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Suicidal Ideation, Plans, and Attempts Among Rural Young Chinese: The Effect of Suicide Death by a Family Member or Friend

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Abstract

Suicidal ideation, plans, and attempts have been found to be predictors of suicide. This study aims to estimate the suicidal behaviors in rural China. We studied 784 respondents as informants of suicide and 1,247 respondents as informants of community living controls, with the NCS-R measures on suicidal behaviors. The life-time prevalence of ideation, plans, and attempts among the informants of suicide was 18.1, 4.1, and 1.7%, and the 12-month prevalence was 12.1, 2.2, and 0.4%, respectively. The prevalence scores were higher for the family members than for friends of suicide. The risk factors for suicidal behaviors include being parents or spouse of the suicide, female gender, low education level, and being never married. As suicidal behaviors are more observed among those who have a suicide death in the family or among close friends, suicide screening and intervention efforts should be focused on this type of population.

Keywords

Suicidal behavior; Effect of suicide death; Family; Friends; China

Introduction

Suicide prevention is one of the World Health Organization's priorities in mental health for developing countries (Malakouti et al. 2009). It is particularly important in China as its suicide rates are higher than the world average (WHO 2005). A study published in 2002 reported suicide as the fifth leading cause of death with a mean annual rate of 23/100,000, for a total of 287,000 suicide deaths per year (3.6% of all deaths) in China (Phillips et al. 2002). The demographic pattern of Chinese suicide—with rural rates two to three-fold greater than the urban rates, and rates among women slightly higher than among men—is different from that reported in Western countries, where rates in urban and rural areas are roughly equivalent and rates of suicide in men are two- to four-fold higher than in women (Durkheim 1951; Wang et al. 2008).

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Suicidal behaviors such as suicidal ideation, plans, and attempts have been found to be an important predictor of suicide death (De Leo et al. 2005; Kessler et al. 2005). Understanding the patterns and correlates of suicidal ideation, plans, and attempts is essential for planning health-care policy to reduce suicide and suicide related problems (Kessler et al. 2005). Studies from different cultural environments revealed that the prevalence of suicidal ideation, plans, attempts for lifetime were 13.5, 3.9, and 4.6% in the US (Kessler et al. 2005), 10.4, 4.4, and 4.2% in Australia (De Leo et al. 2005). Results from the WHO/SUPRE-MISS study, where the eight participating countries showed the range of variability for suicidal ideation, plans, attempts for lifetime was 2.6–25.6%, 1.1–15.6%, 0.4–4.2% (Bertolote et al. 2005).

Some studies on suicidal behaviors in China have examined psychiatric patients, hospital emergency department records, and specific socio-demographic groups like adolescents (Fleischmann et al. 2005; Liu and Tein 2005; Phillips and Yang 2004). To date, there have been also a small number of epidemic studies addressing suicidal behaviors in general populations. Bertolote et al. (2005) investigated 503 Chinese rural residents in Yuncheng using the Chinese Version of the European Parasuicide Study Interview Schedule (EPSIS) (Bertolote et al. 2005). Lifetime suicidal ideation, plans, and attempts were 18.5, 7.4, and 2.4%, respectively. However, the study failed to examine the socio-demographic and psychiatric correlates of suicidal behaviors. Lee et al. (2007) interviewed 5,201 urban residents in Beijing and Shanghai of China using the Chinese version of the Composite International Diagnostic Interview (CIDI) and reported that lifetime suicidal ideation, plans, and attempts were 3.1, 0.9, and 1.0%, respectively (Lee et al. 2007). However, rural people, who accounted for around 75% of the Chinese population, were not targeted in that study, thereby limiting the generalizability of the research findings. Ma et al. (2009) studied 5,926 rural and urban people of China with a large-scale survey of suicide-related behaviors including suicidal ideation, plans and attempts in China using CIDI. They aimed at the lifetime prevalence of suicide-related behaviors and their relationships with socio-demographic factors and psychiatric disorders in the rural and urban regions of Beijing, China. They found the overall lifetime prevalence estimates of suicidal ideation, plans and attempts were 2.3, 1.4, and 1.0%, respectively; the corresponding figures were 2.8, 1.6, and 1.3% in the rural sample, and 1.8, 1.3, and 0.9% in the urban sample. The study also found that older age (>25 years), female gender, unmarried status, lower education level, lower (<RMB500 month) or higher (>RMB2000 month) monthly income and presence of major medical disorders were significantly associated with increased risk of suicide related behavior (Ma et al. 2009).

Previous studies with Chinese samples reported the prevalence rates with certain socio-demographic correlates, but it is imperative to explore the effect of suicide history in the family as another important risk factor. As of now, we are not aware of studies that address suicidal ideation, plans and attempts in relation to the suicide death in the family or among close friends. The present study aims to estimate the suicidal ideation, plan and attempt among those rural Chinese who have had a family member or close friend who had died to suicide. Because of the social and psychological impact of a suicide death to a family member or close friend, it is hypothesized that the family member or close friend of a suicide experiences more suicide thought or behavior than those intact.

Methods

Subjects and Data Collection

Data for the study were obtained from three provinces (Liaoning, Hunan, and Shandong) in China. It was a large psychological autopsy project investigating correlates of completed suicide in comparison with a group of living controls. Interviews were performed in sixteen

rural counties from the three provinces (6 from Liaoning, 5 from Hunan, and 5 from Shandong). In each selected county, suicides were consecutively enrolled into the study in 2008. Similar numbers of community living controls were recruited in the same counties during the same time periods. A total number of 392 suicide cases and 416 community living controls were recruited for the psychological autopsy study.

For each suicide case and living control, two informants were interviewed. Thus, 784 informants in the suicide group and 1,247 informants in control group (including control self, one informant in control group was not available) were interviewed. However, recognizing the fact that the type of informants rather than the number of informants in psychological autopsy studies was an important and complex consideration (Kraemer et al. 2003), we selected the informants based on the context or environment (how people observe the target, e.g. home vs. non-home setting). Thus, the following three guidelines were used for the inclusion of informants: (1) Informants had to be 18 years of age or older. Characteristics of the informants for both suicides and controls were noted in a standardized fashion (i.e., most recent contact, number of contacts in the last month, frequency of contacts in the last year, number of years informant has known the target, relationships, and the informant's impression of their familiarity with target persons). (2) For both suicides and controls, informant #1 was always a parent, spouse, or another important family member, and informant #2 was always a friend, co-worker, or a neighbor. (3) Wherever possible we avoided recruiting spouses and in-laws of suicides associated with family disputes. Interviewing these people could result in very biased reports, if marital infidelity and family oppression were possible causes of suicide.

For the current study, we only used the information on the informants provided by themselves: 784 subjects from the suicide group and 1,247 subjects from the control group. Table 1 presents some demographic characteristics of the two samples. Upon their agreement by written informed consent, the interview was scheduled 2–6 months after the suicide. Interviews with living control informants were scheduled as soon as the control targets and their informants were identified. All the interviewers were trained before the investigation, and the face-to-face interview was done in a private place where only the interviewer and interviewee were present.

Measures

Socio-demographic factors included age, gender, education (low ≤ 6 years, high > 6 years), marriage status (never married, ever married including currently married, separated, divorced, and widowed), religion (including Taoism, Islam, Protestantism, Catholicism, Buddhism, other, and none), family annual income, relation to the suicide (spouse, parents, siblings, friends, and other).

The questions related to suicidal behaviors came from The National Comorbidity Survey Replication (NCS-R) (Kessler et al. 1994). Informants was asked according to the following questions: (1) suicidal ideation: have you ever seriously thought about killing yourself and, if so, have you had the thoughts in the past 12 months; (2) suicidal plans: Have you ever made a plan for committing suicide and, if so, have you made such a plan in the past 12 months; (3) suicidal attempts: Have you ever attempted suicide and, if so, have you attempted suicide in the past 12 months. Respondents who reported making a 12-month attempt were then asked to describe the lethality intent of the attempt by indicating which of the following 3 statements best described their attempt: "I made a serious attempt to kill myself and it was only luck that I did not succeed." "I tried to kill myself, but knew the method was not foolproof." "My attempt was a cry for help. I did not intend to die." Respondents who endorsed either of the first 2 statements were considered in the analysis to

have made a suicide attempt, whereas respondents who endorsed the third statement were considered to have made a suicide gesture. (Kessler et al. 1994).

Data Analysis and Certification of the Methods

SPSS 17.0 was used for all statistical analysis. Coefficients were converted to odds ratios (ORs) for ease of interpretation and 95% confidence intervals (CIs) were also reported. Both authors of this study certify that we are responsible for the methods used in the data collection and data analyses.

Results

General Information

The demographic characteristics of the study sample are shown in Table 1. Compared with the respondents from the control group, the respondents from suicide group are older (45.0 ± 12.8 years), more male (56.4%), lower education level (7.16 ± 3.49 years), more likely to be married (90.7%), less likely to be religious (94.5%), and have lower family annual income (see Table 1).

Trends in Prevalence

The lifetime prevalence of suicidal ideation, plans, and attempts among informants in the suicide group was 18.1, 4.1, and 1.7%. Family members or close friends of suicide were 1.8 times (95% CI: 1.5, 2.1) more likely to think about suicide, 2.4 times (95% CI: 1.5, 4.1) more likely to plan suicide, and 1.5 times (95% CI: 0.9, 2.5) more likely to have suicidal attempt than those from control group. For the family members of suicide, the lifetime prevalence of suicidal ideation, plans, and attempts was 24.7, 5.4, and 1.8%, for friends of suicide it was 11.5, 2.8 and 1.5%, respectively. Compared with the friends of suicide, family members of suicide were 1.7 times (95% CI: 1.3, 2.2) more likely to think about suicide (see Table 2).

The 12-month prevalence of suicidal ideation, plans, and attempts among family members or close friends of suicide was 12.1, 2.2, and 0.4%. Individuals suffering from suicide death in the family or among friends were 2.9 times (95% CI: 2.1, 4.0) more likely to think about suicide, and 4.1 times (95% CI: 1.5, 11.7) more likely to plan suicide than those in control group. For family members of suicide, the 12-month prevalence of suicidal ideation, plans, and attempts was 18.4, 3.8, and 0.5%, and for friends of suicide the prevalence was 5.9, 0.5 and 0.3%. Compared with the friends of suicide, family members were 2.2 times (95% CI: 1.5, 3.2) more likely to think about suicide, and 4.3 times (95% CI: 1.2, 15.9) more likely to plan suicide (see Table 2).

Trends in Socio-Demographic Correlates of Prevalence

In a multivariate regression analysis, being a family member or close friend of a suicide, female gender, lower education level (≤6 education years) were all related to both 12-month and lifetime suicidal behaviors. However, the ORs in the multivariate regression model for 12-month suicidal behaviors were higher than those for lifetime [12-month suicidal behaviors: for informants from suicide group, ORs were 5.2 (95% CI: 3.3, 8.2) for ideation, and 6.8 (95% CI: 1.9, 24.4) for plan; for female, ORs were 1.7 (95% CI: 1.1, 2.5) for ideation; for low education level, ORs were 3.2 (95% CI: 2.1, 4.8) for ideation and 6.2 (95% CI: 2.1,18.3) for plan]. For the family members or the friends of suicide, spouse, parents, female, low education level and never married was also related to both 12-month and lifetime suicidal behaviors. Moreover, ORs for 12-month suicidal behaviors were also higher than those for lifetime except for gender factors [12-month suicidal behaviors: for spouse, ORs were 6.3(95% CI: 2.3, 17.5) for ideation; for parents, ORs were 7.4 (95% CI:

3.3, 16.2) for ideation and 6.3 (95% CI: 0.8, 51.4) for plan; for female, ORs were 2.1 (95% CI: 1.3, 3.4) for ideation; for low education level, ORs were 2.2 (95% CI: 1.3, 3.6) for ideation and 7.1 (95% CI: 1.8,27.5) for plan; for never married, 4.8 (95% CI: 1.1,20.7) for plan]. Religion had no relation to the suicidal behaviors in this multiple regression analysis (see Tables 3, 4).

Discussion

The life time prevalence and the 12-month prevalence of suicidal behaviors (ideation, plans, and attempts) among the community populations in the current study are similar to what have previously been found in other studies in China (e.g. Lee et al. 2007 and Ma et al. 2009). We have also found that the rural young Chinese who were family members or close friends of suicide were significantly associated with an increased risk of suicidal ideation, plans and attempts. The lifetime prevalence of suicidal behaviors (suicidal ideation, plans, and attempts were 18.1, 4.1, and 1.7%) among family members or close friends of suicide were also higher than those found in general populations in China. Overall with the samples from the three different provinces, family members or close friends of suicide were 1.8 times more likely to think about suicide, 2.4 times more likely to plan suicide, and 1.5 times more likely to have suicidal attempt than those from the control group. As pain can be potentially independent risk factor for suicidal behavior (Ilgen et al. 2008), loss of a loved one due to suicide is also an important risk factor.

This study also found that female gender, lower education level (≤6 education years) were significantly associated with increased risk of suicide related behavior. As this observation is similar to the findings from other studies (Ma et al. 2009) in China, prevention measures may have to be focused on the female population with a low education level.

For family members or close friends of suicide, suicide behaviors recorded during lifetime span were more frequently than those reported in the 12-month period (the prevalence of suicidal ideation, plans, and attempts was 12.1, 2.2, and 0.4%) preceding in the interview. But comparing with the control group, the risk times of suicidal ideation and plans in 12-month were higher than those in lifetime span. Individuals exposed to suicide death were 2.9 times more likely to think about suicide, 4.1 times more likely to plan suicide than those in control group in 12-month. Therefore, suicide death was associated with the increased risk of suicidal behaviors for the family members or close friends of suicide. Female gender and lower education level (≤6 education years) were still risk factors for the suicidal behaviors.

Phenomena recorded in the present study showed that family members were more affected by suicide death than close friends. For both lifetime span and previous 12 months, the prevalence of suicidal ideation, plans and attempts in family members of suicide were higher than that of close friends of suicide (lifetime: the corresponding figures were 24.7, 5.4, and 1.8% for family members, 11.5, 2.8 and 1.5% for close friends; 12-month: 18.4, 3.8, and 0.5% for family members; 5.9, 0.5 and 0.3% for close friends). Moreover, the 12-month risk times of suicidal behaviors for the family members were still higher than those for close friends. Besides female gender and low education level (≤6 education years) were the risk factors for suicidal behaviors, never married was also related to both 12-month and lifetime suicidal behaviors, especially for suicidal plans. In all relationship to the suicide death, parents and spouse were the most affected than other relationship to the suicide death. Relatively, parents had high risk to have suicidal ideation, and spouse had high risk to have suicidal plans. In this study, the age of suicide death was between 15 and 34 years, so the suicide death to the parents apparently was vital event.

As suicidal behaviors are more observed among those who have a suicide death in the family or among close friends, suicide screening and intervention efforts should be focused on this type of population. However, there might be two explanations for the observed differences. One is the "contagion" effect that leads a family member or close friend to be more acceptable for suicidal behavior. Another explanation is that suicide risk in the experimental group may have preceded the suicide, i.e. it is a product of a shared miserable environment. Because this study is not longitudinal we do not know if risk increased in light of the suicide. It may well have been high before the suicide because people share a dysfucntional family and a poor living environment. As those individuals who have recently opposed to suicide are at high risk of suicide, this sub-population should receive comparatively more attention for suicide prevention. As of now in China, we are not yet aware of any special efforts placed on this group of people. For suicide prevention in Chinese communities, psychological counseling for those exposed to suicide should be exercised immediately after the suicide event, and this requires efforts of psychologists, sociologists, psychiatrists, medical staff, as well as community social workers.

The present study are well planned and carried out, but these findings should be interpreted in the context of limitation. Because this study was part of a large psychological autopsy project which was focused on suicide death, family members or close friends as informants gave more information about the suicide death in the long interview time. Dimensional measures of mental disorder and personality were not considered for the respondents for this study.

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Table 1

Demographic descriptions of the respondents from suicide and control groups

Demographics	**Informants in suicide group (*n* = 784)**	**Informants in control group (*n* = 1,247)**	**t/χ^2**	***P***
Age (Mean ± SD)	45.0 ± 12.8	32.1 ± 12.0	22.61	<0.001
Gender				
Female	342 (43.6%)	704 (56.5%)	31.74	<0.001
Male	442 (56.4%)	543 (43.5%)		
School education years (Mean ± SD)	7.16 ± 3.49	8.56 ± 2.86	9.41	<0.001
Marriage status				
Never married	73 (9.3%)	297 (23.8%)	67.99	<0.001
Ever married	711 (90.7%)	950 (76.2%)		
Religion				
No	741 (94.5%)	1,144 (91.7%)	5.56	0.018
Yes	43 (5.5%)	103 (8.3%)		
Family annual income (RMB: Y*uan*) (Mean ± SD)	14834.6 ± 19363.2	16890.8 ± 17298.8	2.43	0.015

Table 2

The prevalence of suicide-related behaviors among informants in suicide and control groups

Group	Life time			12-Month		
	Ideation	Plan	Attempt	Ideation	Plan	Attempt
Informants in suicide and control group						
Suicide group (n = 784) %	18.1	4.1	1.7	12.1	2.2	0.4
Control group (n = 1,247) %	6.4	0.9	0.7	2.2	0.2	0.2
χ^2 (P value)	67.6 (<0.001)	23.8 (<0.001)	3.94 (0.047)	84.4 (<0.001)	18.3 (<0.001)	0.97 (0.33)
OR (95% CI)	1.8 (1.5, 2.1)	2.4 (1.5, 4.1)	1.5 (0.9, 2.5)	2.9 (2.1, 4.0)	4.1 (1.5, 11.7)	1.5 (0.5, 4.5)
Informants in suicide group						
Family members (n = 392) %	24.7	5.4	1.8	18.4	3.8	0.5
Friends (n = 392) %	11.5	2.8	1.5	5.9	0.5	0.3
χ^2 (P value)	23.3 (<0.001)	3.26 (0.071)	0.078 (0.780)	28.8 (<0.001)	10.2 (0.001)	0.33 (0.563)
OR (95% CI)	1.7 (1.3, 2.2)	1.5 (0.9, 2.4)	1.1 (0.6, 2.0)	2.2 (1.5, 3.2)	4.3 (1.2, 15.9)	1.5 (0.3, 7.5)

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Table 3

Logistic regression models for life-time prevalence and 12-month prevalence of ideation, plan, and attempt among the suicide and control informants (OR, *n* = 2,031)

Demographics	Model 1 (Life-time)			Model 2 (12-month)		
	Ideation	Plan	Attempt	Ideation	Plan	Attempt
Gender						
Female	1.5 (1.4, 2.7)***	1.4 (0.8, 2.7)	0.7 (0.3, 1.7)	1.7 (1.1, 2.5)*	1.0 (0.4, 2.5)	0.7 (0.1, 4.4)
Male	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Education						
≤6 years	2.9 (2.1, 3.9)***	4.0 (2.0, 7.9)***	2.8 (1.1, 7.0)*	3.2 (2.1, 4.8)***	6.2 (2.1, 18.3)***	5.6 (0.8, 41.6)
>6 years	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Marital status						
Never married	0.9 (0.6, 1.5)	2.2 (0.9, 5.5)	1.1 (0.3, 4.1)	0.7 (0.3, 1.5)	2.4 (0.6, 9.1)	6.4 (0.9, 47.7)
Ever married	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Religion						
Yes	1.1 (0.6, 1.9)	1.9 (0.7, 5.1)	1.5 (0.7, 4.5)	1.1 (0.5, 2.3)	0	0
No	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Informants group						
Suicide group	2.9 (2.1, 3.9)***	4.3 (2.1, 8.8)***	1.8 (0.7, 4.4)	5.2 (3.3, 8.2)***	6.8 (1.9, 24.4)**	2.1 (0.3, 14.7)
Control group	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)

*$P < 0.05$,

**$P < 0.01$,

***$P < 0.001$

Table 4

Logistic regression models for life-time prevalence and 12-month prevalence of ideation, plan, and attempt among the suicide informants only (OR, n = 784)

Demographics	Model 1 (Life-time)			Model 2 (12-month)		
	Ideation	Plan	Attempt	Ideation	Plan	Attempt
Gender						
Female	2.5 (1.7, 3.7)***	1.3 (0.6, 2.8)	1.0 (0.3, 3.0)	2.1 (1.3, 3.4)**	1.1 (0.4, 3.0)	3.1 (0.2, 40.6)
Male	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Education						
≤6 years	2.3 (1.5, 3.5)***	5.1 (2.1, 12.4)***	2.5 (0.7, 8.4)	2.2 (1.3, 3.6)**	7.1 (1.8, 27.5)**	5.0 (0.3, 84.5)
>6 years	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Marital status						
Never married	1.3 (0.6, 2.7)	4.3 (1.4, 13.0)**	1.1 (0.1, 9.0)	1.4 (0.6, 3.4)	4.8 (1.1, 20.7)**	7.2 (0.4, 132.6)
Ever married	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Religion						
Yes	1.0 (0.5, 2.4)	2.0 (0.6, 7.1)	1.5 (0.2, 12.1)	1.1 (0.4, 2.8)	0	0
No	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)
Relation to the suicide						
Spouse	4.4 (1.9, 10.2)***	6.9 (1.4, 33.9)*	3.4 (0.2, 57.5)	6.3 (2.3, 17.5)***	8.7 (0.7, 103.7)	0
Parents	5.0 (2.7, 9.1)***	3.3 (0.9, 12.0)	2.8 (0.3, 25.7)	7.4 (3.3, 16.2)***	6.3 (0.8, 51.4)*	1.0 (0.1, 16.3)
Siblings	2.4 (0.9, 6.2)	2.7 (0.4, 17.2)	4.0 (0.2, 66.0)	1.6 (0.4, 6.4)	7.4 (0.6, 87.7)	5.2 (0.3, 94.3)
Friends (neighbors)	1.4 (0.8, 2.7)	2.2 (0.6, 8.3)	4.0 (0.5, 34.0)	1.4 (0.6, 3.4)	1.3 (0.1, 14.8)	1.0 (−)
Other	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	1.0 (−)	0

*$P < 0.05$,

**$P < 0.01$,

***$P < 0.001$