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## An Overview of Suicide Research in China

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### Abstract

Chinese suicide research did not start until the end of 1970s, when China opened its door to the West through reforming its economy. Although limited Chinese suicide research conducted overseas is published and known to the West, studies conducted by Chinese researchers and published in Chinese language, which may be of more significance, are rarely known or cited in the West. Further, researchers in China with direct observation of the suicidal environment may understand the suicide differently than scholars overseas with second hand information, and therefore derive different explanations of Chinese suicide. This current study overviews suicide research conducted in China and published in Chinese during the past two decades and compares the findings with what has been reported in Western publications. Six research books and 429 journal articles are reviewed. As units of analyses, all journal articles are quantified with 151 variables analyzed. Results support findings of previous studies in terms of the suicide rates by gender, age, and rural/urban location. A unique phenomenon in Chinese suicide noticed in the study is that married Chinese are at higher risk of suicide than the non-married. Hypotheses for future research are suggested based on the articles reviewed.

### Keywords

Chinese culture; China; gender; rural; suicide methods in China; suicide rates in China

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Suicide in China has become a focus of study in recent years, partly because of increasingly available data and the astonishingly high rates of Chinese suicide publicized in previous reports. Since 1987, the Chinese Ministry of Public Health (CMPH) has reported vital statistics, including those for suicide, to the World Health Organization (WHO) on an annual basis. However, few researchers out of China have obtained suicide data from various local governments in China, because suicide is still a politically sensitive topic in the nation. Therefore, the world's knowledge of Chinese suicide is generally based on what is provided by WHO Statistical Annuals, which are limited to only the rates by age, gender, and rural/urban location provided by the Chinese government.

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Based on the WHO data, Chinese suicide is unique in comparison with those in the rest of the world in at least two ways. First, Chinese women commit more suicides than do Chinese men, while the reverse is true for the rest of the world (Lester, 1990; WHO, 1988–1995; Zhang, 1996). Second, rural Chinese commit more suicides than urban Chinese do, while in most parts of the world, suicide rates are higher in cities than in the country (Lester 1990). In addition, the Chinese suicide age pattern is generally a bimodal one, though the first peak of suicide rates is between 15–24, instead of around the age of 25–34 as found other societies, and this is particularly true among rural females. Therefore, suicide by rural young women in China is an urgent focus in suicide research.

To understand the uniqueness of Chinese suicide in terms of age, gender, and location, we need to go beyond the WHO data. Until China further opens its door to western researchers for suicide data collection, the only source of information may be the literature published by Chinese researchers in China in the past. This current study is an overview and analysis of all published research that can be found from Mainland China for about the past two decades. Major objectives for the overview include (1) assessing the scope of suicide research in China, (2) evaluating Chinese researchers' explanations of the uniqueness in Chinese suicide in terms of age, gender, and rural/urban location, and (3) comparing the WHO data reported by CMPH with what has been found by Chinese researchers in various regions of China.

## SUMMARY OF THE WHO DATA

Because China began reporting statistics to the WHO only in the late eighties and has missed occasional years, the Chinese data included in the *World Health Statistics Annuals* are for 1987–1990, 1992, and 1994. For these six years of data, the crude numbers and the rates based on suicides per 100,000 population are reported. The crude numbers and rates are categorized into gender, rural and urban regions, and eight age groups with 10-year intervals. The average rate of Chinese suicide over the six years is 21.1/100,000.

From the data two facts stand out: (1) the female rates are consistently higher than the male rates regardless of region and year, and (2) the rural rates are always higher than the urban rates for both males and females. However, breaking the rates down by age groups reveals a more complex picture. Elderly Chinese men, urban or rural, especially 75 years of age or over, commit more suicides than elderly Chinese women do, and the pattern holds over the six years. The trend is clearly presented in Figure 1, which summarizes the six years of available data between 1987 and 1994 and describes suicide rates by three independent variables: gender, location, and age. The figure clearly shows the trend of increasing suicide rates with age after 45–54 for genders, whether rural or urban. For females, there is a second peak in the 15–24 age range for both urban and rural populations. These rates from the late teens and early twenties roughly match the rates for women in their late fifties and early sixties.

Rural suicide rates are three times greater than the urban rates. The rate averaged over the six years for the rural suicides is 26.4 per 100,000 rural population, while that for the urban is 8.7 per 100,000 urban population. Since rural people account for approximately 70% of the Chinese population, the absolute number of suicides in the countryside is much higher than in cities.

Figure 1 also illustrates the gender differences in suicide rates for both rural and urban populations throughout the age groups. Females generally commit more suicides than males in China. The averaged rate for female suicides in China over the six years is 23.9 and that for male suicides is 18.3. The female rates are generally higher than the male rates, but only before certain ages. For the age group of 15–24, for each suicide by a young man, there are

about two young women who have taken their own lives. This is the case for both rural and urban areas. The overall ratio of female to male suicide rates (23.9 to 18.3) is not as high as 2 to 1 because the pattern changes over the life span. The male suicide rate “catches up” to the female rate around the ages of 55–64. As age increases, male suicides increasingly outnumber female suicides, especially among the rural population.

## REVIEW OF CHINESE SUICIDE RESEARCH IN THE WEST

Because of the difficulty in obtaining data and the short time since China opened its door to the west, scientific research on Chinese suicide is an immature field. Most literature on Chinese suicide is either from non-scientific magazines such as *Time*, *The Economist*, *The New York Times*, and *Far Eastern Economic Review* or from unpublished conference papers such as that of Phillips and Liu (1996). As of today, none of the major research journals in medicine, psychiatry, psychology, sociology, and other psycho-behavioral fields has been noted to have published a scientific study on Chinese suicide to answer questions raised on the uniqueness of Chinese suicide. The following review of Chinese suicide literature is summarized in comparison with suicide statistics in the west.

### The Rate

Chinese suicide rates are relatively high compared with those in the world. A 1995 World Mental Health Report put the overall suicide rate in China at 17.1 per 100,000 population (Murray and Lopez, 1996a). A study by Phillips and Liu (1996) reported that the Chinese suicide rate is as high as 28.7 per 100,000 people. Other research conducted at the Harvard School of Public Health reported the Chinese suicide rate as 30.3 per 100,000 (Murray and Lopez, 1996b). Based on Murray’s estimates, China, with 21.5% of the world’s population, accounts for a staggering 43.6% of the 786,000 suicides worldwide, and the incidence of suicide will take over 330,000 Chinese lives each year (Brown, 1997). Another report has revealed that the top three causes of premature mortality by injury in China are suicide (33%), motor vehicle crashes (16%), and drowning (14%), while in the USA, death by suicide accounts for only 20% of all injury deaths (Pearson, 1995). Compared with suicide rates around the world, Chinese suicide rates are among the highest, since the average of suicide rates in the world is 10.7 (Lester, 1997). Lester (1997), based on data from 1990, reported that the highest annual rate in the world is found in Hungary (39.9 per 100,000 population) and the lowest in Egypt (0.04 per 100,000 people).

To explain the high suicide rates in China, researchers have postulated hypotheses in at least four areas: (1) suicide means and remedial action, (2) mental health education and availability of professionals, (3) living conditions and quality of life, and (4) depression.

Easy access to the means of suicide has been discussed as the most prominent reason why suicide rates are high in China. Pesticide availability is one example. Nearly all rural households store pesticides, which makes suicide means readily available in the Chinese countryside (The Economist, 1997). Handguns, which are a primary means of suicide in the West, are not available to Chinese civilians, and account for only about 0.1% of Chinese suicides (Zhang, 1996). Although usually less violent and less efficient than guns, pesticides can be an efficient means of suicide if they are easily available and if few hospitals are equipped to treat patients who have ingested them. No reliable figures yet exist for the ratio of attempted suicides to completed suicides in China. The difference between China and other countries may lie not so much in a higher rate of attempted suicide, but in a higher rate of attempted suicides that die because of unsuccessful remedial action (The Economist, 1997).

Suicidal symptoms are not easily detected by Chinese medical doctors. Many doctors, especially in rural areas, do not understand the symptoms of depression (Brown, 1997). Because of low salaries and high stress, few doctors choose to go into the mental-health field. Therefore, severely depressed patients, especially those outside the large cities, often go without treatment (Nelán, 1998). On the other hand, suicidal and depressed people often seek out physicians for their problems due to a scarcity of mental health professionals or psychiatrists available to them, as well as their own lack of awareness of mental illness symptoms. Patients, going to the doctors by themselves or being sent there by family members, often complain to their physicians about somatic pains, rather than depression or psychological suffering (Brown, 1997).

As in a third world country, living standards for most people in China are lower than in the West. About 70% of the Chinese population live in rural areas, where for the most part life is physically difficult. This economic polarization caused by the ever-growing free markets may have caused the high suicide rate in China. Yet such economic conditions prevail in developing countries that have far fewer suicides. China's high rate cannot be fully explained by poverty, poor public health or the low status of women either, because many other parts of the world also suffer from those problems (Nelán, 1998).

The link between mental illness and suicide is controversial in China. It is believed that as few as 50% of Chinese people who commit suicide may turn out to be suffering from diagnosable depression or other mental disorders at the time (Brown, 1997). On the other hand, about 90% of American, British, and European people who kill themselves are suffering from serious psychological illness, mainly severe clinical depression (Brown, 1997). Phillips and Liu (1996) object to the notion, common among Western researchers, that depression is almost always present in people who attempt suicide (The Economist, 1997). Pearson (1995) also argues that depression is not as important a cause in China as it is in Western countries. To a Western eye, at least, the discrepancy between the high rates of suicide and the low rates of depression presents something of a puzzle. Individuals in traditional China with ancient philosophy are not encouraged to express their feelings, nor are they socialized to believe that catharsis is good for the soul. Thus, even intense misery may go unrevealed and unrecognized. There is also a cultural expectation that individuals will accommodate themselves to circumstances, rather than expecting their environment (and those in it) to change to suit the individual. This further encourages the person to direct the distress inward (Pearson, 1995).

## Gender

Men in the world generally kill themselves at about three times the rate of women (Pritchard, 1996). In the USA for example, men account for about 78.8% of all suicides each year (Maris, 1992). For each female suicide in the USA, there are almost four male suicides. Unlike other countries in the world, suicide rates for Chinese women are about 40% higher than those for Chinese men: For each 100 male suicides, there are about 139 female suicides in China (The Economist, 1997; Phillips and Liu, 1996). The Global Burden of Disease study conducted by the World Bank, World Health Organization and Harvard University, identifies China with 56.6% of all female suicides worldwide, an astonishing figure considering that only 21% of the world's female population lives in China. The study also found that the rate of suicide among Chinese women is nearly five times the world average (Macleod, 1998). China may be the only country in the world where women's suicides outnumber male suicides. Explanations for the unique gender difference are many, most of which have concentrated on the lower status of Chinese women, love, marriage, marital infidelity, and family problems, the methods used to commit suicide, and mental health of Chinese women (Lester, 1994; He, 1996; Zhang, 1996). Comprehensive research on the subject, however, is lacking.

Before the Communist government came to power in 1949, discrimination against women was institutionalized within all the usual structures of society: family, the economy, education, culture and the political system. It was one of the major policy initiatives of the Communist government to do away with the unequal treatment of women. However, it is quite easy to demonstrate that significant discrimination against women still exists, especially in the countryside. The Chinese government believes that this is because of “remnants of feudal thinking.” Although this may be partly true, there are aspects of current Chinese society that encourage the continuation of this cultural tradition (Pearson, 1995).

Young women make up a disproportionately large fraction of the suicide victims in China. More than 30% of all deaths to rural females 15 to 29 years of age are due to suicide (Phillips and Liu, 1996). Li and Baker (1991) speculate that marital problems are one of the major causes of suicide for Chinese women. Brown (1997) further argues that social pressures that barely exist in Europe and the USA, such as being unable to leave unhappy marriages, keeping the lid on sexual indiscretions, or living with a constantly critical mother-in-law can be intolerable conditions for Chinese women.

Unhappy families certainly seem to weigh heavily on the minds of the suicidal in Shanghai. Of the 8,000 callers who phoned the city’s Hotline for Mental Health over a two-year period, most wanted to discuss problems with lovers and partners. Among unmarried callers, half requested help with problems related to a love affair. Among married callers, more than half were having “marital disputes and family problems” (Brown, 1997).

Women’s suicides are often impulsive acts, in reaction to family conflicts over love or infidelity. When problems arise in the family and marital arena, women are the first to be blamed and held responsible for whatever caused the problems, because of traditional gender roles imposed on Chinese women (Zhang, 1996). About 60% or more of such cases seem to be related to family problems and the women’s sense of being trapped in lives with little value except for childbearing. “They see no alternatives. They can’t find solutions to their problems” (Nelán, 1998).

Although more females than males in both China and the rest of the world have thought about suicide (Zhang and Thomas, 1991; Zhang and Jin, 1996), males are generally far more likely to complete the self-destructive behavior. This difference might be explained by the methods employed in suicides. The popularity of a method is related to its availability, and women’s methods are usually “female appropriate” and are often less lethal because they are less violent (Pritchard, 1996). Poisons such as pesticides are the most popular method for suicide in China, compared to handguns and firearms in other countries, partly because of their availability. Poisons are less overtly violent and appeal to women, whereas firearms are more overtly violent and tempt men when they consider suicide (Zhang, 1996).

As is the case in Western countries, depression and neurotic disorders in China are diagnosed more frequently in women than in men, although, overall, the prevalence rate in China is much lower than in Western countries. What is unusual is that schizophrenia, which is diagnosed at roughly equal rates for men and women in Western countries, is diagnosed more frequently in women in China (Pearson, 1995). Despite this, women occupy fewer psychiatric hospital beds and generally receive fewer resources than men, partly because of the lower social status of women in China. In Chinese mental health hospitals, male beds outnumbered female beds by at least 6:4 and sometimes more (Pearson, 1995).

### **Location (Rural/Urban)**

Contrary to the common belief that urbanization is harmful for mental health and suicide rates (Fischer, 1982; Kowalski et al., 1987), rural people in China commit more suicides

(Brown, 1997; Pritchard, 1996), and the rural rate is nearly three times the urban rate (The Economist, 1997). In other words, for each urban suicide, there are 2.77 rural suicides (Brown, 1997). Although about 70% of the Chinese population live in rural areas, they account for about 93% of suicides in the nation (Phillips and Liu, 1996). These observations are in contrast to Western nations, where suicide has come to be associated with city dwelling (Brown, 1997; Kowalski, et al., 1987).

Previous researchers have suggested two explanations for this unique difference between the rural and urban suicide rates: easy accessibility to lethal suicide methods in the countryside and rural Chinese culture (Brown, 1997; The Economist, 1997). In China, it appears to be easier to commit suicide in the countryside than in cities. As mentioned above, the most common method of suicide is swallowing pesticide, a substance found in the majority of rural homes. In the West, suicide rates have fallen every time a tried and tested method of suicide has ceased to be readily available—for example, when North Sea gas replaced the more toxic coal gas in Britain. All eyes are now on Australia to see if the suicide rate will drop after strict gun controls were introduced the last few year (Brown, 1997). If the availability of pesticides is a major cause of the high rural suicide rates, a decrease in the rates would be expected when pesticides become less available in the Chinese countryside.

The difference between rural and urban life is greater in China than in Western countries. Living standards, quality of life, and living styles sharply distinguish rural from urban Chinese. In general, rural life is more stressful and poor, but there are other possible explanations for the different suicide rates in China besides the social and economic stresses in rural living. The nation's high rates might reflect a greater acceptance of suicide by Chinese society, especially in the countryside. In some interpretations of Confucianism, an honorable death is better than a life without honor. On the other hand, Buddhism is generally intolerant of suicide, and some aspects of Confucian thought are, too. (Brown, 1997).

## Age

Suicide rates usually increase with age, but there are exceptions. Girard (1993) suggested four patterns of suicide rates as a function of age: upward sloping, downward sloping, bimodal, and convex patterns. The upward sloping pattern is a simple monotonic line of suicide rates going up steadily with increased age. The downward sloping pattern has a peak suicide rate before the age of 35 and the rate then goes down as age increases. The bimodal pattern has two peaks of suicide rates, one around the age of 25–34 and the other over 75. The convex pattern is an inverted U shape, with a peak in suicide rates between 35 and 74 years of age (Girard, 1993). The Chinese suicide pattern is generally a bimodal one, but the first peak of suicide rates is between 15 and 24, instead of around the age of 25–34 as found in other societies (WHO, 1995).

Elderly Chinese are committing suicide in increasing numbers (Nelán, 1998). Many elderly are unsupported by their children and, particularly in the countryside, are economically destitute (Phillips and Liu, 1996). Some elderly suicides seem related to a breakdown in the country's health-care system and the rising cost of medical treatment. Rather than burden their families with expenses and worry, the elderly who are seriously ill decide to end their lives (Nelán, 1998).

## Summary

Compared with suicides elsewhere in the world, Chinese suicides are unique in at least two areas. First, the rate for females is higher than that for males, while all over the world the reverse is true. Second, in China, rural people commit more suicides than urban people, while in the rest of the world, the urban population is at higher risk of suicide. Explanations

of the phenomena from the Western researchers' points of view can be summarized as (1) availability of pesticides, (2) lower status of women, (3) poor mental health services, (4) traditional values in marriage and the family, and (5) difficult living conditions.

While outsiders may see things that people in the country do not always see, Western researchers' views may be less accurate or even biased due to cultural differences. In order to know Chinese explanations of Chinese suicides, we surveyed the publications that are related to suicide in China in the past few decades. We hypothesized that there may be some discrepancy between the Western and the Chinese understanding of suicide in China.

## METHOD

The method to overview Chinese suicide research conducted in China is to find and analyze all the related publications in Chinese journals and books. The China Biology and Medicine Disk (CBMD) is a Chinese databank that indexes all available papers published in social, behavioral, and medical journals. Produced by the Chinese Academy of Medical Sciences Institute of Information, the CBMD indexes papers since 1982 from over 900 journals all over China. Since China opened its door to the West for economic reforms in 1978, there have been growing numbers of academic publications in each year. However, the CBMD indexes publications from 1982. Publications before 1982 are small in number and not available for the current study.

Using the keyword of SUICIDE on CBMD disks for 1982–1995 and 1996–1998, we have located 429 papers published in 62 journals. At Dalian Medical University (DMU), Dalian, Liaoning Province, China, we acquired all the related journals from both the DMU library and libraries all over China, copied all the 429 papers, and filed each paper as a case.

For easy coding, we have designed in the raw data sheet 151 variables, which have later been combined to a smaller number of variables. For instance, for suicide means, we had originally 11 variables, each of which is actually a category of the variable of suicide means.

Two readers were hired to read and code each paper with a previously designed code-book of 151 variables. Whenever there was discrepancy or disagreement in coding, a third reader was called to review the information. Discussions among the three coders continued until agreement was reached.

In addition to the journal article search with the CBMD disks, we also searched other databanks for book publications. Each book was acquired for review by the authors, but with no coding for quantification.

## FINDINGS, ANALYSES, AND DISCUSSION

The 429 journal articles were quantified in terms of 151 variables and analyzed with the SPSS program. Findings, descriptive analyses, and discussions yield the following summaries. Because it is not possible to quantify the books and each of them deserves a separate book review, we give them only a brief overview in this study.

### A Review of Books

There are a total of six scholarly books on suicide research available for our review. To our best knowledge, they are the only volumes of this type published in mainland China in the past twenty or so years. From the oldest to most recent they are

1. *A Dangerous Age* [Weixian de Nianling] by Yang Zhangqiao in 1993
2. *Suicide by Adolescents* [Qingshaonian Zisha] by Hou Jietai in 1993.

3. *Reveal the Secrets of Suicide* [Jiekai Zisha Zhi Mi] by Liu Duancheng in 1994
4. *Suicide and Life* [Zisha yu Ren Sheng] by He Zhaoxiong in 1996
5. *Suicidology* [Zisha Bing Xue] by He Zhaoxiong in 1997
6. *Crisis Intervention and Suicide Prevention* [Weiji Ganyu yu Zisha Yufang] by Zhai Shutao in 1997

So far as we know, only one of the six has been reviewed in an American journal. Jiang (1997) reviewed He's (1996) *Suicide and Life* and published it in the American journal, *Suicide and Life-Threatening Behavior*. Like *Suicide and Life*, all of the other five volumes are not theory-oriented and have little statistical work other than percentages, means, and rates. Their findings in terms of gender, age, location, reasons, methods, and so on for Chinese suicide basically coincide with what we find in our review of Chinese journal articles on the subject.

As evidenced by the techniques used in the six volumes, suicide research in China is far from sophisticated. In most of them, personal experiences and opinions outweigh theory and hypothesis testing with systematic data collection and analyses. Of the five authors for the six books, He (1996,1998) is a medical epidemiologist retired from Guangxi Medical University, Zhai (1997) is a psychiatrist teaching at Nanjing University and serving as the Editor of the *Journal of Clinical Psychological Medicine*, Yang (1993) is a sociologist at Zhejiang Academy of Social Sciences, Hou (1993) is a psychologist teaching at Hong Kong Chinese University, and Liu (1994) is a law enforcement officer in Hunan Province. Most if not all of the authors started suicide research within the last 20 years, after China opened its doors to the West. Because of the limited time and lack of training in the West, they have not developed sophisticated methods that should be used in scientific studies of suicide. Some books on suicide that have been published in China during the years are translations of foreign authors, such as Emile Durkheim's *Suicide: A Study in Sociology* (Zisha Lun) and Franz Boekle's *To Live in the Side of Death (Im Angesicht Des Todes Leben*, Xiang Si Er Sheng). Several others are non-scholarly descriptions of suicide or fiction for commercial purposes. Theory driven studies with scientific methods are needed to do suicide research in China.

### Regions of study

Out of 33 administrative regions of China, Jiangsu Province accounts for the highest number of studies: 58 of the 429 papers were authored by researchers from Jiangsu Province. The second most productive regions are Beijing and Shandong Province, each of which has 35 papers indexed in the databank. Henan Province has 25 papers and is the third, followed by Sichuan Province (24), Hubei Province (19), Guangdong (16), and Heilongjiang (16). The regions with the fewest studies were Hong Kong and Ningxia Autonomous Region, each of which contributed two papers. Tibet, Taiwan, and Macao have generated no published articles. (For more detailed information provided by the data, interested readers should contact the first author of the current study.)

The region of study is defined as the location of the first author's affiliation, since most authors use data from their local areas. The description of regions of study may inform us where suicide research is the most and least active.

### Journals That Publish the Studies

Out of 62 journals that published the papers under study, the *Journal of Clinical Psychological Medicine* has the highest number of papers on suicide: 60 of the 429 papers surveyed by the study are from this journal. The founding editor of the Journal is Zhai



Shutao, author of one of the books on suicide. The Journal is based at Nanjing University in Jiangsu Province, which is the region that has produced the most papers on suicide as reported above. Jiangsu's being first in suicide research production might be a function of the journal generally publishing more works by local authors. Of the 60 papers published by the Journal, 18 (30%) have the first author from Jiangsu Province.

### **Publication Date, Length of Paper, and Number of Authors**

From 1982 to 1993 the number of papers on suicide grows slowly and unevenly, never exceeding 11 papers per year. 1994 marks the beginning of a period of exponential growth capped by the 103 papers in 1997. The leveling off in 1998 (98 papers) may either be a real effect or may reflect delay in printing, and/or fewer articles entered into the CBMD (see Figure 2).

Words were counted for 342 papers in the sample. The shortest paper contains 180 Chinese characters, while the longest in the sample has 7,000. The average length of paper in the sample is 1,671 characters. The length of paper tends to decline over the two decades of suicide research. The Pearson correlation coefficient between the publication year and number of words is  $-.236$  with a significance level lower than 0.01.

The number of authors for one paper is as high as 19, and the mean number of authors is 2.31. Of the total, 158 (37%) papers are authored by single authors, 129 (30%) are by two authors, 77 (18%) three authors, 37 (9%) four authors, and the rest are by five or more authors. Only one paper is produced by 19 authors. This variation in authorship may reflect diversity in the disciplinary affiliations of the authors. In Western scientific publications, papers in medical journals tend to have more multiple authors, than those in the social sciences.

### **Types of Samples and Nature of the Study**

There are five types of samples for the 429 studies. In 246 (57.3%) studies, researchers used non-psychiatric samples (normal people), 123 (28.7%) used psychiatric patients, and 35 (8.2%) papers studied law enforcement people. The other two types are all (mixed) people (14 studies, 3.3%) and psychosomatic patients (11 studies, 2.6%). More than half of the studies were based on non-psychiatric people's suicides (246 of 429). Among the 123 studies of psychiatric patients, 42 are treated for psychotic disorders, 34 for depression, 27 for schizophrenia, 3 for affective disorder, 2 for epilepsy disorder, and others are unclassified.

Among all the papers, 306 (71.3%) are categorized as research reports based on empirical data, 48 (11.2%) are overviews of literature, 16 are translations (3.7%), 19 (4.4%) are reports mixed with translations and research, and 23 (5.4%) are translation and overviews.

### **Research Orientation and Statistical Methods**

There are 252 (58.7%) papers categorized as quantitative or empirical studies, 174 (40.6%) qualitative, and 3 (.7%) as a combination of the two approaches. The majority of research papers on suicide are based on quantitative data. Among the 252 studies using quantitative data, 158 (62.7%) use only rates and percentages, 55 (21.8%) use Chi-squares, 24 (9.5%) regression analyses, 7 (2.8%) t-tests, and 3 (1.2%) correlations. The rest (2%) use a combination of different statistics.

Over the years being studied, there is no pattern in terms of qualitative and quantitative methods. The mean year of using quantitative methods is 95.24, and that for qualitative is

95.18. The mean years for using each of the five major statistics do not show any patterns of difference, either.

### **Targets of the Study and Sources of Data**

Completed suicides are the focus of 106 studies, while 63 study attempted suicides and only 16 look at suicidal ideation. Of the remainder, 94 study completed and attempted suicides, and 11 for attempted suicide and suicidal ideation. The rest are either for mixed subjects or for other targets such as attitudes and other aspects of suicidal behavior.

Of the 429 studies, 193 (45%) use medical records from hospitals, 131 (30.5%) use self-administered questionnaire surveys, and 83 (19.3%) use government records, with the rest being either from other sources or unmentioned.

### **Gender, Age, and Rural/Urban Location of Suicide**

Among all, 169 papers discussed male suicide and 170 discussed female suicides. While the total number of male suicides discussed is 23,697 with a mean of 140, the number for females is 33,858 with a mean of 199. The gender ratio (male/female) for the sample is .70, which is very close to that reported in the WHO data.

There are 100 studies discussing risky ages for suicide, and 81 of them agreed that ages between 15 and 30 are at the highest risk. This finding closely matches what the WHO data illustrated -- the earliest, though smaller, peak of Chinese suicide rate is at the 15–24 interval. Obviously, Chinese suicide research has focused on younger populations, since the Chinese elderly, as observed in the WHO data, are at higher risk of suicide.

As to suicide rates as a function of rural/urban location, 18 papers discussed rural rates and 17 discussed urban rates. While the mean of the rural rates used in the 18 papers is 116.5, that for urban rates based on 17 papers is only 30.8. The rural/urban ratio for Chinese suicide rates is again a reflection of the WHO data, where the rural suicide rates are three times greater than the urban rates.

### **Marital Status and Suicide**

There are 41 studies discussing suicides by single and unmarried persons, 40 papers mentioning suicides by married people, 17 talking about the divorced, and 14 covering the widowed. Out of all 7,245 suicides discussed in those studies mentioning marital status, 3,138 (43.3%) victims were singles, 3,736 (51.6%) were married people, 168 (2.3%) were divorced, and 203 (2.8%) were widowed. Unlike what we know in the West, married Chinese may commit more suicides than other marital status groups. Although the current data are not from a random sample of Chinese suicides, the finding that these research papers collected more cases or paid more attention to married suicides may suggest that married Chinese are at a higher risk of suicide than other marital status groups.

### **Education and Suicide**

Educational levels are measured in the study with five categories: illiterate, primary school, middle school, high school or vocational school, and college or higher. The highest number of suicides reported in the papers (8,303) is for victims with only a primary school education. The number goes down as education increases: 5,927 suicides with a middle school education, 4,540 with high school, and 2,521 with college or higher. At the illiterate level, the number of suicides is 2,664, which is much lower than that for those who have primary education. Although it must be noted that the figures are not rates and the differences in numbers might be a function of non-random samplings, it may nevertheless be indicative that suicide differences by education found in this meta-analysis may hold true for

the general population. One reason for this argument is that selection of the papers for the current study is not biased, and there is no obvious reason for any of the papers to prefer any education level to another.

Based on the limited data available, thus, there appears to be a curvilinear relationship between education and suicide. Chinese people without any or too much education commit less suicide than those who have a small amount of education. Once educated, Chinese people become less prone to suicide as they obtain more education.

### Occupations of Suicide

About 20 percent of the studies (as many as 84 out of the 429 papers) discussed occupations of the suicides. There 65 papers discussing suicides by peasants (rural people) with a total number of suicides of 16,419; 57 papers discussed suicides by factory workers (urban people) with a number of suicides of 5,370; 51 looked at students with a number of 5,639; and 49 were concerned with administrators or professionals, with 1,284 suicides. There 36 papers discussing suicides by unemployed people, with a total number of suicides of 2,158, and 27 papers with a total number of suicides of 1,525 are about occupations not classified as above. Peasants (the rural population) with a total number of suicides discussed as 32,395, have committed the highest number of (50.7%) suicides (50.7%) among all the groups. Again, this might be a function of rural population that accounts for about 70 percent of Chinese population. Most researchers are urbanites and yet many choose to study rural suicides may suggest that rural suicide cases are more prevalent or appealing to researchers.

### Suicide Months and Places

There are only 51 studies mentioning the months when suicides occur. Figure 3 shows the frequencies. July (7) is the month when the highest number of suicides is reported; the data indicate that 19 out of the 51 studies mention July as a suicide month. Not quite surprisingly, no studies mention February, March, and October through December, which are generally cold months in China. This finding agrees with what suicidologists all over the world have noticed: suicide rates go up as temperature increases.

Three places are identified for the most suicides: home, hospital, and other places. However, only 25 studies discussed suicide locations. Out of the 25 studies, 12 mentioned home, 8 hospital, and 5 other places. Based on the studies, 325 suicide cases happened at home, 122 in the hospital, and 19 in other places.

### Suicide Reasons

Authors in this sample have identified up to 15 major reasons for suicide. They are listed in Table 1 in the order of relative frequency. The figure in parentheses indicates the number of mentions of the reason in all papers. One paper may mention more reasons, but mentions each reason only once. The numbers next to the numbers of papers are of suicides claimed by all the studies for that reason, and the far right column is the percentage of suicide claimed for each reason.

Among the 15 reasons on the list, “family disputes including couple disputes” ranks number one in number of papers discussing the reason. However, “marriage including love affairs” ranks as the leading reason in terms of the total number of suicides claimed. “Love affairs without marriage” is a reason that ranks number seven in number of papers mentioning it. Put together, the family and love related reasons were used to explain about 67 percent of the suicides in the sample.

## Suicide Means

Authors in the sampled articles have identified 11 methods of suicide. They are listed in Table 2 in the order of relative frequency. The figure in parentheses indicates the number of mentions of the method in all papers. One paper may mention more than one method, but is counted as having mentioned each method only once. The numbers next are the numbers of suicides claimed by all the studies for each method. The far right column is the percentage of deaths from each method.

The overwhelming majority of suicides (82%) in China whose means were analyzed in the sample articles are by poisons such as pesticides and sleeping pills. In comparison, the use of firearms, which is the most common method in the West, accounts for less than 1 percent of suicides in China. This finding supports what is illustrated in He and Lester (1998): the popularity of a method is related to its availability. Poisons such as pesticides are stored in almost every rural household, but firearms like handguns are rarely seen by non-military Chinese. The methods used by Chinese suicides partially explains why more women and rural population commit suicide in China. Poisons are less overtly violent and appeal to women, whereas firearms are more overtly violent and male oriented (Zhang, 1996).

## Suicide Rates among Rural Women

Four major reasons for the exceptionally high suicide rates among rural Chinese women are identified in the papers. They are ordered in Table 3 by relative frequency. The figure in parentheses indicates the number of papers that specify the reason as the most important one. Each paper names only one reason as the most important.

According to those authors, the most important reason for female suicides in China is low self-esteem, followed by lack of education, and then by low status in the family and society. The low self-esteem might be caused by low status and lack of education of women in Chinese society. Therefore, the social and educational treatment of women might be indirect causes of the high suicides rates for Chinese women, if the authors' judgments are warranted. However, these judgments need to be tested in empirical studies with systematic measurements.

## Suggestions for Prevention

Unlike those in the West, researchers in China are likely to make suggestions for policy, to demonstrate practical implications of their studies. The suggestions made by the largest numbers of papers are to offer more psychological counseling services (134), that the government should do more (115) in education (114), and that the government should promote more suicide research in China (19). These four suggestions, implying the superstructure as the key to preventing suicide in China, constitute the majority of suggestions in the articles that make recommendations. There are 454 of 760 mentions for the four suggestions. Other measures to prevent Chinese suicide as listed in Table 4 are many but less frequently suggested by researchers.

## CONCLUSION

This study with 429 journal articles and six books provides an overview of suicide research conducted in the past two decades in China. The journal articles are quantified with 151 variables for analyses.

The most active region in suicide research is Jiangsu Province -- authors of 60 out of 429 papers are affiliated with work units in the province. Meanwhile, the journal that has published the highest number of suicide articles is *Journal of Clinical Psychological*

*Medicine*, which is headquartered in the province. However, this by no means indicates that Jiangsu accounts for the highest number of suicides in China. Because of lack of data, there are no reports on suicide rates for the various regions in China.

The number of studies on suicide has been on the rise since 1982, thanks to the increased reform in both economy and ideology, although suicide remains a politically sensitive topic in Chinese academia. Over the two decades of suicide research, the length of paper measured by the number of Chinese characters declines. The continuing decrease in length of reports may indicate the increased number of publications in each year or increased sophistication in suicide research in China.

However, it is not clear whether suicide research in China is getting more and more sophisticated each year. One measure of research sophistication by Western standards might be the degree to which quantification is applied. The analysis of data, nevertheless, does not show a difference in qualitative and quantitative methods over the years; the mean year of using quantitative methods is 95.24, and that for qualitative is 95.18. The mean years for using each of the five major statistics (rate and percentage, Chi square, regression, t test, and correlation) do not show any patterns of difference.

For Chinese suicide rates as functions of gender, age, and rural/urban location, the current data generally support what have been found in earlier studies. Chinese women commit more suicides than Chinese men with a men to women ratio as .70, the most risky age for Chinese suicide is between 15 and 30, and far more rural Chinese have committed suicide than urban Chinese with a ratio of 3.9. Again, the focus of Chinese suicide research should be on the rural young women. Why rural young women in China commit more suicides is beyond the scope of current research. What is possible is limited to correlations of suicide rates with several social factors. The relationships between suicide rates and certain variables found in these analyses could be the basis for hypotheses for further studies in which a cause-effect relation can be explored.

One social factor is marital status of the suicide. Different from what we know in the West (Durkheim, 1951[1897]), married Chinese (51.6%) commit more suicides than singles (43.3%) and other unmarried (2.3% divorced; 2.8% widowed) Chinese. Understanding the higher suicide rates among married Chinese may be improved by knowing the reasons and means of Chinese suicide. Among the 15 reasons listed for Chinese suicide by researchers, “family disputes including couple disputes” ranks number one in number of papers discussing the reason, and “marriage including love affairs” ranks as number one reason in terms of the total number of suicides claimed. Although “love affairs without marriage” is a reason that ranks number seven in number of papers mentioning it, put together, the family, marriage, and love related reasons explain about 67 percent of suicides in China. Therefore, the family, especially rural families is the place where suicide prevention efforts should focus, as well as suicide research.

As found in previous studies (He, 1997;Zhang, 1996), the most common method for Chinese suicide is poisons, such as pesticides and sleeping pills. In the data, 81.9 percent of suicides were accomplished by poisons. The most popular means may explain why rural and women commit more suicides in China. Pesticides are stored in almost every rural household, and swallowing poisonous liquid is less violent than firearms and are more appealing to women.

One purpose of the project is to summarize our understanding of how researchers in China interpret the high suicide rates among Chinese women and compare their interpretations with those by Western researchers. Among the four judgements by authors for why women commit more suicides in China, low self-esteem ranks number one. Lack of education is second reason for high rates for women, followed by low status in the family and society.

Although the Chinese authors' judgements in the papers were not necessarily based on systematic observations and may be flawed by biased values and limited environments, they have at least offered some common sense beliefs for investigation. Future research on Chinese women's suicide may start with these hypotheses.

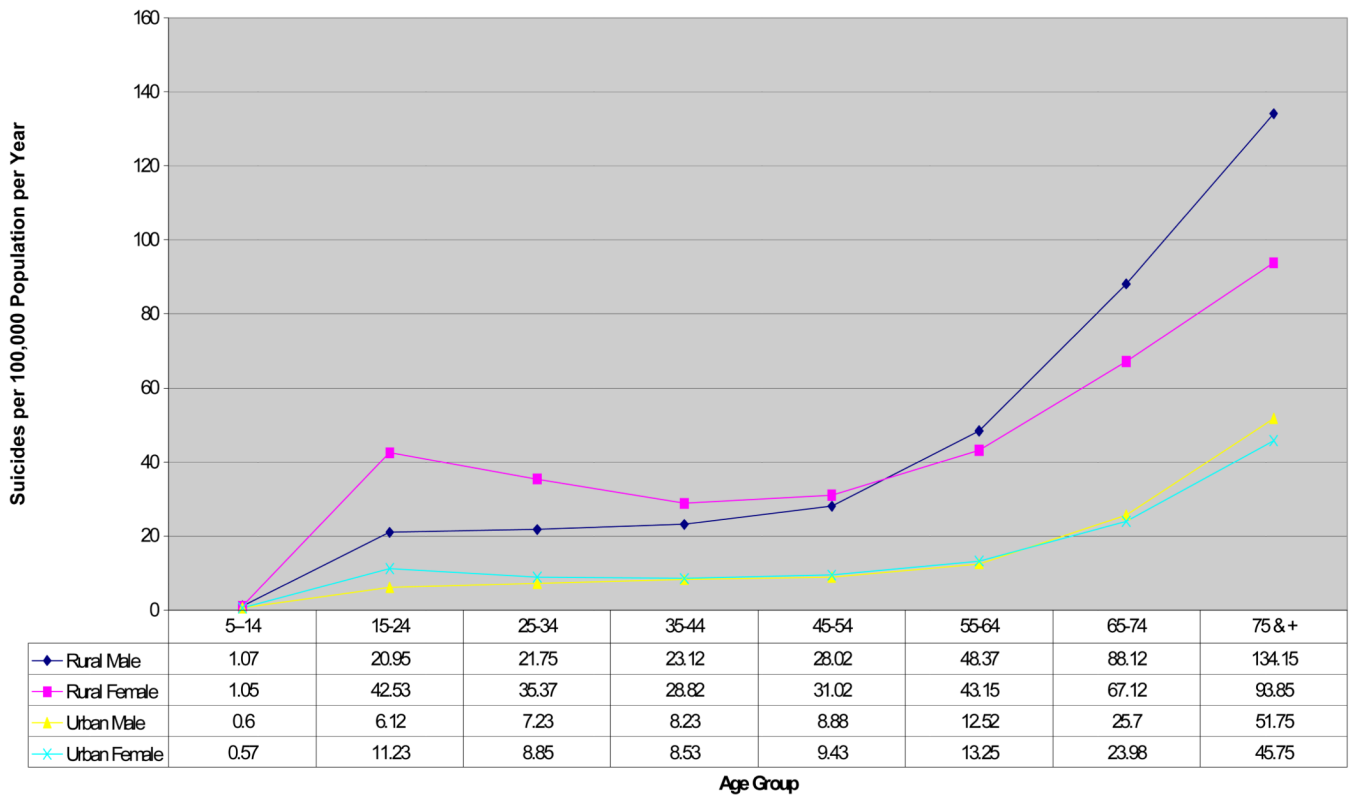
For suicide prevention in China, the majority of authors agree that superstructural measures such as education, research, and counseling are more important than infrastructural improvements such as improving facilities for rescuing attempters and controlling farm chemicals. These judgements are related to the authors' four explanations why women commit more suicide in China, none of which is about the physical environments the Chinese women live in. Therefore, the authors' suggestions for prevention may be less materialistic and more difficult to accommodate.

The review is the first of its kind in Chinese suicide research. Findings based on the data that consist of 429 journal articles may be generalized to all suicide research in China in the past 20 years, since the sample is actually the sampling frame -- all available entries that can be found in the database. While the current data support findings from earlier research, such as Chinese suicide rates in terms of gender, age, and rural/urban location, they also present different pictures in comparison with Western suicide. That married people in China commit more suicides than the non-married might be particular to China. Since no systematic studies of Chinese suicide have been reported on marital status, this review may be the first to touch on the issue. Further, the current research offers several hypotheses for future studies on Chinese suicide based on the Chinese authors' judgements. We hope this overview initiates a new round of scientific and empirical research on the patterns and prevention measures of Chinese suicide.

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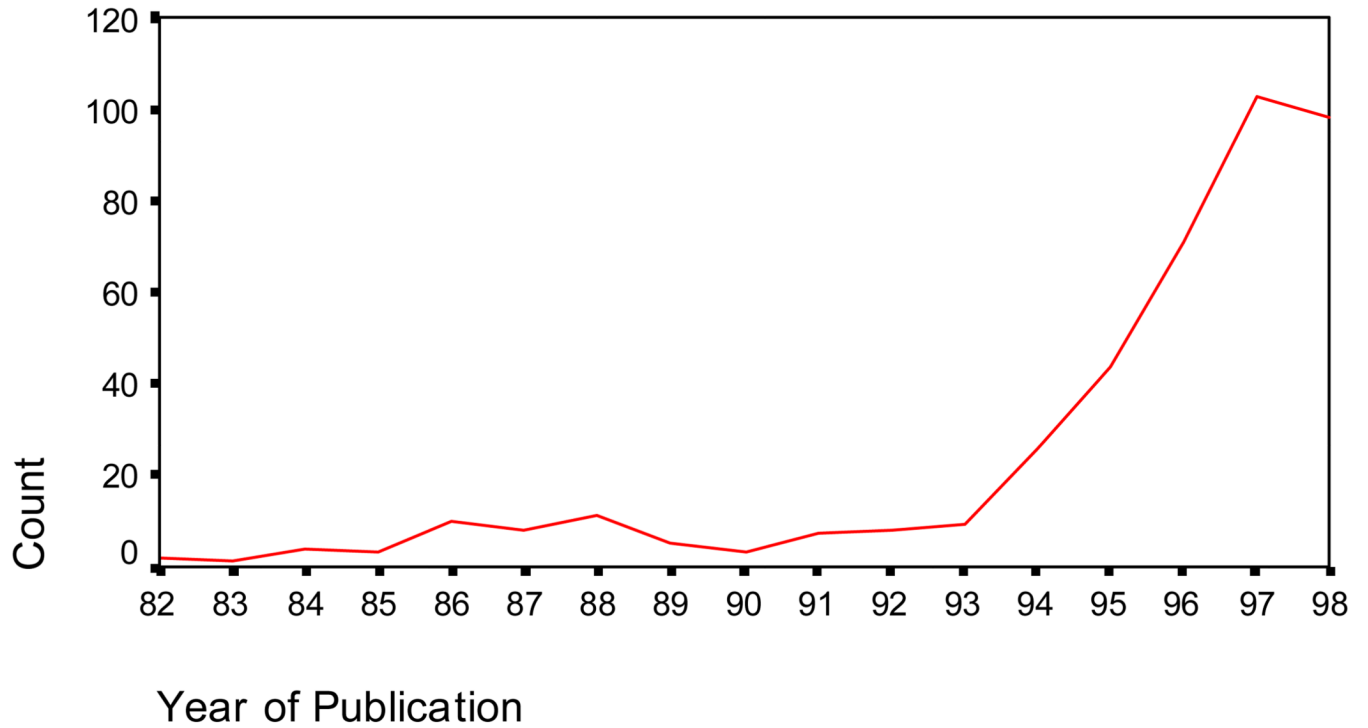
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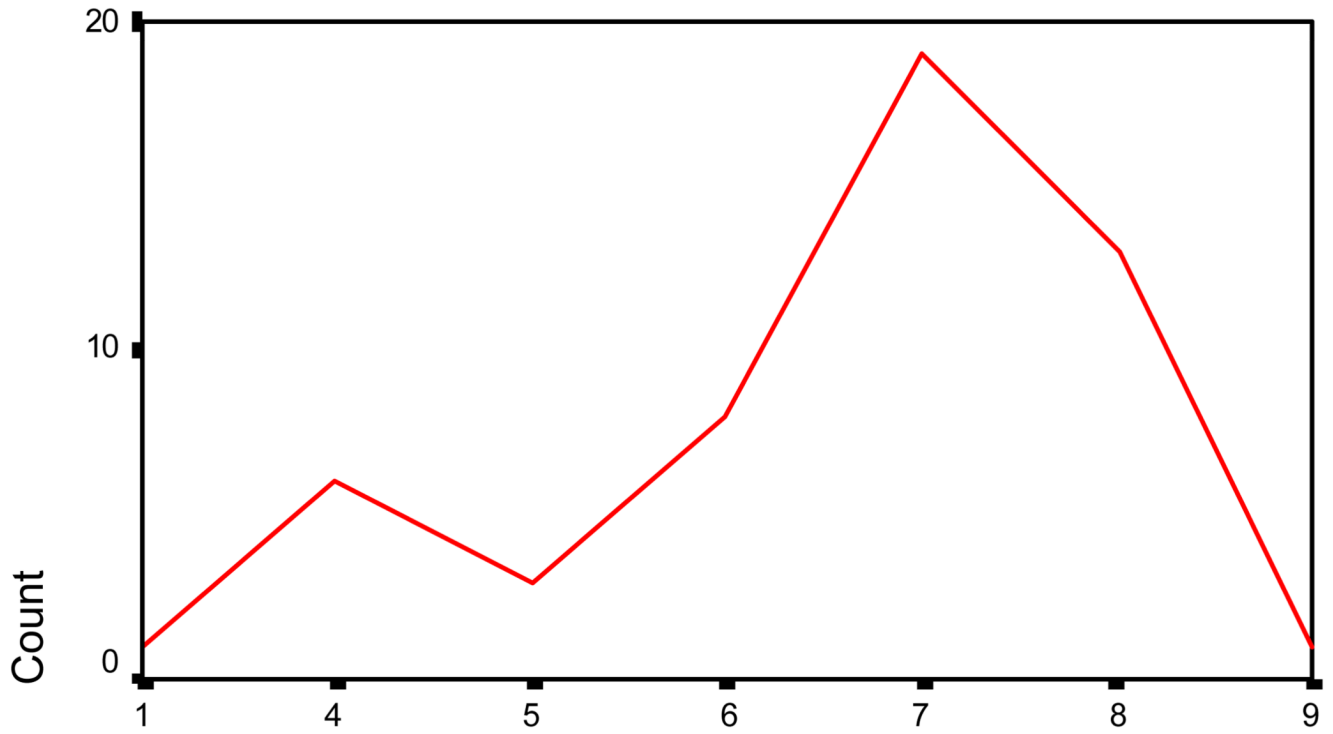
**Figure 1.**  
Chinese Suicide Rates (Averaged for 1987–1994) by Gender, Location, and Age





Note: Since data were not complete for 1999 at the time of study,  
the number of papers for 1999 is not shown

**Figure 2.**  
Number of Academic Papers Published Each Year between 1982 and 1998



### The Month

Note: The count for each month is the number of studies that discusses the month when suicides happened

**Figure 3.**  
Months of Suicide

**Table 1**

## Suicide Reasons

<b>Reason and the Rank by Number of Papers</b>	<b># of Papers</b>	<b># of Suicides</b>	<b>% of Suicides</b>
1. Family disputes (including couple disputes)	(73)	12,204	24.0%
2. Chronic illness	(60)	4,170	8.2%
3. Marriage (including love affairs)	(47)	19,694	38.7%
4. Relationships with neighbors and colleagues	(47)	3,117	6.1%
5. Unclassified others	(43)	1,650	3.2%
6. Psychiatric diseases	(42)	1,971	3.9%
7. Love affairs (without marriage)	(30)	1,885	3.7%
8. Poverty or losing money	(27)	1,371	2.7%
9. Life events	(24)	837	1.6%
10. Failing an exam or poor school scores	(24)	598	1.2%
11. Psychological problems	(15)	927	1.8%
12. Committing crimes	(15)	187	0.4%
13. Parental discipline	(8)	158	0.3%
14. Being elderly and lack of caring	(7)	1,034	2.0%
15. Losing money from gambling	(5)	1,123	2.2%
Total	(467)	50,926	100%

**Table 2**

## Suicide Means

<b>Method and the Rank by Number of Papers</b>	<b># of Papers</b>	<b># of Suicides</b>	<b>% of Suicides</b>
1. Poisons (pesticides, sleeping pills, etc.)	(130)	34,011	81.9%
2. Hanging	(77)	3,259	7.8%
3. Drowning	(60)	2,352	5.7%
4. Jumping from a high place	(52)	540	1.3%
5. Self cutting	(50)	621	1.5%
6. Unclassified others	(34)	297	0.7%
7. Self-inflicted explosion	(28)	160	0.4%
8. Rail tracks	(16)	57	0.1%
9. Bumping head against something hard	(14)	67	0.2%
10. Firearms	(9)	46	0.1%
11. Cooking gas	(9)	123	0.3%
Total	(479)	41,533	100%

**Table 3**

Why Women Commit More Suicides: Judgements by the Authors Reviewed

<b>Reason for Women's Suicide and the Rank by Number of Papers</b>	<b># of Papers</b>	<b>% of Papers</b>
1. Low self-esteem	(102)	42.5%
2. Lack of education	(79)	32.9%
3. Low status in the family	(32)	13.3%
4. Low status in society	(27)	11.3%
Total:	(240)	100%

**Table 4**

What Should Be Done to Prevent Suicide: Judgements by the Authors Reviewed

<b>Authors' Suggestion for Prevention and the Rank by Number of Papers</b>	<b># of Papers</b>	<b>% of Papers</b>
1. More psychological counseling services	(134)	17.6%
2. Governments should do more to help	(115)	15.1%
3. To enhance popular education against suicide	(114)	15.0%
4. To promote research in China	(91)	12.0%
5. To improve facilities for rescuing	(62)	8.2%
6. Caring the attempted	(49)	6.4%
7. To better manage and control farm chemicals	(45)	5.9%
8. More and better treatment on suicidal patients	(41)	5.4%
9. To strengthen management in mental hospitals	(38)	5.0%
10. To control the drugs in mental hospitals	(28)	3.7%
11. To pay more attention to suicide attempters	(25)	3.3%
12. More work on mental patients' prevention	(18)	2.4%
Total:	(760)	100%