Suicide in China: Unique Demographic Patterns and Relationship to Depressive Disorder

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Recent research on suicide in China reveals several unique findings: 1) female suicides outnumber male suicides by a 3:1 ratio; 2) rural suicides outnumber urban suicides by a 3:1 ratio; 3) a large upsurge of young adult and older adult suicides has occurred; 4) a comparatively high national suicide rate two to three times the global average is evident; and, most startlingly, 5) a low rate of psychiatric illness, particularly depression, exists in suicide victims. The strongest empirical data suggest that these trends result from a high number of rural, young females who experience acute interpersonal or financial crises and then impulsively attempt suicide using lethal pesticides or poisons. Other suicide risk factors in China are similar to those that are well known internationally. Interactive sociological, cultural, and economic hypotheses unique to China provide further insight. Among those, the cultural-socioeconomic disadvantages of the Chinese rural female and cultural attitudes toward suicide are particularly noteworthy.

Introduction

Recent substantive research on suicide in China has produced a number of unique findings. The general picture is that the suicide rate in China is about two to three times higher than the global average; considering that one fifth of the planet's population lives in China, this is an enormous issue [1,2]. These findings are informative not only for what they reveal about a suicide near-crisis and its impact as a public health issue in China, but because they challenge some traditional views within suicidology. This cross-cultural study may permit new insight.

This paper presents these significant findings and provides a review and discussion through international comparisons, analyses of available proposed explanations, and a brief update on suicide prevention efforts in China. Many of these hypotheses are interconnected and interdependent. This article also focuses on the cross-cultural exploration of the relationship between depressive disorder and suicide. In addition to a comprehensive review of publications searched via MEDLINE and PsychInfo (1984–2007), we surveyed the Chinese Database for Academic Journals (published in Chinese) for more complete data sources. Search terms used included "China, "Hong Kong," "suicide," and "attempted suicide" in English and "*qing sheng*" ("to take life lightly") and "*zì sha*" ("suicide") in Chinese.

Unique and Significant Findings

Relative high rates and number of suicides in China

To date, China does not have a comprehensive vital statistics reporting system; there exists a relatively wide range of figures on suicide rates. According to research based on a sampling method, using data from selected rural and urban areas (the Disease Surveillance Points System), the Chinese government reported to the World Health Organization (WHO) a national suicide rate of 13.9 per 100,000 in 1999 [3]. Based on the same data source, two other major research studies found very different rates. Phillips et al. [4] at the Beijing Suicide Research and Prevention Center estimated an average rate of 28.7 per 100,000 from 1990 to 1994, with detailed figures of 38.8 and 27.5 per 100,000 for rural women and men, respectively, and 10.7 and 9.9 per 100,000 for urban women and men, respectively. The Global Burden of Disease (GBD) study estimated a 1990 figure of 30.3 per 100,000 in China using multiple adjustments to account for likely underreporting [5].

Using mortality rates reported by local health officials from all counties of China to the Chinese Ministry of Health as a database, the Ministry reported a figure of 22.2 per 100,000 for 1999 [6]. Using this database, Phillips et al. [1] again made detailed epidemiologic

estimates and reported a mean annual suicide rate of 23 per 100,000 from 1995 to 1999. Smaller-scale studies done by other Chinese researchers have found an average of approximately 18 to 23 per 100,000 [6–8]. Within the wide range listed previously, the 22 to 23 per 100,000 range is most consistently reported and more generally accepted; most studies reported generally stable rates over the studied years.

Discussion

The WHO's international reports show widely varying national suicide rates (eg, 10–14 per 100,000 in North America, ~ 25 per 100,000 in Scandinavia, < 10 per 100,000 range in the Mediterranean regions) [3]. The GBD study used the same algorithm to calculate each country's suicide rate and found a global average of 10.7 per 100,000. Thus, China's suicide rate is two to three times the global average; in percentages, China has 21% of the world's population but 44% of the world's total suicides and 56% of the world's female suicides [5]. This translates to close to 300,000 suicide deaths in China each year [1] and, by extrapolation, close to 3 million suicide attempts behind these deaths [9]. Suicide is an enormous health and social issue.

Many hypotheses attempt to explain the high suicide rates in China. The overarching and most common hypothesis connects the rapid economic reform in the last 30 years and its attendant deleterious sociological and infrastructure changes to increased suicide rates. Commentators implicate wholesale failure of state-owned companies, massive urbanization by migrant workers, the related breakage and uprooting of rural families, deterioration of family relational networks, intense competition for economic survival, surging divorce rates, resurgence of substance addictions and abuses, destructive forces related to gambling and prostitution, marketization of the health care system, skyrocketing health care costs, and an increasing gap between the rich and poor in the suicide rate hike [4,6,10–12].

Some scholars also point to the "moral-emotional sequelae of disastrous political conditions"—referring to the failure of the communist state as an ideological authority and its potential impact on suicide [12,13]. Evoking the French sociologist Emile Durkheim, these theories point to the anomic type of suicide, in which an individual's integration into society is disturbed at times of drastic socioeconomic change and social instability. Individuals who cannot follow customary norms became much more vulnerable to suicide [14]. Although interesting, these and other similar theories do not carry strong empirical evidence. Furthermore, no comparative data exist from other periods of great societal changes in China, including the recent Cultural Revolution (1966–1976) and the Sino-Japanese war and Chinese civil war era (1930s–1949) [4].

Remarkable age distribution

Like most countries, China has suicide rates that increase with age: the over-65 age group has the highest rate of suicide, reaching 50 to 200 per 100,000, which is four to five times that of the general population, with male rates higher than female and rural rates as high as five times those of urban rates [1,6]. China is also unique in that it has another (smaller) peak, in the age group of those aged 15 to 34 years [1]. Suicide has been the leading cause of death in this age group, accounting for 18.9% of all deaths.

Discussion

China's "two peaks" phenomenon is more dramatic than elsewhere, although some other countries (eg, the United States) have seen increases in the young adult age group outpacing those in other age groups [15]. The average North American suicide rate for the over-65 age group is about 40 per 100,000.

Several issues are remarkable with respect to age distribution of suicide in China. To start, the much higher rates in older adults may be related to decreased infant mortality and higher life expectancy (increased from 45 to 70 years over the past 50 years) [16]. Second, high older adult suicide data are dissonant with respect to important Chinese, Confucian, traditional values of filial obligations of respect and care for older adults [4,17]. Moreover, the high suicide rate in older adults is further divided on rural/urban lines, with rural older adults dying by suicide four to five times more frequently than their urban counterparts. Given that many believe these traditional values and practices to be most entrenched in the countryside, the data are particularly disquieting. Effects of economic reform, relative poverty (forcing migrant workers to leave home and family), cultural changes (eg, elderly no longer living with their children), and the one-child policy (decreasing family size and caring resources) may contribute [17–19].

Lastly, the high numbers of youth and young adults dying by suicide is puzzling. Some theories point to the rapid pace and high stress level in a changing society possibly affecting the young more selectively. Young people may exhibit immature coping skills and a poorly conceived sense of identity in the face of overwhelming pressures, especially with fewer role models and traditions upon which to rely [4,19,20]. Psychopathology, such as external locus of control, depression, and aggression, and life stresses, such as poor academic performance, being away at school, relationship breakups, legal and disciplinary crises, and family conflict, play major roles in suicidal behavior in Chinese youth, especially in rural females [21]. Furthermore, the national "one-child-only" family-planning policy over the last 40 years is implicated, as it is argued that those who grew up in a single-child environment get overly pampered by "six-parent families" (ie, parents and two sets of grandparents). Thus, they do not get adequate exposure and training in problem solving and socialization and have poorly developed resilience and self-identities [22].

Unique gender differences

The Chinese national reports on suicide have shown a strong reversal of the international trend: in those younger than age 60 years, female rates exceed male rates by an average of 26%, with rural female rates exceeding rural male rates by 66% [1,6]. This female-to-male ratio of suicide decreases with age and generally is reversed at ages older than 60 years [1,6].

Discussion

Typical international reports show the male-to-female suicide ratio is 2 to 3:1, and in attempted suicide, female-to-male ratio is about 3:1 [3,15,23]. Like their counterparts in the rest of the world, Chinese females attempt suicide more frequently, with a ratio of 3:1 to males [4,19,24,25]. In the West, the high rate of attempted suicide in females, coupled with the lower overall suicide rate in females, points to high levels of female impulsive suicide attempts and self-harm episodes. Events that are less planned and less lethal are more likely to result in intervention or rescue. Typically, impulsive suicides are seen in those who have dramatic reactions to serious negative life events, such as relationship breakups, financial losses, and family conflicts. [26]. The time elapsed between these crises and suicide typically is short, sometimes within days or even hours [19,26]. One line of research found that the main difference in China compared with other countries is that impulsive, female-dominated attempted suicides are highly fatal given that the agent of suicide typically is highly potent pesticide or rat poison; in rural China, there is no means of rescue, as medical resources are limited [27••]. In China, pesticide or rat poison is the means of suicide 30% to 67% of the time, followed by hanging (8% to 44%), drowning (3% to 14%), jumping from a high place (3% to 7%); almost no firearm suicide is reported [6]. In contrast, firearm is the most common means of suicide in the United States (60%) for males and females, whereas drug ingestion (mostly among women) accounts for 70% of failed suicide attempts [9].

Sociologically, theories abound suggesting a link between low social status of women in Chinese society and suicide. Social scientists point to evidence of oppression of women, including selective abortion of females [28], young women "inducted as wives who are expected to be a source of endless labor and producers of sons" [12], and abusive in-laws and husbands whose abuse is apparently permitted in traditional family dynamics. These issues have been proposed as explanations for the high female suicide rates [10,29,30].

Two other forms of inequality have been linked strongly to women's suicide. Faced with economic hardship, many families in rural China pull girls from school and start them in paid employment. Even by middle school, 10% more boys than girls attend. At a national level, female illiteracy is 13.6%, compared with 4% in males [10]. Educational deprivation reflects fundamental gender discrimination in China. Similarly, women are systematically dispossessed under the land reform. Under the current system, land and farming property titles are distributed to families on a "loan" basis from the communist government without a sophisticated system of real estate title. Under this arrangement, families rather than individuals have land rights. Despite the Chinese Constitution's formal guarantee of women's right to these "loans," the operational reality of these reforms, coupled with traditional views of social hierarchy, mean that women are the first to lose land titles when they marry "out" of families, are divorced, or become widowed; a recent survey showed that women constitute 70% of the landless rural population [10]. Lower educational levels and resulting loss of opportunities may lead to a diminished sense of self-worth in rural females, making suicide seem like a way out when faced with overwhelming stresses [7,10,29].

Similarly, land is associated with status, self-worth, and economic survival. Women without these key resources are frequently reported to be desperate, overwhelmed, and unable to "find a way out," all of which can lead to suicide [10,29,31].

Wide rural and urban differences

Research in China has shown that rural suicides are three to five times more common than urban suicides, with this holding true for men and women and in all age groups [1,8,32]. This phenomenon is noteworthy, as approximately 70% of Chinese live in rural settings, and 93% of all suicides happen in rural China. Rural suicides largely account for the high Chinese national suicide rate and unusually high female rates.

Discussion

In most developed Western countries, suicide rates in urban areas generally outnumber those in rural areas [3,33]. However, global rural suicide rates may be on the rise, possibly as a result of decreasing social integration and economic deprivation [33,34]. Still, the scale of rural/urban difference in China is strikingly large and consistently found in all studies.

According to Durkheim [14], Western rural areas enjoy a more cohesive, mutually supportive, and interdependent social network. This allows for more interpersonal connections and support and serves as a stronger protective factor against suicide as compared with Western urban areas. As discussed, in China's current economic dislocation, considerable disruption in family and social structure has occurred [4]. Disproportionate disintegration of the protective factors in rural China as described by Durkheim [14] may partly explain the high rural suicide rates.

On a practical level, another factor for high rural rates is the accessibility of very potent pesticide or rat poison (typically stored at home) in rural China [2,7,19]. Combined with very low levels of emergency room and

resuscitative capacity to treat such poisoning, the death rate in rural areas has skyrocketed.

In other research, lower education, lower income, and higher frequency of major negative life events have been associated with rural suicides [31]. Furthermore, sociological explanations on rapid economic reforms may, as compared to the urban area, affect the traditionally poor, less educated, and resource-limited rural areas more negatively, as entrenched, traditional, hierarchical structures and family values may come into more conflict with the increasingly individualistic and materialistic values of market reform. Rural areas also may be less adaptive to change in general [32].

Uniquely low level of mental illness, particularly depression, in suicide victims

According to Chinese psychiatric research, the prevalence of Axis I mental illness, including depression, found in suicide victims is approximately 30% [32].

Discussion

In the West, depression carries the greatest risk for suicide, and suicide typically is regarded as a result of severe depression. More than 90% of suicide victims have an Axis I mental illness; the vast majority of the victims suffer from depression (60%); other conditions include schizophrenia (10% to 15%) and substance-related problems (15% to 25%) [9,35,36].

Part of the reason for the low rate of mental illness found in suicide victims in China is a methodologic issue. To that extent, the penetration rate of mental health services in China, especially rural China, is extremely limited and unaffordable [11,37]. The GBD study also estimated that only 5% of individuals with depression received treatment in China [5], and the Phillips et al. [19] psychological autopsy study found that only 7% of the suicide victims had seen any mental health professional before their deaths [19]. A study on suicide attempters found that only 30% had sought help for psychological problems [31]. In summary, those with mental illness are very unlikely to have been exposed to mental health services and, therefore, to have received a diagnosis in the first place. Furthermore, for those who received mental health services, the level of psychiatric training, knowledge, and expertise may be inadequate to diagnose mental illness [11,32]. Undertreatment and underdiagnosis of mental disorders partially explain this discrepancy between China and the West. More importantly, great numbers of depressed individuals not receiving treatment also may partially explain China's high suicide rates [38•].

A related issue is a hypothesis that the instrument used in China to diagnose depression is not as sensitive due to cultural and linguistic barriers [19,39••]. Linguistic and cultural issues (such as heavy stigmatization) also contribute to lowered willingness and readiness to report mental illnesses [12,40].

To address these issues, Phillips et al. [19] undertook a comprehensive, case-controlled, psychological autopsy study from a nationally representative sample (n = 519). The research group paid special attention to depression and developed within the study a culturally appropriate probe, based on the Chinese version of the Structured Clinical Interview for *DSM-IV,* that significantly increased the sensitivity to the illness and found an overall rate of depressive illness in the suicide victims of 40% [39••]. With this methodologically rigorous and reliable study, the overall prevalence of depression in suicide victims increased by 10%. However, this is still significantly lower than the 60% figure known in the West.

Taking a step further, Phillips et al.'s [39••] study highlighted an often-neglected point within suicidology: the importance of conceptualizing depression as a dimensional, incremental illness rather than a categorical diagnosis. They found that many suicide victims have depressive symptoms but were subthreshold for a full diagnosis. They argue that rather than relying on diagnosis as a predictor, a systematic, biopsychosocial review of well-known suicide risk factors and triggering events, such as previous suicide attempt, acute stress, interpersonal conflict within days before suicide, low quality of life, high chronic stress, family history of suicide, and having known another person with suicide behavior, is most useful [26,41]. Suicide risk increased with exposure to multiple risk factors in a "dose-dependent" fashion [19,39••].

One must ask whether depression incidence truly is lower in suicide subjects in China or whether the differences reflect primarily measurement issues. Strong arguments exist for the view that depressive disorder incidence is lower in Chinese individuals who die by suicide. On an anthropological level, suicide in traditional Chinese culture can be justified and rationalized in moral terms. Suicide can carry with it social and cultural significance of "following a loved one in death," loyalty, virtue seeking, establishing eternal fame, courage, preserving moral integrity, redeeming one's self from disgrace, social criticism, shame inducement, or even a domestic strategy in a highly rigid patriarchal family setting. In less charitable accounts, classic depictions also include notions of personal weakness, social failings, and silent suffering, but it is clear that depression as an entity we know today does not have a strong historical presence in China [2,4,6,12]. In modern times, these notions still have strong presence, and no strong religious or legal prohibition exists against suicide [1]. Thus, the social environment is arguably more permissive of suicide in China than in the West. Nevertheless, cultural attitudes alone cannot explain the high suicide rates, as evidence shows other Chinese societies, such as in Taiwan, Singapore, and Hong Kong, do not have such high rates. Thus, other sociological and psychological factors also must be at play [4].

Culturally speaking, common knowledge and consistent research reports suggest that personal crises, relationship

breakups, losing face, feeling "no way out," social experience of intense shame, and loss of honor are common suicide precipitants in China. These individuals typically are found not to be clinically depressed, but socially powerless and marginalized [6,26,31]. This line of research points away from depression as a primary or dominant risk factor. One illustrative Chinese study found that only 38% of suicide attempters attempted due to a mental illness; more attempts were due to severe stressors [42]. Phillips et al.'s [19] psychological autopsy results suggest the same conclusion. Their study found the presence of a psychiatric diagnosis was not a significant predictor of suicide, but "doses" or degree of depressive symptoms, presence of multiple risk factors such as the stressors described perviously, and quality-of-life measures were significant predictors [19].

As noted, research suggests that many suicides are impulsive, or "low-planned" [27••], adding further weight to this argument, as these suicides have high correlation to acute stress and no association with depression. The short time between these crises and suicide does not allow reactive mental illness to develop, whereas "higher planned" suicide acts are associated with greater depression [43,44].

Epidemiologically speaking, the most comprehensive Chinese national studies showed that neurotic disorders' (ie, including depression and neurasthenia, a condition historically overdiagnosed in China in place of true depression) point prevalence in the general population was 2.2% [45], much lower than the American figure of approximately 5.9% [46]. Review studies, including a recent study of older Chinese adults [47], also support this view of generally lower depression presence in China [40].

Finally, the other significant mental illnesses found in suicide victims by Phillips et al. [19] included schizophrenia (7%) and alcohol dependence (7%). Although the rate of schizophrenia is relatively stable, a substantial increase in substance problems has been observed in the last three decades in China [48]. The rate of alcohol and substance abuse in China, despite the recent increase, remains much lower than in the West. For example, in North America, approximately 24% of those who die by suicide have an alcohol problem (alone or comorbid with other mental illnesses [9]), compared with 7% in China [19]. At the population level, the GBD study on China estimated an alcohol dependence rate of 0.49%, about five times lower than that of the West [5]. Eighty percent of substance problems in the West are found in males, which likely contributes to the gender differences in suicide rates [9].

Major Contemporary Chinese Views and Suicide

It has been argued that suicide in China was historically seen as a free person's final act in response to social stress; the notion that suicide is a problem to be helped primarily by mental health professionals, as it is in the West, is not part of the dominant collective conception of the issue. The Chinese scholar A. Kleinman called the "over-medicalization" of suicide in China as adopted in the West a form of "ethnocentric" myopia at the cost of ignoring China's social condition [21]. Contextual factors discussed previously are consistent with this analysis.

On a more individual level, one current noteworthy perspective on suicide in China starts with an alternative term for suicide: *"qing sheng"* (literally, "to take life lightly"). Compared with the conventional word of "*zì sha*" ("suicide, to kill one's self"), inherent in this alternative term is a host of different semantic notions, including taking one's sacred life with a low regard, seeking escape from unbearable life, and choosing to be unburdened. On one level, this term is a euphemism; on another, this view also tends to be associated in public discourse with a shade of blaming those who have committed suicide for being weak and having made a poor choice, abandoning society's trust, abdicating responsibility, and wasting the hard work parents have done to raise them [10,31]. Some researchers have linked the conception of *qing sheng* to a more generalized loss of humanism; a devaluing of reflective, moral living; and overpowering of traditional views by marketization of social life in contemporary China [22].

Related to this, many authors are struck that many who die by suicide are young and relatively comfortable. In the eyes of those who survived decades of brutal wars, natural disasters, and political turmoil, why those in the relatively affluent and stable society today would commit suicide is a mystery. However, increasing knowledge exists about the power of modern stresses related to life's difficult challenges in times of large-scale changes, pressure, and uncertainty [22,32].

Research on personality characteristics and cultural values provides another interesting view. As a group, it has been reported that the Chinese are more emotionally reserved, introverted, overly considerate, socially overcautious, and habituated to self-restraint. Coupled with the culturally highly valued imperatives of maintaining personal honor, face, and reputation, and increasing level of social stressors, such Chinese characteristics are thought to predispose people to suicide as a means to resolve crisis and conflict [6].

Finally, Phillips et al. [4] have proposed a comprehensive model to provide a framework for understanding suicide in China. This model has five interactive factors: 1) cultural beliefs in the afterlife and acceptability of suicide as a solution to social problems; 2) prevalence of social problems "that place individuals in morally ambiguous or socially constrained circumstances"; 3) prevalence of predisposing psychological problems that "limit individuals' ability to adapt to stressful circumstances"; 4) the availability of convenient and effective means of suicide; and 5) unavailability of suicide prevention services [4]. This appears to be a flexible model that can be applied in different settings in China and beyond.

Future Directions

Many researchers and organizations have called for urgent attention to the suicide crisis in China. Suicide and its prevention have been designated by Beijing as a top national public health priority [32]. Given the problems' complexity and enormity, no easy solutions are likely to be found. Proposals include the following [32,49,50••]:

- Establishment of a comprehensive vital statistics–reporting system
- Increased training and ability to detect suicide risk at multiple front-line levels
- Serious education and land title reforms to correct discrimination against women
- Increased "buy-in" from different stakeholders, such as government ministries, academic researchers, educational and training institutes, and the media
- Public education about the availability of treatment for highly mental illnesses related to suicide risk, such as depression, schizophrenia, impulsive personality structure, and substance abuse
- Antistigma campaign to improve understanding of mental illness
- Active reduction of means of suicide (eg, removal from home and improved control of agricultural pesticides and poisons)
- Dissemination of medical knowledge, awareness, and resources on how to treat pesticide poisoning
- Expansion of direct suicide prevention strategies such as telephone hotlines
- Investment in support and counseling for families of suicide victims

Finally, along with the national recognition of suicide as a major public health issue, there is increasing charitable support from the private sector in Hong Kong and elsewhere for work by Chinese government agencies and universities.

Conclusions

The unique findings on suicide in China are informative and thought provoking. Comparative data are still lacking. Research is only beginning to address and explain the complex and enormous psychosocial issue of suicide. Integrated and synthetic understanding is needed. The research on impulsive suicide by young rural females using lethal pesticides is an example of a potentially very instructive view on the multifaceted, interconnected nature of suicide in China.

Current research also highlights that suicide is deeply affected by the cultural context within which it takes place, and a medical model of depression, entrenched in the West, has serious limits in its capacity to fully explain suicide's complex nature in China. However, depression as a dimensional rather than categorical construct and as part of a group of other known suicide risk factors can be very predictive of suicide risk. This cumulative and multifactorial reality should guide research and prevention strategies.

Suicide, in addition to being a tragic personal and societal loss, serves as a powerful reflector of societal conditions and wants. The observation on female inequality issues brought on by the large gender and geopolitical location differences highlights the role suicide plays in some societies.

Overall, Chinese society at large is looking at the issue more seriously and is actively engaged in a discourse on the subject. What will emerge, through reflection and grief, likely will be something uniquely Chinese, but it may be informative on the subject at large.

Disclosures

No potential conflicts of interest relevant to this article were reported.

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This major paper was collaboratively written by many of the leading figures in suicide research in the world today. It contains valuable information on the foundations of suicidology, as well as locally meaningful international perspectives on suicide's psychosocial aspect.