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Suicides and Medically Serious Attempters Are of the Same Population in Chinese Rural Young Adults¹

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Abstract

Background—Suicide rates in China are among the highest in the world, although there has been a decreasing trend in the past few years. One practical approach to study the characteristics and risk factors of suicide is to interview the suicide attempters.

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Conflict of Interest

All the authors declare that they have no conflicts of interest.

Contributor

Jie Zhang designed the study and wrote the manuscript. Long Sun did the statistical work. Yeates Conwell, Ping Qin and Xin-Ming Tu reviewed this study and gave some suggestions. Cun-Xian Jia and Shuiyuan Xiao take the responsibility for the data collection. All authors have approved the final article.

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Aims—It was to compare completed suicides with serious attempters that may shed lights on suicide prevention strategies.

Method—This is a combination of two case control studies for suicide completers and suicide attempters respectively. After a sample of suicides (n=392) and community living controls (n=416) were obtained and studied in rural China, we collected in the same rural areas data of suicide attempt and studied 507 medically serious attempters and 503 community counterparts.

Results—Characteristics and previously observed risk factors were compared between the suicides and the attempters, and we found that the demographic characteristics and risk factors for the suicides were also for the medically serious attempters but at some lesser degrees for the attempters than for the suicides. It was especially true of suicide intent, deficient coping, negative life events, and impulsivity. While most of the demographic characteristics were not significantly different between the suicides and the attempters, most of the clinical variables could distinguish the two groups.

Conclusions—The suicide victims and the serious attempters could be of the same group of people who were at the edge of fatal self-injury, and the same clinical risk factors but of different degrees have divided them into the life and death groups.

Keywords

Suicide; Suicide attempt; China; Rural; Young Adults; Risk factors

For every suicide there are many more people who attempt suicide, and the ratio of suicide attempters to the suicide deaths can be as high as 20 to 1 in the world (Maris et al., 2000). The number of suicide attempts that require emergency medical treatment is about 9 to one suicide death (Crosby et al., 2011). An earlier estimate of the ratio for China is about seven suicide attempters to one suicide death (CDC, 2004). Prior suicide attempt is the single most important risk factor for suicide in the general population (World Health Organization, 2014). An understanding of the differences between the two groups will help us develop better prevention measures. For both suicide and suicide attempt, improved availability and quality of data from vital registration, hospital-based systems, and well-designed surveys are required for effective suicide prevention. This study with such sophisticated data collection aimed to compare such samples in order to identify the relations between suicide and medically serious suicide attempt in the rural young populations in China. Relatively to the research on suicide completers and on suicide attempters, the relations of the two have been understudied. In a longitudinal and population-representative study involving 1,037 birth cohort members, researchers found that many people who attempted suicide before 24 years of age remained vulnerable to costly health and social problems into midlife (Goldman-Mellor et al., 2014). In her study of the samples from New Zealand, Beautrais (2001) found that suicides and serious attempters were from two highly overlapping but different populations. Fushimi, Sugawara, and Saito (2006) with their study in Japan supported the concept that the completed and attempted suicide groups were essentially of a different nature. In another study from Finland, Uribe and colleagues (2013) found that suicide completers were less likely to be treated by mental health services than suicide attempters and suggested that prevention programs be tailored to the specific profile of suicide

completers. In illustrating the fact that suicide attempters and completers represented different but overlapping groups of distressed individuals, DeJong, Overholser, and Stockmeier (2010) identified several similarities and differences between suicide attempters and suicide completers from a US sample.

In a systematic study comparing suicides and medically serious attempters conducted in New Zealand for individuals under 25 years of age, three groups were examined: suicide completers, suicide attempters, and non-suicidal community controls. Suicides were found to be characterized by male gender, less education, depression, history of mental problems, and negative life events. Similar risk factors, except for gender, were associated with serious suicide attempters. It was concluded that same risk factors play a similar role in suicide and serious suicide attempt (Beautrais, 2003). As to date, no comparisons have been addressed between the Chinese suicides and the suicide attempters. As the Chinese rural youths, especially the Chinese rural young women, were at the highest risk of suicide (Phillips et al., 2002a; Zhang et al., 2011a), we chose to study this group of Chinese in order to identify the risk factors for both suicide and suicide attempt. Further, studying the relations between suicide completers and suicide attempters may lead us to better prevention measures in the future. Based on the literature reviewed for Western cultures, it is hypothesized that some similar risk factors are associated with the Chinese suicides and serious attempters, and the degree (strength) of the risk factors distinguish the suicide completers from the attempters. Intervention and treatments for the suicide attempters by possibly lowering the observed risk factors is critical in saving lives that could be lost to suicide.

Methods

Sampling and Implementation of the Data Collection

This study was designed to compare suicide completers and suicide attempters from the same Chinese population. To exclude the compound variables such as local sub-culture, economic development, geo-climate, and language, we confined our data collection in the same areas for the two projects. We targeted on the same age cohorts in rural China, employed the same research teams, and used the same instruments for measurement in the two projects.

For the first of the two sequent projects, data of suicide completers were obtained with the psychological autopsy (PA) method in 16 rural counties from three provinces (Shandong, Hunan, and Liaoning) of China. The total number of suicides was 392 (214 men and 178 women), and the total number of community living controls was 416 (202 men and 214 women). Both the suicides and controls were selected between 15 and 34 years of age. While the suicides were consecutively sampled from all the villages in the 16 counties, the living controls were systematically and randomly selected from each of the 16 counties and approximately matching the number of suicides in each county.

Two informants were interviewed for each of the 392 suicides and each of the 416 living controls. The details for the application of the psychological autopsy (PA) method and the proxy data can be found in the authors' previous publications such as those by Zhang, Xiao, and Zhou (2010b) and by Zhang, Wiecezorek, Conwell, Tu, Wu, Xiao, and Jia (2010a). For

this current study in comparison with the suicide attempt data, the PA data were streamlined to 373 suicides and 412 controls by taking out those cases that had 10% or more missing data. The mean substitution or alternative was used for the cases that had less than 10% missing data.

For the second of the two sequent projects, data of suicide attempters were obtained from the attempters themselves and the age, gender, and location matched community controls, from the same 16 rural counties from the three provinces of China. In each of the rural counties, hospital emergency departments were connected and village doctors were networked to notify the research teams in each province the suicide attempt victims on monthly basis. The enrollment of cases was limited only to those victims whose injury and wounds were so serious as to require hospitalization or immediate medical care. Interviews with the suicide attempters were usually conducted either in the emergency room after the victim felt like talking or the home of the victim a few days later. For those victims who were too weak to talk, family members who were with the victims assisted in the interview by answering some of the questions on the protocol.

The community controls were systematically and randomly selected from the same areas of the attempt victims, and roughly matched for their age and gender. The controls were interviewed with the same instruments and by the same interview team.

The interview teams were well trained for the suicide attempt study as well as for the previous PA study. The IRB approvals from both the Chinese institutions and the US based university where the Principal Investigator is affiliated ensured the human subjects protection and the ethical methodology regulated by the NIMH which funded the projects.

While the original goal of the enrollment was 800 suicide attempt victims and 800 community controls, we sampled about 1,000 suicide attempters within the time period designated for the data collection. The final sample of suicide attempters that completed the study and were entered into the data file was 792. For this current study, we used 507 suicide attempters and 503 community controls to match the age range (15–34 years) of the completed suicides sample. With a systematic random sampling approach, we recruited the same number of community controls based on the age, gender, and location of the suicide attempters. The relatively high response rate for the suicide attempters was due to the administrative efforts, cooperation of the patients, and the human subjects protection measures. Informed consent was obtained from each of the participants (suicide attempters and community controls) before the interview. The high percentages of response rates made the rigorous study even stronger in terms of the sample representation and the validity of the sampling.

Instruments and Recoded Measurements

The same instruments were employed in the two sequential studies and for all the four samples: suicides, living controls for the suicides, attempters, and community controls for the attempters. Following are the descriptions of how the questions were designed and how they were recoded for this study.

Gender was measured by male (1) and female (0). The age ranged from 15 to 34 years for both case and control groups. Education years ranged from 0 to 17 years for the cases and 0 to 20 years for the controls. Marital status was dichotomized as “never married (0)” and “ever married (1)” with the latter including those who were divorced, separated, or widowed. Those unmarried were asked whether they were dating or in a love relationship. In the traditional rural society of China, most boys or girls in love and dating are likely to be socially and psychologically bond like marriage. Therefore in this study the category of never married included only those who have never married and not currently in love. Social economic status (SES) was measured by an item which asked respondents for their self-evaluated economic status in comparison with other people in the village. The choices ranged 1 (very good), 2 (good), 3 (average), 4 (bad) and 5 (very bad). While (1) through (3) were recoded to high SES (0), (4) and (5) were recoded to low SES (1). Living alone was measured by yes (1) and no (0). Occupation was measured by farmer (peasant), businessman, public service staff, student, factory worker, rural doctor, teacher, housewife, unemployed and others. As most responses were peasants, they were recoded to peasants (1) and not peasants (0).

There were four items in the protocol to assess religious belief of the cases and controls. The first asked what religion the target person believed in, and the choices were Taoism, Muslim, Christianity, Catholics, Buddhism, others, and no religion. The second item asked about how many times in an average month the target person attended religious events. Item number three asked if the target person believed in God. The final question was to know whether the target person believed in “afterlife.” The variable of religious belief was recoded to “yes (1)” with any positive responses from the four items and “no (0)” with all negative responses. Physical disease was assessed with an item asking if they had any physical illness at the time of interview. Pesticide at home was assessed with a single item asking if any type of farming chemicals was stored at home. Family suicide history was measured by an item asking if their family members had died of suicide before.

A 64-item revised version of Interview for Recent Life Events (IRLE) including 19 culturally (Chinese) specific items added by the research team was used to measure the number of life events that happened in the past 12 months before suicide incidence or the interview for the controls (Paykel et al., 1971). The respondents were also asked if the mentioned life event was a positive or negative one for the target person, and only the number of negative life events (NLEs) was counted for negative life events in the analysis (Zhang and Ma, 2012). The Beck Hopelessness Scale (BHS) has 20 items and each of them was assessed by 5 choices from 1 (strongly disagree) to 5 (strongly agree) (Beck, 1978). The total score was used in the analyses. The Chinese version of BHS has been validated with a number of Chinese samples and proved to be an excellent measure of hopelessness in general Chinese populations (Cheung et al., 2006; Kong et al., 2007). Social support was measured by the social interaction sub-scale from the Duke Social Support Index (DSSI). This sub-scale has 4 items and the choices ranges from 1 (no-body) to 3 (5 people or more) and the total score was used in the analyses. The Chinese version of the scale had been validated in the earlier study (Jia and Zhang, 2012). Impulsivity was measured by the Dickman Impulsivity Inventory (DII) which has 23 items and each of them was assessed by 2 choices from 0 (No) to 1 (Yes) (Dickman, 1990). The Chinese version of the DII had been

validated in some previous studies (Gao et al., 2011). Anxiety was estimated by the Spielberger's Trait-Anxiety Inventory (STAI) scale which has 20 items and each of them was assessed by 4 choices from 1 (never) to 4 (always) (Spielberger et al., 1983). The Chinese version of STAI has been tested and the validation was sound in general Chinese populations (Li et al., 2008; Shek, 1993; Zhang and Gao, 2012). Coping skills was estimated by the approach coping sub-scale from the 48-item Coping Response Inventory (CRI) (Moos et al., 1990). The sub-scale has 24 items and each of them was assessed by 4 choices from 0 (never) to 3 (always). The total score was used in the analyses with higher score indicating better coping skills. It has been tested multiple times in rural Chinese populations with excellent reliability and validity (Li and Zhang, 2012; Zhang et al., 2011c).

We used the Chinese version of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (SCID) (Spitzer et al., 1988) to generate diagnoses for both cases and controls. Diagnoses were made by the psychiatrists with the written information obtained by the trained interviewers for each suicide attempt and each community control. The Chinese version of the SCID was provided by the Department of Psychiatry of Kaohsiung Medical College in Taiwan (Gu and Chen, 1993), and permission to use the work had been obtained. This Chinese version of the SCID has been used in Chinese populations in many areas including Taiwan, Hong Kong, Macau, as well as mainland China for the past few decades (Lyu and Zhang, 2014). A total of 27 Axis I mental diseases was detected by the SCID with the case and control samples, and we used the dichotomous diagnosis for each of them with 1 (yes) and 0 (no).

Prior suicide act was estimated by an item which asked about the number of suicide attempts before. Any non-zero response was counted as yes. Suicide intent was measured by Beck's Suicidal Intention Scale (SIS) (Beck et al., 1974). We used the first 8 items of the scale with a score from 0 to 2 on each. The Chinese version of SIS had been approved to be a measure as good as the Kessler's scale of suicide ideation, plans, gestures, and attempts (Kessler et al., 2005) and has sound reliability and validity which has been illustrated in a previous study (Zhang and Jia, 2011). Suicide method was the primary method used for the suicide death or for the suicide attempt. The cases were also asked if they had ever received any treatment for mental illness, and it was measured by 1 (yes) and 0 (no).

Statistical Methods

SPSS for Windows (version 21.0) was used for data analysis. T-tests or Chi-square tests were used to compare the difference on categorical and continuous variables across groups. Logistic Regression Analysis was performed to examine the factors related to completed or attempted suicide. All of the factors were chosen as the independent variables. All tests were two-tailed and a p value of <0.05 was considered statistically significant.

Findings

A comprehensive analysis for this study includes (1) a summary of the findings in the previous PS study in terms of the risk factors for the suicide completers, (2) comparing the correlates between the suicide completers and suicide attempters, and (3) rank ordering the risk factors for suicides, attempters, and community controls.

The risk factors for completed suicide have been previously reported from the sample of Chinese rural young people (Zhang et al., 2004; Zhang et al., 2011b). Here is a summary for current readers. Mental disorders including major depression were found in 47.5% of the suicide completers and could be taken as the strongest correlate of the Chinese suicide among all other risk factors, although the percentage was much smaller than those found in the West (Zhang et al., 2010b). Hopelessness (Kong et al., 2007) and impulsivity (Gao et al., 2011; Zhang and Lin, 2014) were both risk factors of suicide as found in the West (Beck et al., 1993; Fergusson et al., 2000; Swann et al., 2005). For the social structural influences, social support was a protective factor (Lyu and Zhang, 2014) as found elsewhere in the world (Thoits, 1986), but being married (Zhang et al., 2010b) and religious belief (Zhang and Xu, 2007) were correlates (Kraemer et al., 1997) which were starkly different from the evidence in the West (Stack, 1983, 1998). Further, less education, low SES, family suicide history, negative life events, and deficient coping were also found to be significantly associated with an increased risk of suicide among those rural young residents in China (Jia and Zhang, 2011; Kong and Zhang, 2010; Li and Zhang, 2012; Liu and Tein, 2005; Zhang and Ma, 2012) (Please review the information in Table 1 and Table 2).

As can be seen in Table 1, the risk factors for the suicides were also risk factors for the attempters, with an exception for several demographic variables such as gender, living alone, occupation, religion, and pesticide at home. All the clinical variables were significantly associated with completed suicide and attempted suicide, although with lesser strengths for the attempters than for the completers.

The mental disorder prevalence (47.5% of the suicides and 18.3% of the attempters), although lower than what can be found in the West, remained the strongest predictor of both completed suicide and attempted suicide. Obviously many other non-psychiatric factors also explain the variance in the Chinese suicide and suicide attempt.

Comparing the suicides and attempters on the clinical conditions, we found that the suicide completers (17.4%) had experienced more suicide acts than the attempters (8.9%) had. The completers were more likely to employ lethal means such as hanging (9.7% vs. 0.2%) and drowning (5.9% vs. 0.6%) in the acts than the attempters, and they (37.9%) had more often received psychiatric treatments than the attempters (28.0%). More significantly, the completers (8.22, $sd=3.28$) had much stronger intent for suicide than the attempters (4.30, $sd=2.52$) (see Table 3).

All the variables were further analyzed in multiple logistic regression models with completed suicides vs. the combined control group in Model 1, attempted suicides vs. the combined control group in Model 2, suicides vs. attempters without certain clinical conditions in Model 3, and suicides vs. attempters with the clinical conditions such as prior suicide acts and suicide intent. The concerned risk factors were still significantly associated with suicide and suicide attempt with all other risk factors held constant in the same model (see Table 2). In Model 1 for completed suicide, education is a protective factor for suicide, low SES is a risk factor, peasants were more likely than non-peasants to die of suicide, and also were family suicide history, negative life events, hopelessness, impulsivity, deficient coping, as well as mental disorders. In comparison with Model 2, exactly the same risk

factors were identified in both completer and attempter models, except for gender, being married, impulsivity, and anxiety.

Model 3 and Model 4 were both for the comparison between suicides and attempters with completed suicide being predicted. The majority of the demographic variables did not distinguish the suicide attempters from the completers, but marital status did. Married people attempted but were less likely to die of suicide than non-married people. Suicide completers had more family members who die of suicide and more negative life events than the suicide attempters. Although pesticides were more likely to be found in the home of the suicides than in the home of attempters, the former did not use pesticides in the suicidal acts more than the latter. The completers were more impulsive but less able to cope with difficulties than the attempters. Also, the suicides scored much higher than the attempters on suicide intent. It is also noted that mental disorders did not distinguish suicide attempters from the completers, either.

The community living controls for both the suicides and the attempters were combined into one group and then compared with the two victim groups. For almost all the risk factors, a clear ranking order was observed, with the suicide group on the top, the attempt group following, and the control group at the bottom of the ranking. Figure 1 shows the distribution of selected risk factors across the three groups of population. It is evidenced that suicide attempters are a group of people in between suicide completers and the general populations.

Discussion and Conclusion

This is a study focusing on medically serious suicide attempters in comparison with suicide completers of the same age range (15–34 years) from the same geographic areas of China. The primary purpose is to identify the similarities and differences in the correlates for the two groups of young people in rural China. The study shows that most if not all variables identified for suicide completers were also seen for the suicide attempters. Relatively to the general populations of the same age cohorts in the same rural areas of China (community controls), the suicide attempters are at risks of suicide but for lower degree than the suicide completers. Therefore, for the Chinese rural young people, suicides and medically serious attempters are of the same population with differential degrees of risk factors.

For most of the demographic variables, there was no significant difference between suicide completers and suicide attempters. The suicides and the attempters are more likely to be from the same population than otherwise. They also share the same clinical risk factors of the self-harm behaviors, although at different degrees.

Most of the correlates for suicide and suicidal behaviors are universal, such as gender, a fixed marker (Kraemer et al., 1997). Males are more likely to die of suicide than females in the world (World Health Organization, 2001), although the gender ratio for the Chinese men and women is very close to 1. On the other hand, females are more likely to attempt suicide than males (Bertolote et al., 2005). Family suicide history (Qin et al., 2002), negative life events (Weyrauch et al., 2001), hopelessness (Dyer and Kreitman, 1984), impulsivity

(Swann et al., 2005), deficient coping skills (Koenig et al., 1992), and mental disorders are all risk factors for suicide and suicide attempt both in the West and in China.

Certain social factors which are protective for suicide in the West have been proved to not protective or even risk factors in Chinese culture, such as marriage (Cutright et al., 2007) and religion (Dervic et al., 2004; Stack, 1992). Being married is not a protective but a risk factor of suicide for Chinese rural young women and it has been approved in earlier studies with the Chinese suicide data (Zhang, 2010). Believing in a religion not protecting Chinese from suicide has also been studied in our earlier data (Zhang and Liu, 2012; Zhang and Xu, 2007). These two correlates uniquely observed in the Chinese suicide completers can also be applied to the Chinese suicide attempters.

In this attempt data, we have found the same patterns. As only less than 10% of the Chinese general populations claim themselves religious (Yang, 2006), believing in a religion is considered to be a deviant behavior. Some rural people became religious after encountering difficulties or misfortunes in life and hoped to resort to religion and the church for comfort and solution of the problems, and similar observation was made in the Chinese community in Taiwan (Liu et al., 2011). However, this hypothesis needs to be further studied to fully understand the positive correlation between suicide/suicide attempt and religion in China.

Marriage is not a protective factor for suicide attempt among the Chinese rural youths, and this is particular true for rural young women. Being married in rural China might have limited a young woman's socialization. In the traditional Confucian ideology regarding gender, a woman, especially those in rural areas, is expected to stay at home to take care of the elderly in-laws, her husband and children, and abide by her man. Lack of social support coupled with the relational tension with the mother-in-law generally increases the risk for suicide, especially when a life crisis or inner frustration takes place and then the people who may be able to help are not available (Zhang, 2010).

While over 50% of suicides in the United States happened with firearms (Conwell et al., 2002; De Moore and Robertson, 1999; Klieve et al., 2009), more than 60–70% of the Chinese rural young suicides employed pesticides (Phillips et al., 2002b). This can be explained by the unavailability of private guns in China. Then, the most lethal means of suicide in rural China is hanging, followed by drowning. Also according to our comparative data, pesticide swallowing is not as lethal as hanging and drowning in rural China, as higher percentage of pesticide users was found in the suicide attempters than in the suicide completers. Nonetheless, suicide prevention in rural China still has to include restricting access to lethal methods as well as physician education in depression recognition and treatment (Mann et al., 2005).

The only real difference between the suicides and the attempters in our study might be found in the degree of their suicide intent: 8.22 ± 3.28 for the suicides vs. 4.30 ± 2.52 for the attempters. Because of this, the completers had tried more times than the attempters, and are more likely to employ very lethal means such as hanging and drowning to kill themselves. The stronger suicide intent for the completers than for the attempters can be explained by the factors that existed in social structure and had negative impact on certain individuals. Future

research on suicide etiology may have to focus on the social variables that precede suicide intent, such as certain negative life events that could result in psychological strains (Zhang et al., 2011c). Studying what happened to those individuals before they had suicide intent is an upstream prevention approach.

Findings in this research echo those found in previous studies comparing completed suicides, medically serious attempters of suicide, and non-suicidal community controls, as in the study conducted in New Zealand (Beautrais, 2001). Similar correlates, except for gender, were found to be associated with both serious suicide attempters and completed suicides. Same variables play a similar role in suicide and serious suicide attempt among the Chinese rural youths, and similar patterns can be found in the Western studies. Therefore, suicides and medically serious attempters are of the same population in Chinese rural young populations, and suicide prevention measures in rural China may have to be implemented at the selective or even universal level of efforts.

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Figure 1.

Visual Comparisons for Completed Suicides, Attempted Suicides, and Community Controls

Table 1

Comparing the Demographics and Characteristics between the Samples

	Mean $\pm$ SD/f (%)	Attempters (N=507)	Controls (N=915)	χ^2	A vs. C	S vs. A
Gender	Suicides (N=373)					
Male	200 (53.6)	205 (40.4)	405 (44.3)	9.314**	1.952	15.040***
Female	173 (46.4)	302 (59.6)	510 (55.7)			
Age						
-	26.39 $\pm$ 6.11	26.72 $\pm$ 5.31	26.24 $\pm$ 5.67	0.410	1.567	-0.868
Education years						
-	7.43 $\pm$ 2.79	7.81 $\pm$ 2.90	9.49 $\pm$ 2.96	-11.545***	-10.348***	-1.961*
Marital status						
Never married	122 (32.7)	75 (14.8)	181 (19.8)	24.610***	5.500*	39.695***
Ever married	251 (67.3)	432 (85.2)	734 (80.2)			
Social economic status						
High (SES)	189 (50.7)	378 (74.6)	811 (88.6)	219.983***	47.190***	53.501***
Low (SES)	184 (49.3)	129 (25.4)	104 (11.4)			
Living alone						
Yes	34 (9.1)	20 (3.9)	40 (4.4)	11.011**	0.147	9.975**
No	339 (90.9)	487 (96.1)	875 (95.6)			
Occupation						
Peasants	187 (50.1)	287 (56.6)	554 (60.5)	11.758**	2.095	3.624
Not Peasants	186 (49.9)	220 (43.4)	361 (39.5)			
Religious belief						
Yes	108 (29.0)	103 (20.3)	150 (16.4)	26.100***	3.431	8.798**
No	265 (71.0)	404 (79.7)	765 (83.6)			
Physical disease						
Yes	133 (35.7)	74 (14.6)	82 (9.0)	135.791***	10.602**	52.988***
No	240 (64.3)	433 (85.4)	833 (91.0)			
Pesticide at home						

	Mean $\pm$ SD/f (%)	Attempters (N=507)	Controls (N=915)	χ^2/t	A vs. C	S vs. A
Suicides (N=373)						
Yes	284 (76.1)	293 (57.8)	519 (56.7)	42.560***	0.152	32.047***
No	89 (23.9)	214 (42.2)	396 (43.3)			
Family suicide history						
Yes	83 (22.3)	42 (8.3)	23 (2.5)	136.692***	24.902***	34.404***
No	290 (77.7)	465 (91.7)	892 (97.5)			
Negative life events						
-	3.34 $\pm$ 2.33	1.88 $\pm$ 1.91	0.82 $\pm$ 1.27	24.837***	12.526***	10.175***
Hopelessness						
-	69.14 $\pm$ 13.45	52.74 $\pm$ 15.14	42.17 $\pm$ 10.45	38.533***	15.486***	16.646***
Social support						
-	6.28 $\pm$ 1.88	7.72 $\pm$ 2.18	8.45 $\pm$ 1.98	-18.099***	-6.451***	-10.222***
Impulsivity						
-	13.98 $\pm$ 5.65	10.46 $\pm$ 4.29	10.19 $\pm$ 3.84	13.870***	1.196	10.501***
Anxiety						
-	53.18 $\pm$ 10.44	41.50 $\pm$ 11.06	37.72 $\pm$ 7.73	29.265***	7.522***	15.862***
Coping						
-	21.42 $\pm$ 12.77	39.69 $\pm$ 12.69	44.61 $\pm$ 11.42	-31.915***	-5.435***	-20.452***
Mental disorder						
Yes	177 (47.5)	93 (18.3)	29 (3.2)	386.758***	95.767***	85.622***
No	196 (52.5)	414 (81.7)	886 (96.8)			

Note:

p<0.001;**
p<0.01;*
p<0.05.

S=Suicides, A=Attempters and C= Controls.

Table 2

Logistic Regressions of Risk Factors on Suicidal Behaviors (OR and 95% CI)

Variable	Model 1 (S vs. C) (N=1288)	Model 2 (A vs. C) (N=1422)	Model 3 (S vs. A) (N=880)	Model 4 (S vs. A) (N=880)
Male	0.755 (0.443, 1.284)	0.693 (0.523, 0.919)*	0.942 (0.628, 1.415)	1.000 (0.632, 1.581)
Age	1.012 (0.957, 1.071)	0.990 (0.962, 1.019)	1.016 (0.975, 1.059)	1.008 (0.961, 1.058)
Education years	0.841 (0.756, 0.937)**	0.818 (0.776, 0.863)***	1.010 (0.939, 1.086)	1.006 (0.927, 1.091)
Ever married	0.757 (0.357, 1.606)	1.709 (1.103, 2.649)*	0.397 (0.229, 0.688)**	0.381 (0.205, 0.708)**
Low SES	1.923 (1.050, 3.521)*	1.740 (1.219, 2.484)**	1.422 (0.937, 2.158)	1.545 (0.963, 2.481)
Living alone	1.616 (0.563, 4.638)	0.961 (0.499, 1.848)	1.796 (0.848, 3.805)	1.337 (0.541, 3.307)
Peasants	3.000 (1.633, 5.521)***	1.915 (1.420, 2.584)***	1.192 (0.780, 1.819)	0.985 (0.612, 1.586)
Religious belief	1.298 (0.695, 2.421)	0.889 (0.629, 1.255)	1.092 (0.701, 1.700)	1.144 (0.690, 1.894)
Physical disease	0.639 (0.308, 1.325)	0.901 (0.590, 1.377)	1.931 (1.209, 3.085)**	1.926 (1.142, 3.247)*
Pesticide at home	1.505 (0.862, 2.627)	0.837 (0.640, 1.094)	2.438 (1.600, 3.715)***	3.244 (1.938, 5.432)***
Family suicide history	5.778 (2.488, 13.420)***	2.409 (1.291, 4.492)*	2.388 (1.403, 4.066)**	1.966 (1.062, 3.640)*
Negative life events	1.427 (1.210, 1.683)***	1.440 (1.311, 1.583)***	1.168 (1.062, 1.283)**	1.173 (1.053, 1.307)**
Hopelessness	1.143 (1.107, 1.179)***	1.069 (1.053, 1.084)***	1.027 (1.011, 1.044)**	0.995 (0.976, 1.014)
Social support	1.007 (0.873, 1.161)	1.018 (0.949, 1.092)	0.920 (0.830, 1.020)	0.905 (0.805, 1.017)
Impulsivity	1.129 (1.067, 1.195)***	0.971 (0.939, 1.004)	1.136 (1.092, 1.183)***	1.158 (1.106, 1.212)***
Anxiety	0.992 (0.952, 1.033)	0.976 (0.957, 0.995)*	1.007 (0.984, 1.031)	1.005 (0.979, 1.032)
Coping	0.929 (0.905, 0.953)***	0.986 (0.973, 0.999)*	0.940 (0.923, 0.956)***	0.938 (0.919, 0.956)***
Mental disorder	10.075 (4.624, 21.950)***	2.729 (1.614, 4.614)***	1.461 (0.930, 2.296)	1.312 (0.780, 2.205)
Prior suicide act	-	-	-	0.797 (0.414, 1.534)
Suicide intent (SIS)	-	-	-	1.525 (1.400, 1.660)***
Pesticide method	-	-	-	0.691 (0.411, 1.162)
Constant	0.000***	0.298	0.060***	0.053*
R ²	0.835	0.371	0.595	0.698

Note:

p<0.001;**
p<0.01;*
p<0.05.

S=Suicides, A=Attempters and C= Controls.

Table 3

Comparing the Suicides and Attempters on the Critical Conditions

Variable	Suicides (N=373) Mean $\pm$ SD/f (%)	Attempters (N=507) Mean $\pm$ SD/f (%)	χ^2/t
Prior suicide act			
Yes	65 (17.4)	45 (8.9)	14.365***
No	308 (82.6)	462 (91.1)	
Suicide intent (SIS)			
-	8.22 $\pm$ 3.28	4.30 $\pm$ 2.52	-20.015***
Suicide method			
Pesticide	252 (67.6)	384 (75.7)	105.771***
Other toxicant	25 (6.7)	25 (4.9)	
Hanging	36 (9.7)	1 (0.2)	
Drowning	22 (5.9)	3 (0.6)	
Jumping	7 (1.9)	5 (1.0)	
Overdose	12 (3.2)	66 (13.0)	
Wrist cutting	1 (0.3)	11 (2.2)	
Gas chamber	1 (0.3)	1 (0.2)	
Suffocation	1 (0.3)	0 (0.0)	
Electrocution	1 (0.3)	0 (0.0)	
Train rails	2 (0.5)	2 (0.4)	
Others	13 (3.5)	9 (1.8)	
Mental disease treated			
Yes	67 (37.9)	26 (28.0)	2.644
No	110 (62.1)	67 (72.0)	

Note:

p<0.001;**
p<0.01;*
p<0.05