychiatric disorder were more hopeless, less social support, more anxious, and more depressed than none psychiatric disorders group. The results are also consistent with previous research, depression is a common symptom in schizophrenia (Radomsky, Haas et al. 1999) and hopelessness is the most important

predictor of suicide attempt and the key mediator between depression and suicide in patients with schizophrenia (Kim, Jayathilake et al. 2003), major depression, and other psychiatric disorders (Ran, Xiang et al. 2005). Less social support may be due to the socially isolated personality because of psychiatric disorder (Rogers and Fahy 2008; Zhornitsky, Rizkallah et al. 2012). These findings emphasize the need for careful assessment of those social and psychological predictors as a significant potential prevention strategy for suicides with psychiatric disorder.

It is worth noting that the comparisons on impulsivity among the three groups in current study. Reddy et al. (2013) reported that there was no difference between schizophrenia patients and healthy controls on impulsivity variable. Zhornitsky et al. (2012) found that impulsivity was significantly higher in non-abusing schizophrenia patients than healthy controls, while the present study indicated that the suicides with psychiatric disorder were less impulsivity than none psychiatric disorders group.

As to the suicide methods, the schizophrenia group and other psychiatric disorders group are more likely to use violent suicide methods than none psychiatric disorders group. But the main suicide methods of the three groups were both still non-violent suicide methods such as pesticides. Many researchers insisted that violence was a common stigma attached to schizophrenia; however, the vast majority of all violent individuals do not have serious mental illness. Although the media often focus upon the dangers that the mentally illness, those who do have schizophrenia most are not violent (Rogers and Fahy 2008).

Schizophrenia group was more inclined to ask for help and more explicitly mentioned suicide attempt than none psychiatric disorders group before completed suicide, but arrange things after life was not significant than none psychiatric disorders group. Those special characteristic implicated prevention strategy of suicide, the relatives and the guardians should pay close attention to the individual when he/she mention suicide attempts explicitly or ask you for help.

Other psychiatric disorders group often emerged the phenomenon as following before suicidal action: arrange things after life, actively prepare for suicide action such as search pesticides or hypnotics, explicitly mentioned suicide attempts. Simultaneously, other psychiatric disorders group was likely to suicide in the time that was hard to stop, for example at night or stay alone. If the scenes motioned above appear, which indicate that individual with other psychiatric disorder will commit suicide.

5. Conclusions

There has been little previous literature that reported the different characteristics among the suicides with schizophrenia, with other diagnosed psychiatric disorder and without psychiatric disorders in depth. This study compared the demographic characteristics, clinical characteristics, method of suicide and suicide intents of three groups.

The current study found being female was the risk factor for suicides with schizophrenia in rural China, which was opposite to the previous studies in the West. The suicides with psychiatric disorder scored higher on hopelessness, anxiety, and depression, but lower on

social support and impulsivity than suicides without psychiatric disorder. The suicides with psychiatric disorder were less impulsive than none psychiatric disorders group. The schizophrenia group did not show more violence than other psychiatric disorders group. The results indicated that each groups showed their unique characteristics. Different suicide preventive measurements should be taken according to the special characteristics of each group.

Limitations: One limitation of the study was the narrow range of sampling. The data for current study were obtained from rural China. Future studies on this research topic may be conducted in larger and more diverse samples, such as in urban China, in the West countries etc.

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Table 1

Comparing the Demographic Characteristics of the Suicides among Three Groups Different on Psychiatric Diagnoses

Demographic and Personal Characteristics	$\bar{X} \pm SD/\text{Freq.} (\%)$	(1) vs. (2)			(1) vs. (3)			(2) vs. (3)		
		Schizophrenia group (1) (n=38)	Other group (2) (n=150)	Non group (3) (n=204)	χ^2	<i>p</i> ^a	<i>t</i> / χ^2	<i>p</i> ^a	<i>t</i> / χ^2	<i>p</i> ^a
Age (year)	29.03±5.59	28.53±5.96	25.18±6.36		0.442	0.659	3.544	<0.001	5.071	<0.001
Gender					11.056	0.001	0.742	0.389	16.397	<0.001
Male (0)	15 (39.5%)	103 (68.7%)	96 (47.1%)							
Female (1)	23 (60.5%)	47 (31.3%)	108 (52.9%)							
Education (year)	7.97±3.44	7.13±2.93	7.46±2.49		1.685	0.093	1.045	0.297	-1.124	0.262
Marital Status					0.017	0.895	1.479	0.224	3.207	0.073
Never married (0)	14 (36.8%)	57 (38.0%)	97 (47.5%)							
Ever married (1)	24 (63.2%)	93 (62.0%)	107 (52.5%)							
Living Alone					0.158	0.691	0.570	0.450	0.247	0.619
No (0)	33 (86.8%)	136 (90.7%)	188 (92.2%)							
Yes (1)	5 (13.2%)	14 (9.3%)	16 (7.8%)							
Number of Family Members	4.05±1.39	3.83±1.65	3.74±1.24		0.849	0.396	1.238	0.216	0.597	0.550
Status in Family					1.105	0.576	0.708	0.702	8.973	0.012
High (1)	17 (44.7%)	61 (40.7%)	84 (41.4%)							
Middle (2)	16 (42.1%)	58 (38.7%)	99 (48.8%)							
Low (3)	5 (13.2%)	31 (20.7%)	20 (9.9%)							
Personal Annual Income (<i>Yuan</i>)	2832.43±6990.19	5234.25±6943.28	6424.37±18105.89		-0.938	0.349	-1.441	0.151	-0.783	0.434
Relative Poverty in Village										
Rich (1)	2 (5.3%)	12 (8.0%)	18 (8.8%)							
Average (2)	14 (36.8%)	61 (40.7%)	89 (43.6%)		0.687	0.709	1.578	0.454	0.500	0.779
Poor (3)	22 (57.9%)	77 (51.3%)	97 (47.5%)							
Atheism					3.024	0.082	2.785	0.095	0.039	0.844
No (0)	13 (34.2%)	31 (20.8%)	44 (21.7%)							
Yes (1)	25 (65.8%)	118 (79.2%)	159 (78.3%)							

Note:

^a Indicated that the adjusted significant level was 0.0125 when the Chi-square segmentation method was used.

Table 2
Comparing the Clinical Characteristics of the Suicides among the Three Groups Different on Psychiatric Diagnoses

Clinical Characteristics	$\bar{X} \pm SD/\text{Freq. (\%)}$		(1) vs.(2)		(1) vs. (3)		(2) vs. (3)		
	Schizophrenia group (1) (n=38)	Other group (2) (n=150)	Non group (3) (n=204)	t/χ^2	p^a	t/χ^2	p^a	t/χ^2	p^a
Physical Health				7.585	0.108	17.916	<0.001	85.622	<0.001
Poor (1)	14 (36.8%)	46 (30.7%)	28 (13.7%)						
Average (2)	10 (26.3%)	37 (24.7%)	31 (15.2%)						
Good (3)	14 (36.8%)	67 (44.7%)	145 (71.1%)						
Serious Chronic Disease				2.008	0.156	24.071	<0.001	26.359	<0.001
No (0)	15 (39.5%)	78 (52.3%)	159 (78.3%)						
Yes (1)	23 (60.5%)	71 (47.7%)	44 (21.7%)						
Mental Disorder (Self-Report)				59.758	<0.001	186.212	<0.001	43.931	<0.001
No (0)	0 (.0%)	104 (69.8%)	194 (95.6%)						
Yes (1)	38 (100.0%)	45 (30.2%)	9 (4.4%)						
Previous Suicide Behaviors				1.325	0.250	14.325	<0.001	12.957	<0.001
No (0)	24 (63.2%)	109 (72.7%)	179 (87.7%)						
Yes (1)	14 (36.8%)	41 (27.3%)	25 (12.3%)						
Family History of Mental Disorder				3.197	0.074	9.117	0.003	28.211	<0.001
No (0)	27 (73.0%)	128 (85.3%)	186 (91.6%)						
Yes (1)	10 (27.0%)	22 (14.7%)	17 (8.4%)						
Family History of Physical Disorder				3.197	0.074	9.117	0.003	3.475	0.062
No (0)	28 (75.7%)	92 (61.3%)	138 (68.0%)						
Yes (1)	9 (24.3%)	58 (38.7%)	65 (32.0%)						
Family History of Suicide Behavior				0.433	0.511	0.097	0.755	0.394	0.530
No (0)	30 (81.1%)	114 (76.0%)	160 (78.8%)						
Yes (1)	7 (18.9%)	36 (24.0%)	43 (21.2%)						
Relationship with Community				6.896	0.032	1.866	0.393	8.394	0.014
Not close (1)	2 (5.3%)	14 (9.3%)	8 (3.9%)						
Average (2)	21 (55.3%)	48 (32.0%)	91 (44.6%)						
Close (3)	15 (39.5%)	88 (58.7%)	105 (51.5%)						
Hopelessness	71.27±11.74	73.99±13.72	65.52±12.35	-0.809	0.250	2.504	0.013	6.105	<0.001

Clinical Characteristics	$\bar{X} \pm SD/Freq. (\%)$	(1) vs. (2)				(1) vs. (3)			
		Other group (2) (n=150)	Non group (3) (n=204)	t/χ^2	p^a	t/χ^2	p^a	t/χ^2	p^a
Schizophrenia group (1) (n=38)									
Social Support	18.61±4.00	19.62±4.11	21.50±4.26	-1.258	0.209	-3.685	<0.001	-4.129	<0.001
Impulsivity	16.36±5.33	17.47±6.64	19.63±6.11	-0.953	0.341	-2.884	0.004	-3.165	0.002
Anxiety	57.14±10.90	57.93±10.45	49.24±8.72	-0.451	0.652	4.580	<0.001	8.355	<0.001
Depression	23.42±15.29	24.02±14.12	6.59±6.99	-0.293	0.770	8.393	<0.001	14.551	<0.001
Evaluation From Interviewer.									
Non-suicidal (1)	6 (16.2%)	13 (8.7%)	49 (24.0%)	10.652 ^b	0.017	8.938 ^b	0.052	15.648 ^b	0.002
Suicidal ideation (2)	0 (0.0%)	25 (16.7%)	25 (12.3%)						
Suicidal threat (3)	1 (2.7%)	5 (3.3%)	8 (3.9%)						
Mild attempt (4)	0 (0.0%)	1 (0.7%)	1 (0.5%)						
Serious attempt (5)	30 (81.1%)	106 (70.7%)	121 (59.3%)						

Note:

^a indicated that the adjusted significant level was 0.0125 when the Chi-square segmentation method was used.

^b It is indicated that Fisher's exact test was used.

Table 3

Suicide Methods among the Three Groups Different on Psychiatric Diagnoses

Suicide Methods	Freq. (%)		Non group (3) (n=204)	χ^2	P	(1) vs. (2)		(1) vs. (3)		(2) vs. (3)	
	Schizophrenia group (1) (n=38)	Other group (2) (n=150)				χ^2	P ^a	χ^2	P ^a	χ^2	P ^a
Violent Methods	6 (15.8%)	27 (18.0%)	19 (9.3%)	7.248 ^b	0.503	2.213 ^b	0.693	2.178 ^b	0.432	3.647 ^b	0.481
Wrist cutting	0 (0.0%)	2 (1.3%)	0 (0.0%)								
Hanging	4 (10.5%)	20 (13.3%)	16 (7.8 %)								
Jumping	2 (5.3%)	3 (2.0%)	2 (1.0%)								
Electronic	0 (0.0%)	0 (0.0%)	1 (0.5%)								
Railway	0 (0.0%)	2 (1.3%)	0 (0.0%)								
Non-violent Methods	27 (71.1%)	113 (75.3%)	180 (88.2%)	15.908 ^b	0.062	7.472 ^b	0.075	10.801 ^b	0.016	4.329 ^b	0.508
Pesticides	17 (44.7%)	94 (62.7%)	148 (72.6%)								
Other Poison	2 (5.3%)	6 (4.00%)	17 (8.3%)								
Drowning	5 (13.2%)	8 (5.3%)	9 (4.4%)								
Overdose	3 (7.9%)	4 (2.7%)	5 (2.5%)								
Gas	0 (0.0 %)	0 (0.0%)	1 (0.5%)								
Suffocation	0 (0.0 %)	1 (0.7%)	0 (0.00%)								
Other Methods/Don't know	5 (13.2%)	10 (6.7 %)	5 (2.5 %)	7.948	0.019	0.968	0.325	6.764	0.009	3.786	0.052
Total	38	150	204	14.980	0.005	1.571 ^b	0.456	9.557 ^b	0.006	141.680	<0.001

Note:

^a Indicated that the adjusted significant level was 0.0125 when the Chi-square segmentation method was used.^b It is indicated that Fisher's exact test was used.

Table 4

Comparing Suicide Intents among the Three Groups Different on Psychiatric Diagnoses

Suicide Intents	$\bar{X} \pm SD$	(1) vs. (2)				(1) vs. (3)				(2) vs. (3)			
		Schizophrenia group (1) (n=38)		Other group (2) (n=150)		Non group (3) (n=204)		t		P		t	
Isolation (SIS-1)	1.84 ± 0.374	1.77 ± 0.536		1.66 ± 0.603		0.689		0.489		1.780		0.077	
Prevention of Time (SIS-2)	1.32 ± 0.747	1.43 ± 0.727		1.18 ± 0.752		-1.802		0.424		1.068		0.285	
Prevention Behavior (SIS-3)	0.95 ± 0.848	1.04 ± 0.826		0.95 ± 0.754		-0.648		0.518		0.036		0.972	
Ask for Help (SIS-4)	1.46 ± 0.869	1.68 ± 0.710		1.79 ± 0.587		-1.787		0.075		-2.798		0.006	
Arrange Things after Life (SIS-5)	0.51 ± 0.731	0.67 ± 0.825		0.39 ± 0.697		-1.109		0.268		0.925		0.355	
Actively Prepare to Suicide (SIS-6)	0.89 ± 0.809	1.13 ± 0.825		0.79 ± 0.828		-1.596		0.112		0.710		0.478	
Posthumous Papers (SIS-7)	0.30 ± 0.702	0.51 ± 0.865		0.54 ± 0.886		-1.323		0.187		-1.591		0.113	
Explicitly Mentioned Suicide Attempts (SIS-8)	0.73 ± 0.902	0.85 ± 0.893		0.43 ± 0.738		-0.827		0.410		2.082		0.038	
Total Scores	8.00 ± 3.091	9.07 ± 3.332		8.17 ± 6.792		-1.082		0.280		-0.179		0.858	
												1.546	
												0.123	