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Cross-sectional survey on the acceptability of suicide among rural residents, urban residents and college students from three locations in China

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Abstract

Background—Community attitudes about suicide and their relationship to suicidal behavior have not been adequately investigated in low- and middle-income countries.

Aims—Compare acceptability of suicide in different population cohorts in China, identify factors that affect the degree of acceptability, and assess the relationship of cohort-specific acceptability of suicide and suicide rates.

Methods—A multi-stage stratified random sample of 608 rural residents, 582 urban residents and 629 college students were administered a 25-item scale in which respondents stated the likelihood they would consider suicide (on a 5-point Likert scale) if they experienced a variety of stressors ranging from 'being disciplined at work' to 'developing a chronic mental illness'. The internal consistency and test-retest reliability for the scale are excellent (Cronbach's α =0.92, ICC=0.75).

Results—College students had the most permissive attitudes about suicide and urban residents were significantly more accepting of suicide as a response to serious life stressors than rural residents. Multivariate analysis found that the overall acceptability score was higher in women, decreased with age, and increased with years of education.

Conclusions—There was no clear relationship between cohort-specific acceptance of suicide and reported rates of suicide, highlighting the complexity of the relationship between attitudes about suicide (of which acceptability is only one component) and suicidal behavior.

Keywords

suicide; attitudes; acceptability; cross-sectional survey; China

Introduction

Substantial geographic and temporal variation in suicide rates (Liu KY, 2009, Judd, Cooper, Fraser, & Davis, 2006; Middleton, Gunnell, Frankel, Whitley, & Dorling, 2003; Taylor, Page, Morrell, Harrison, & Carter, 2005) cannot be fully explained by varying rates of mental illnesses and different patterns of other frequently reported risk factors (Moscicki,

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Declaration of Conflict of Interest
None.

1997; Phillips et al., 2002b). Another important component in the complex causal network for suicide is the normative cultural attitudes about suicide, which vary by community, by population cohort, and over time (Salander-Renberg, et al., 2008; Goldsmith et al., 2002).

Attitudes about suicide are multidimensional, including constructs such as permissiveness, unpredictability, perceived causes, preventability, appropriate management and so forth (Salander-Renberg, et al., 2008). Early beliefs that there was a direct causal link between suicidal behavior and attitudes about suicide (Farberow, 1989) have given way to a more nuanced understanding of the complex interactions between attitudes and behavior. For example, the social acceptability of suicide or permissiveness towards suicide-- one of the most commonly assessed attitudinal dimensions-- can have different or even contradictory effects on suicide rates: it can increase or decrease community members' consideration of suicide as a solution to life problems, it can increase or decrease the willingness of suicidal individuals to seek help, and it can affect the accuracy of reports of suicide as a cause of death (Goldsmith et al., 2002; Ramsay & Bagley, 1985; Salander Renberg & Jacobsson, 2003). Thus countries with strong religious or legal prohibitions that make suicide socially unacceptable tend to report low rates of suicide and low rates of care-seeking for suicide-related behaviors, but they may also have much higher rates of missing or misclassified deaths by suicide (Gajalakshmi & Peto, 2007).

Understanding this complex relationship between suicidal behavior and attitudes about suicide would help strengthen theoretical models of suicide. More importantly, knowledge about the factors that influence suicide-related attitudes and the mechanisms via which they affect suicidal behavior should help determine the most appropriate content, target groups, media, venue, and timing of community-based preventive activities (e.g., distribution of educational materials, public lectures, public service announcements, promotional campaigns, etc.). However, it remains unclear whether or not attitudinal research will actually be able to 'deliver the goods' and provide the new knowledge needed to demonstrably improve the effectiveness of community-based suicide prevention activities.

One limitation of current attitudinal research about suicide is that almost all of it has been conducted in high-income countries so its relevance to low- and middle-income countries (where the majority of global suicides occur) is uncertain. For example, research in high-income countries finds that throughout their lifetimes males, Caucaisians, and less religious persons are more accepting of suicide (Deluty, 1988–89; Domino & Miller, 1992; Marks, 1988–89; Overholser, Hemstreet, Spirito, & Vyse, 1989; Salander Renberg, Hjelmeland, & Koposov, 2008; Seidlitz, Duberstein, Cox, & Conwell, 1995; Stein, Witztum, Brom, Denour, & Elizur, 1992) but these findings may not be relevant in China because of differences in the sociodemographic characteristics of suicide and of the general population: unlike in most high-income countries, female suicide rates in China are somewhat higher than male rates (Phillips, Li, & Zhang, 2002), 92% of the population is of the Han ethnicity (National Bureau of Statistics of China, 2001), and (with the exception of some minority groups) a very small proportion of the population have religious beliefs or practices.

To help expand the cross-cultural scope of attitudinal research about suicide, over the last seven years our Center has been developing a multi-dimensional instrument for the assessment of suicide-related attitudes in China (Li & Phillips, 2007, Li et al., 2004, Lee et al, 2007). The current paper presents the results for the acceptability of suicide, one of the important attitudinal dimensions assessed in the instrument

Method

Assessment of the acceptability of suicide

The Acceptability of Suicide Scale is one component of a multidimensional questionnaire about suicide-related attitudes that has been developed by the Beijing Suicide Research and Prevention Center over the last 7 years. Other components of the questionnaire (which assess beliefs about the causes, appropriate interventions, preventability, stigmatization, and social importance of suicide) will be reported in subsequent papers. The original version of the Acceptability of Suicide Scale was generated based on results of a large qualitative study and then minor revisions were made to the scale based on the results of community-based pilot studies (Lee, Tsang, Li, Phillips, & Kleinman, 2007; Li et al., 2004). Analysis of the focus group data from the qualitative study found that community members have different ideas about the types of social circumstances in which an individual's suicide is unacceptable, understandable, acceptable or appropriate. To quantify this attitude—which we label the 'acceptability of suicide'—we generated a range of life circumstances (based on the focus groups and other research) and asked respondents the likelihood that they would consider killing themselves if they encountered each of these 25 situations (listed in Table 2). Responses were recorded on a five-point Likert scale: "definitely not consider suicide", "possibly consider suicide", "50% likely consider suicide", "probably consider suicide" and "definitely consider suicide" (scored 1 to 5). The total score for the scale is the sum of the 25 items minus 25, resulting in a parameter that ranges from 0 to 100 (i.e., low to high acceptability). This total score is not intended to predict the likelihood that a particular respondent would actually kill himself or herself if faced with a difficult life situation but, rather, the degree to which respondents consider suicide a reasonable or understandable response to difficult life circumstances.

In the current study the Acceptability of Suicide Scale, which takes about 10 minutes to complete, was incorporated into a comprehensive survey of attitudes about suicide among rural community members, urban community members and college students in three parts of China. These three cohorts were chosen because prior research (Hirsch, 2006) highlights the importance of distinguishing rural and urban suicides, because of the major differences in suicide rates between urban and rural residents in China (Phillips et al, 2002a), and because of recent heightened governmental and community concern about college student suicides in China. The full survey usually takes 30 to 50 minutes to complete and includes 11 components: 1) extensive demographic information; 2) attitudes, beliefs and knowledge about suicide, including the Acceptability of Suicide Scale; 3) knowledge of mental illnesses; 4) personal experience of suicidal ideation and behavior; 5) relatives' and associates' experience of suicidal behavior; 6) availability of poisons in the home; 7) impulsiveness and aggressiveness; 8) life events; 9) quality of life; 10) social support; and 11) childhood abuse.

The internal consistency of the 25 items in the Acceptability of Suicide Scale based on a follow-up assessment of subject enrolled in the current survey (n=1,786) is excellent (Cronbach's $\alpha = 0.92$). A sample of 504 (83.7%) rural residents, 256 (46.0%) urban residents and 310 (49.4%) college students were re-administered the instrument 5-8 days after the first administration; the test-retest reliability of the total acceptability score was high (ICC = 0.75).

Research sites

This cross-sectional survey was conducted from April to June, 2006 in five randomly selected villages from a rural area of Shandong Province (Laiwu) in eastern China, in four

randomly selected urban neighborhoods from Tianjin Municipality in northern China, and in four randomly selected colleges in Chongqing Municipality in southwestern China.

Sampling

Community subjects—Community subjects were persons 18 years of age or older who had lived in the target communities for at least three months in the six months prior to the survey.

Rural participants were selected as follows: 1) two rural townships were probability sampled (i.e., random selection in which larger townships have a greater probability of being selected) from the 15 townships in Laiwu City; 2) two villages were then probability sampled from one selected township and three from the other (larger) township; 3) the number of households to be selected from each village was determined based on the population of the village (given the total target sample of 500 completed interviews); 4) households were randomly selected from the government's household registry; and 5) one subject from each household was randomly selected from all household members aged 18 years or older. In total 963 rural residents were identified by this stratified random sampling procedure; 602 (62.5%) completed the survey. The 361 non-completers included 131 who were not located, 40 who refused, and 190 who had difficulty understanding the content of the survey or only completed part of the survey. There was no difference between the 602 completers and the 361 non-completers by gender (male: 50.0% *v.* 46.3%), but non-completers had a higher mean age (56.6 *v.* 45.0 years, $p<0.001$) and less formal education (3.3 *v.* 5.7 years, $p<0.001$). Among the 602 rural subjects, 601(99.8%) were of Han ethnicity and 1 (0.2%) was of Mongol ethnicity.

Urban participants were selected by a similar procedure: 1) two urban districts were probability sampled from the six urban districts of Tianjin Municipality; 2) two sub-districts were probability sampled from each selected district; 3) one neighborhood was probability sampled from each selected sub-district; 4) the number of households to be selected from each neighborhood was determined based on the population of the neighborhood; and 5) one subject was randomly selected from all members aged 18 years or older in each selected household. In total, 1313 urban respondents were identified; 557 (42.4%) completed the interview. The 756 non-completers included 199 in which there was never anyone in the identified household, 56 in which the identified subject was never available, 295 in which the householders refused any survey (before suicide was mentioned), 130 in which the householders or the identified subject refused to participate in the suicide survey, and 76 who only completed part of the survey. The 557 completers and the 263 non-completers for whom basic demographic information was available had similar proportions of male subjects (48.1% *v.* 52.9%, $p>0.05$) but non-completers had a higher mean age (50.3 *v.* 47.3 years, $p=0.027$) and less formal education (9.6 *v.* 10.6 years, $p=0.008$). Among the 557 urban subjects, 543 (97.5%) were from the Han ethnic group and the other 14 (2.5%) were from six other ethnic groups.

College subjects—The 42 colleges in Chongqing Municipality were stratified according to type (key universities, ordinary universities, technical colleges and private colleges) and then one college of each type was randomly selected. The number of students selected from each of the four selected colleges was based on the proportion of all college students in the municipality attending the different types of colleges and within each college the proportion of students selected from each year was based on the proportion in the total student population for that type of college. Specific students were then randomly selected from student lists available in the registrar's office. In total 765 students were identified and 627 (82.0%) completed the survey. The 138 non-completers included 49 who were not at school

at the time of the survey, 76 who did not attend the scheduled interview session, 9 who refused and 4 who only completed part of the survey. Compared to completers, non-completers were more likely to be male (71.0% *v.* 62.8%, p=0.070) and older (mean age 21.4 *v.* 20.7, p<0.001). Among the 627 college student subjects, 588 (93.8%) were from the Han ethnic group and 39 (6.2%) were from 12 other ethnic groups.

Procedure

Community subjects—Residents of the identified households were introduced to the survey by members of the local neighborhood (village) committee. If they agreed to participate, trained interviewers filled in a household composition form and randomly selected one household member aged 18 years or older as a subject. If the selected subject signed the written consent form, the interviewer administered the survey in the subject's home. To compare different methods of administering the survey, respondents with nine years of education or more were randomly assigned to self-completion or interview-completion groups. Subjects with less than nine years of education were all administered the survey by the interviewer.

College subjects—Identified students were notified by teachers or other administrators to come to an appointed classroom at a specific time. Thirty students or less per group were given the survey at one setting. At the beginning of each session one of the 4–5 trained coordinators from outside the students' institution provided a detailed explanation of the purpose of the survey and of the method of completion of the survey. Students were told that participation in the survey was completely voluntary and that they had the right to leave the classroom at any time during the survey. To avoid possible pressure on the students, the schools' teachers and administrators were not present during the administration of the survey. Students who provided written consent then completed the survey. Once completed, the survey was briefly reviewed by one of the coordinators (to identify missing or incomplete responses) before the student left the classroom. The main problem that the coordinators were checking for after the completion of the survey was unintentionally missed items, which is relatively common. A few students were unwilling to complete the income information but other than that there were virtually no refusals to complete specific items on the interview. If the student was unwilling to complete a particular item or items the coordinators did not press them to do so.

Statistical analysis

SPSS-PC version 11.5 was used for statistical analyses. Two-tailed *t* tests and *Chi* square tests were used to compare results in different groups of subjects. Nonparametric Wilcoxon or Kruskal-Wallis tests were used to assess group differences for variables that were ranked or non-normal. Nemenyi multiple comparison tests were used to compare results for the three pairs of samples (i.e., urban *v.* rural, urban *v.* student, and rural *v.* student). Multiple linear regression models with stepwise exclusion of variables were used to identify factors that had a significant independent influence on the acceptability of suicide.

Human subjects review

This research project and the study procedures were approved by the Institutional Review Board of the Beijing Hui Long Guan Hospital.

Results

Demographic characteristics

Table 1 shows the demographic characteristics of the three different study samples. There was no significant difference by gender between rural and urban groups ($p > 0.05$), but rural subjects were younger, had a lower level of formal education, had a higher proportion of Han-ethnicity individuals, a higher rate of current marriage, a lower rate of living alone and were less likely to have religious beliefs (all p's<0.01). The mean (standard deviation, SD) age of rural subjects, urban subjects and college student subjects were 45 (12), 47 (16) and 21 (2), respectively; and the mean years of formal education were 6 (3), 11 (3), and 13 (1), respectively. The median (interquartile range, IQR) yearly per capita family income was 3,000 Renminbi (1,667–5,000) for rural residents, 8,400 Renminbi (6,000–12,500) for urban residents, and 13,000 Renminbi (10,000–16,000) for college students.(The exchange rate was 8 Renminbi=1$US at the time of the study.) Few subjects reported religious beliefs: 3 (0.5%) rural subjects (2 Buddhists and 1 Roman Catholic), 34 (6.1%) urban subjects (25 Buddhists, 5 Islamists, 2 Protestants and 2 Roman Catholics), and 48 (7.7%) students (35 Buddhists, 10 Protestants, 2 Islamists, and 1 Roman Catholic).

Acceptability of suicide

Table 2 shows that the rural residents, urban residents and college students had significantly different views on the acceptability of suicide for 24 of the 25 circumstances considered (the exception was the 'disciplined at work' item). Despite these differences in absolute values, the ranking of the conditions in terms of the relative likelihood that they would result in thoughts of suicide were similar between the groups. All three groups considered 'suffering from HIV/AIDS', 'an incurable illness', 'drug dependence' and 'being a burden on others with no future hope' as the four situations that would most likely lead them to consider suicide. Overall, 41.7% of rural residents, 34.8% of urban residents, and 8.3% of college students indicated that they would never consider suicide under any of the 25 circumstances; and 18.8% of rural residents, 13.1% of urban residents, and 18.0% of college students would definitely consider suicide in one or more of the 25 circumstances.

For the full sample the mean (SD) total acceptability score was 10.1 (11.8), the median (IQR) was 6 (0–16), and the range was 0–62 (theoretical range 0–100). The mean and median total acceptability scores for rural subjects were 7.8 (11.8) and 2 (0–12), respectively; those for urban subjects were 8.2 (10.8) and 4 (0–13); and those for college students were 13.9 (11.5) and 11 (5–20) (Kruskal-Wallis test for ranked scores: *Chi* square = 198.27, $df = 2$, N=1,786, $p < 0.001$). College students had significantly higher acceptability scores than both rural residents and urban residents (Wilcoxon Mann-Whitney test: $Z = 12.86$ and 10.99, respectively, *p-values* < 0.001); and urban residents had higher scores than rural residents ($Z = 2.06$, $p < .040$). Women had significantly higher overall acceptability scores [mean=11.2 (12.6); median (IQR)=7 (0–18)] than men [mean=9.2 (10.9); median=5 (0–14)] (Wilcoxon Mann-Whitney test, $Z = -2.37$, $p = 0.018$).

Factors associated with acceptability

Table 3 shows that the stepwise exclusion of variables from the multiple linear regression model for the total sample found that years of formal education, gender, and age were independently associated with the acceptability of suicide but family income level, marital status, ethnicity (Han *v*. non-Han), living situation, and employment status were not related to the acceptability of suicide. The unstandardized beta values in the table indicate that if other factors in the model are held constant the variables included in the model have the following relationship with the acceptability score: 1) for each additional year of formal education the overall acceptability score increases by 0.25 points; 2) for each year increase

in age the acceptability score decreases by 0.10 points; 3) female scores are 2.80 points higher than males scores; and 4) college student scores are 2.70 points higher than community residents'scores.

Multiple linear regression models for the three subsamples identified several common factors and some subsample-specific factors significantly associated with the level of acceptability of suicide. Among rural respondents younger respondents and those with better family incomes had higher acceptability of suicide. Among urban respondents younger respondents, female respondents and better educated respondents had higher acceptability scores. And among the students, younger respondents, female respondents and respondents who reported religious beliefs or practices had higher acceptability scores.

Discussion

Using an instrument developed from extensive qualitative research that has good internal validity and test-retest reliability on large, randomly selected samples of rural residents, urban residents and college students from three locations in China, we found that college students had the most permissive attitudes about suicide and that urban residents were significantly more accepting of suicide as a response to serious life stressors than rural residents. Moreover, after controlling for the source of the sample in a multivariate analysis, increased education, female gender and younger age were independently associated with more accepting attitudes about suicide.

Prior research has not compared attitudes in different population groups and very few studies employ multivariate analysis to assess the factors independently related to attitudes about suicide (Salander Renberg et al., 2008; Seidlitz et al., 1995), so it is only possible to compare some of our results with prior studies. Similar to our study, most studies from other countries find more accepting attitudes about suicide among those with more education (Salander Renberg & Jacobsson, 2003; Singh, Williams, & Ryther, 1986) so this appears to be a robust relationship cross-nationally. The higher acceptability of suicide among females found in our study is also found in some, but not all, studies from other countries (Agnew, 1998; Beautrais, Horwood, & Fergusson, 2004; Hjelmeland et al., 2008; Joe, Romer, & Jamieson, 2007; Kocmur & Dernovšek, 2003; Parker, Cantrell, & Demi, 1997; Salander Renberg & Jacobsson, 2003; Zemaitiene & Zaborskis, 2005); the finding in China could be related to the relatively high rate of suicide in Chinese females compared to that in other countries (WHO, 2002). Controversy remains about the relationship of age to attitudes about the acceptability of suicide (Salander Renberg et al., 2008; Salander Renberg & Jacobsson, 2003; Segal, Mincic, Coolidge, & O'Riley, 2004); the decreasing acceptability of suicide as individuals age (after adjusting for educational level) found in our study may be a reflection of an underlying culturally conditioned conservatism that results in increasing intolerance to all forms of social deviance (including suicidal behavior) as one ages. Suicide rates in China, like in most other countries, increase with age (Phillips et al., 2002) so the decreasing acceptability of suicide with age does not appear to substantially reduce the rates of suicidal behavior.

Our stratified analyses identified some factors related to the perceived acceptability of suicide that have not been reported in other studies. For example, among rural residents in China higher family income—an important measure of family status—was associated with greater acceptability of suicide; it is possible that within rural communities the greater social mobility and external contacts of wealthier families encourages more liberal attitudes towards socially deviant behaviors.

Studies from high-income countries uniformly report that persons who hold strong religious beliefs are less accepting of suicide (Agnew, 1998; Eskin, 2004; Joe *et al*. 2007; Neeleman, Wessely, & Lewis, 1998; Singh et al., 1986; Stein et al., 1992). In China we found too few rural residents (0.5%) who reported religious practices to assess the relationship between religious beliefs and attitudes; among urban residents there were enough cases (6.1%) to make the assessment but no significant relationship was identified; and among students those who reported religious beliefs (7.6%) reported ***higher*** levels of acceptability of suicide. Unlike in other countries the vast majority of Han-ethnicity mainland Chinese (92% of the population) have no religious beliefs or practices so young college students who do hold religious beliefs have recently contravened the current cultural norms and adopted religious practices (possibly to help address spiritual or psychological needs), so they may be more understanding and accepting of other types of social deviance. We did not have enough minority ethnic group subjects to assess the relationship between religious beliefs and the acceptability of suicide in non-Han groups; in some of the minority groups religious beliefs and practices are more common so their relationship to suicide-related attitudes may be different than in the majority Han ethnic group.

Another area where our results differ from most studies in high-income countries is the negative correlation between accepting attitudes about suicide and the rates of suicide in different population cohorts. In China suicide rates in rural areas are substantially higher than in urban areas (Phillips et al., 2002a; Yip, et al., 2008) and suicide rates among college students are lower than in other urban residents because the mean age of the students is much younger and suicide rates increase with age (Nisbet 2000; Phillips et al., 2002a; Yip, et al., 2008). But the current study finds that attitudes about suicide are most restrictive among rural residents (who have the highest suicide rates), somewhat accepting among urban residents and most accepting among university students (who have the lowest rates). There are several possible explanations this unexpected finding. Attitudes may be positively related to the prevalence of suicidal ideation and non-fatal suicidal behavior but not to suicidal deaths (Salander Renberg et al., 2008; Salander Renberg & Jacobsson, 2003); thus the rates of ideation and attempts could be higher in students and urban residents but the case-fatality of the behavior may be higher in rural areas because rural residents are more likely to ingest highly lethal pesticides in their suicide attempts and have less access to the high-tech services needed to manage pesticide poisoning (Yang *et al*. 2005). Alternatively, persons with more accepting attitudes in urban China may be more willing to seek help from their social network or from professionals (who are much easier to access in urban areas than in rural areas) when they are distressed, thus decreasing the likelihood that they would act on their suicidal thoughts.

Logically, favorable attitudes toward suicide should increase the attractiveness of suicide if situational cues arise, placing an individual at increased risk of suicidal ideation and behavior (Gibb, Andover, & Beach, 2006) but research on the nature and direction of the relationship between attitudes about suicide and suicidality are not consistent. Most studies find a positive relationship between accepting attitudes and suicidal ideation and behavior (Beautrais *et al*. 2004; Eskin, 2004; Colucci & Martin, 2007; Etzersdorfer, Vijayakumar, Schöny, Grausgruber, & Sonneck, 1998; Gibb et al., 2006; Joe *et al*. 2007; Kocmur & Dernovšek, 2003; Salander Renberg & Jacobsson, 2003; Stein, Brom, Elizur, & Witztum, 1998; Stein et al., 1992; Zemaitiene & Zaborskis, 2005), but some studies find no clear association between attitude changes and changes in suicidal behavior (Cleary & Brannik, 2007; Robertson & Cochrane, 1976) and other studies find a negative relationship (Platt, 1989; Sale, Williams, Clark, & Millis, 1975).

The most probable explanation for the contradictory findings about the factors related to attitudes about suicide is that they use different instruments, different operational

definitions, and different sampling methods. Most studies measure acceptability based on respondents' global value judgments about suicidal behavior and about suicidal individuals, only a minority use the more nuanced approach used in this study of examining the degree of acceptability of suicide under specific circumstances (Joe *et al*. 2007; Neeleman *et al*. 1998).

Respondents' attitudes about the acceptability of suicide in different circumstances could be an indirect reflection of the relative importance of these different negative life events as risk factors for suicidal behavior. There are, as yet, no published studies in China of suicidality among persons who experience the four conditions most likely to result in suicidal thoughts identified in this study—incurable illness, HIV/AIDS, drug dependence, and being a burden on others—but this is certainly a potentially fruitful area for future research that could identify high-risk groups in need of specific preventive activities.

We believe that community-level and individual-level attitudes about suicide are important components in the causal pathway to suicidal behavior. Many countries, including China, are increasingly aware of the importance of suicide prevention and of the need for public health educational campaigns to help address the issue. But, given the complicated relationship between attitudes about suicide and suicidal behavior (Cleary & Brannick, 2007; Salander Renberg et al., 2008; Salander Renberg & Jacobsson, 2003), resolution of the theoretical and methodological differences between the various studies is an essential—though extremely difficult—task that will need to precede the use of attitudinal data to craft community-based educational initiatives for suicide prevention. Concerted effort both within and between countries are urgently needed to ensure that these public promotion campaigns are based on the best science available.

Limitations

The main limitations of this cross-sectional survey are as follows. 1) Acceptability is only one of several dimensions of suicide-related attitudes (Salander Renberg & Jacobsson, 2003); other dimensions may be more directly related to suicidal behavior or it may be the interaction of these dimensions that increases or decreases suicidal risk. 2) The selected sample was representative of the adult population in the study sites but it reflects China's predominantly Han-ethnicity population and was limited to three parts of the country so it may not represent attitudes in other parts of the country or among China's many minority groups. 3) The response rate was good among students (82%), acceptable among rural residents (63%) but poor among urban residents (42%); this may have affected the representativeness of the results because those who did not participate in the survey were older and less educated. 4) This cross-sectional study could not assess the dynamic nature of attitudes, the factors that affect changes in attitudes, or the relationship of changing attitudes to the changing prevalence of suicidal behaviors. 5) The linear regression model of factors associated with attitudes considered a relatively small number of demographic variables so the final model only explained a small proportion of the variance in attitudes between respondents. 6) The internal consistency and test-retest reliability of the acceptability measure we developed are good but acceptability was assessed by asking respondents to make judgments about hypothetical circumstances (e.g., "If you had HIV/AIDS how likely is it that you would consider suicide?") so the results reflect the degree to which respondents understand and accept suicidal behavior in persons faced with difficult life circumstances; longitudinal research will be needed to determine whether or not these attitudes increase of decrease the likelihood of suicidal behavior when the respondents encounter these circumstances themselves.

Conclusion

As part of a larger study on suicide-related attitudes in China, this paper reports on the findings for the Acceptability of Suicide Scale—developed from initial qualitative studies and refined over seven years—that was administered to relatively large samples of randomly selected urban residents, rural residents and college students from three parts of China. We find that college students had the most permissive attitudes about suicide and urban residents were significantly more accepting of suicide as a response to serious life stressors than rural residents. Moreover, , increased education, female gender and younger age are independently associated with more accepting attitudes about suicide. However, there was no clear relationship between the level of acceptance of suicide and the reported rates of suicide in the corresponding population cohorts, highlighting the complexity of the relationship between attitudes about suicide (of which acceptability is only one component) and suicidal behavior. Further high-quality research will be needed before the results of attitudinal research about suicide can be employed to help craft suicide prevention activities.

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Table 1

Demographic characteristics of randomly selected rural residents, urban residents and college students from three sites in China who participated in the survey

Characteristics	Rural (N=602)		Urban (N=557)		Students (N=627)	
	n	%	n	%	n	%
Female	301	50.0	289	51.9	236	37.6
Marital status						
Never married	17	2.8	65	11.7	619	98.7
Married	565	93.8	448	80.5	5	0.8
Other	20	3.4	44	7.9	3	0.5
Medical insurance status						
Self-paid	264	43.9	152	27.3	414	66.0
Co-operative insurance	320	53.2	1	0.2	6	1.0
Paid by work unit	14	2.3	36	6.5	18	2.9
Commercial insurance	1	0.2	7	1.3	104	16.6
Mainly paid by government	3	0.5	361	64.8	85	13.6
No religious belief	599	99.5	523	93.9	580	92.4
Han nationality	601	99.8	543	97.5	588	93.8
Living situation						
Alone	20	3.3	38	6.8	2	0.3
Collective housing	0	0	0	0	581	92.7
Share an apartment	1	0.2	10	1.8	19	3.0
With family members	581	96.5	509	91.4	25	4.0
Employment status						
Farmer	514	85.4	1	0.2	0	0
Worker	12	2.0	71	12.7	0	0
Administrator	2	0.3	51	9.2	0	0
Technician or professional	21	3.5	75	13.5	0	0
Private enterprise	27	4.5	31	5.6	0	0
Service personnel	1	0.2	29	5.2	0	0
Temporary worker	5	0.8	25	4.5	0	0
Retired or sick leave	14	2.3	202	36.3	0	0

Characteristics	Rural (N=602)		Urban (N=557)		Students (N=627)	
	n	%	n	%	n	%
Laid off or unemployed	1	0.2	50	9.0	0	0
Student	2	0.3	12	2.2	629	100
Housewife	3	0.5	10	1.8	0	0

Table 2

Self-reports of randomly selected rural residents, urban residents, and college students from three locations in China on the likelihood that they would consider suicide if they experienced different life circumstances

	Total (N=1786)			Rural [R] (N=602)			Urban [U] (N=557)			Students [S] (N=627)			Multiple
Circumstances	**Mean (SD)**	**Rank**	**%**	**Mean (SD)**	**Rank**	**%**	**Mean (SD)**	**Rank**	**%**	**Mean (SD)**	**Rank**	**%**	**Comparisons***
HIV/AIDS	2.13(1.38)	1	8.8	1.90(1.43)	1	10.8	1.86(1.26)	2	5.2	2.60(1.31)	1	10.2	S>U,R
Incurable illness	1.98(1.15)	2	3.5	1.69(1.14)	2	4.2	1.89(1.19)	1	4.3	2.33(1.03)	3	2.2	S>U>R
Drug dependence	1.97(1.29)	3	6.7	1.61(1.20)	4	6.1	1.77(1.23)	3	5.6	2.49(1.28)	2	8.3	S>U>R
Burden on others and no future hope	1.82(1.15)	4	4.0	1.67(1.16)	3	4.8	1.69(1.07)	4	3.1	2.10(1.17)	4	4.0	S>U>R
Chronic mental illness	1.64(0.94)	5	1.2	1.44(0.90)	8	1.3	1.51(0.92)	7	1.6	1.95(0.92)	5	0.8	S>U,R
Elderly and no family to provide support	1.62(1.01)	6	1.6	1.53(1.05)	5	2.3	1.49(0.89)	8	1.1	1.83(1.04)	7	1.4	S>U,R*
Severe depression	1.61(0.98)	7	1.0	1.32(0.78)	9	0.8	1.57(0.98)	5	0.9	1.93(1.05)	6	1.1	S>U>R
Large debt due to gambling	1.60(1.02)	8	2.2	1.50(1.06)	6	3.2	1.52(0.98)	6	1.4	1.77(1.01)	8	2.1	S>U,R
Raped	1.50(0.92)	9	1.2	1.48(1.01)	7	2.7	1.40(0.81)	9	0.4	1.61(0.90)	9	0.5	S>U,R
Imprisoned	1.38(0.82)	10	1.5	1.25(0.77)	11	1.8	1.30(0.76)	10	1.4	1.59(0.89)	11	1.3	S>U,R
Homosexuality	1.37(0.84)	11	1.9	1.24(0.73)	12	1.0	1.24(0.70)	13	1.3	1.61(1.00)	10	3.3	S>U,R
Death of spouse	1.33(0.69)	12	0.3	1.22(0.66)	15	0.5	1.27(0.63)	12	0.4	1.48(0.75)	12	0.0	S>U>R
Frequently beaten by spouse	1.27(0.71)	13	0.8	1.31(0.82)	10	1.5	1.21(0.63)	15	0.7	1.29(0.67)	15	0.2	S>U
Serious economic loss	1.27(0.67)	14	0.3	1.22(0.69)	14	0.7	1.23(0.62)	14	0.2	1.36(0.68)	13	0.2	S>U,R
Poor with no prospects for improvement	1.22(0.61)	15	0.3	1.17(0.59)	16	0.7	1.29(0.70)	11	0.2	1.21(0.52)	18	0.0	U,S>R
Chronic alcohol abuse	1.21(0.58)	16	0.6	1.16(0.55)	17	0.7	1.14(0.47)	17	0.2	1.33(0.68)	14	0.8	S>U,R
Charged with crime	1.17(0.51)	17	0.2	1.13(0.49)	20	0.2	1.18(0.54)	16	0.2	1.20(0.50)	20	0.2	S>R
Marriage plans interfered with by others	1.16(0.48)	18	0.1	1.15(0.53)	18	0.3	1.09(0.36)	20	0.0	1.22(0.50)	17	0.0	S>U,R
Serious loss of face	1.15(0.52)	19	0.3	1.23(0.68)	13	0.7	1.12(0.44)	18	0.4	1.11(0.40)	24	0.0	S>U,R
Major fright	1.14(0.47)	20	0.1	1.14(0.53)	19	0.3	1.08(0.35)	22	0.0	1.21(0.50)	19	0.0	S>U,R
Serious interpersonal conflict	1.14(0.44)	21	0.1	1.10(0.40)	23	0.0	1.09(0.38)	21	0.2	1.22(0.52)	16	0.0	S>U,R
Divorce	1.11(0.42)	22	0.0	1.11(0.46)	21	0.0	1.10(0.40)	19	0.0	1.13(0.40)	22	0.5	S>U,R
Suicide of family members or friends	1.11(0.42)	23	0.2	1.09(0.44)	24	0.7	1.06(0.27)	25	0.0	1.18(0.48)	21	0.0	S>U,R
Failed university entrance exam	1.10(0.42)	24	0.2	1.11(0.47)	22	0.3	1.07(0.33)	24	0.0	1.13(0.42)	23	0.2	S>U
Disciplined at work	1.08(0.35)	25	0.1	1.08(0.36)	25	0.0	1.07(0.38)	23	0.4	1.09(0.31)	25	0.0	NS

Mean= the mean likelihood that subjects consider suicide: 1–5 (definitely not consider--definitely consider) % = % of subjects that definitely consider suicide.

* Kruskal-Wallis test was used to compare the original ranked scores (1–5) between the three groups and, if significant, the Nemenyi test was used to compare the three pairs of groups (i.e., R *v* U, R *v* S, U *v* S); significant at the 0.05 level; NS = not significant.

Table 3

Results of multiple linear regression analysis of the factors associated with the acceptability of suicide among 1,775 randomly selected community members and college subjects from three locations in China*

Dependent Variables	Unstandardized Beta Coefficients				Standardized Beta Coefficients			
	Total N=1775	Rural N=601	Urban N=547	Student N=625	Total N=1775	Rural N=601	Urban N=547	Student N=625
Rural residents (1=yes; 0=no)	0.59**				0.02**			
College students (1=yes; 0=no)	2.70				0.11			
Believe in religion (1=no; 2=yes)	--	--	--	3.66	--	--	--	0.08
Years of formal education	0.25	--	0.39	NA	0.09	--	0.12	--
Gender (1=female; 2=male)	−2.80	--	−2.28	−4.07	−0.12	--	−0.11	−0.17
Age	−0.10	−0.15	−0.08	−0.78	−0.14	−0.15	−0.11	−0.13
Yearly per capita income in family (1=low; 2=middle; 3=high)	--	1.22	--	--	--	0.08	--	--

* Other variables included in the multiple regression analyses that did not enter the final model include marital status, Han nationality, living alone, medical insurance status, and employment status. The R^2 for the total sample and for the rural, urban and student sub-samples were 0.090, 0.032, 0.049, and 0.057, respectively.

** p >0.05. All other p's <0.05.