



## Review

## Prevalence of suicidal ideation, attempts, and completed suicide rate in Chinese aging populations: A systematic review

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## ABSTRACT

**Background:** As one of the leading causes of death around the world, suicide is a global public health threat. Due to the paucity of systematic studies, there exist vast variations in suicide ideation, attempts and suicide rates between various regions of Chinese aging communities.

**Objectives:** Our systematic study aims to (1) identify studies describing the epidemiology of suicidal ideation, suicide attempts and behaviors among global Chinese communities; (2) conduct systematic review of suicide prevalence; (3) provide cross-cultural insights on this public health issue in the diverse Chinese elderly in China, Hong Kong, Taiwan, Asian societies and Western countries. **Data sources:** Using the PRISMA statement, we performed systematic review including studies describing suicidal ideation, attempts, and behavior among Chinese older adults in different communities. Literature searches were conducted by using both medical and social science data bases in English and Chinese.

**Results:** Forty-nine studies met inclusion criteria. Whereas suicide in Chinese aging population is a multifaceted issue, culturally appropriate and inter-disciplinary approach to improve the quality of life for the Chinese older adults is critical.

**Conclusions:** Future research is needed to explore the risk and protective factors associated with suicidal thoughts, attempts and behaviors in representative Chinese aging populations.

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## 1. Introduction

Suicide is a global public health issue. It was estimated that suicide is the 13th leading cause of death worldwide (Yip, Liu, & Law, 2008). Data from World Health Organization suggest that almost one million people die from suicide every year, with a global mortality rate of 16 per 100,000. As suicide rates in the last half century increased by 60% worldwide, it is estimated that by 2020, suicide would account for 1.53 million deaths (Bertolote & Fleischmann, 2009). These projected deaths could lead to serious socioeconomic burden on the society, especially increasing the burden on health care.

Further, data suggested that suicide rate is extremely high among the elderly. The highest suicide rates in most countries are reported to be among persons over 75-year old (Diego, Marirosa, & Jonathan, 2002; World Health Organization, 1999). For those left behind, losing a loved one to suicide is one of the most devastating losses of all to bear. It has long been reported that survivors of a loved one's suicide anguish in feelings of blame, anger, responsibility, guilt, and abandonment (Ellenbogen & Gratton, 2001; Knieper, 1999). Due to the increasing trend in worldwide elderly population, a corresponding increase in completed suicide is projected.

Chinese has the largest population in the world and represented about 24% of the Asian population. In recent years, vast economic growth, improvement in medicine and sanitation, also led to increased life expectancy, such that the population as a whole was aging rapidly.

Since 1999, China has become an aging country. Currently, Chinese older adults account for the world's largest aging population with 143 million people aged 60 years and older in 2004 (Leng, Tian, & Durso, 2008). By 2050, close to a third of China's population would be over 60 years, accounting for a quarter of the world's aging population. Despite the increasing awareness on elderly suicide among physicians, geriatricians and social work practitioners, there was no systematic study done on suicide among Chinese older adults. In addition, China did not have a comprehensive system to report vital statistics; there were varied ranges of report suicide rates. The studies with recorded data used mortality rates reported by local health official, such that the exact number may be underestimated (Samuel & Pozi, 2008).

In addition, due to the paucity of systematic studies, there exist vast variations in suicide ideation, attempts and suicide rates between various regions. To fill the knowledge gap, our systematic study aims to (1) identify studies describing the epidemiology of suicidal ideation, suicide attempts and behaviors among global Chinese communities, (2) conduct systematic review of suicide prevalence, (3) provide a cross-cultural insights on this urgent public health issue among diverse Chinese elderly in China, Hong Kong, Taiwan, Asian societies and Western countries. Directions for future research and ways to improve care for the Chinese aging population are also discussed.

## 2. Materials and methods

The study design was developed according to the PRISMA guidelines.

### 2.1. Eligibility criteria

Studies eligible for inclusion were studies assessing suicidal thoughts, suicide attempts, and suicide behaviors among Chinese older adults in diverse communities, including Chinese elderly in China, as well as overseas Chinese communities. Studies that included older adults aged 60 and over who self-identified as ethnic Chinese were eligible for the review. Suicidal ideation was

defined as self-reported thought that life is not worth living, or thoughts to commit suicide. Suicide attempts were defined as a potential behavior to harm oneself without fatal outcome. We also included studies that assess the death by suicide rate. We included original research articles related to Chinese aging populations globally. The search was limited to studies available in full-text, written either in English or in Chinese. Manuscripts published over 2 decades ago were excluded.

### 2.2. Identification of studies

Comprehensive literature research was conducted by searching both medical and social science data bases, including MEDLINE, PubMed, China journals full-text database ([www.cnki.net](http://www.cnki.net)), Wan Fang data (in Chinese). Search terms used included "Chinese," "suicide and elderly," "suicide and older people," "suicide" in English, and "zì sha" ("suicide") in Chinese. Secondary searching was performed by reviewing reference lists of eligible paper. Titles, abstracts, and full text articles where necessary, were screened by two bilingual reviewers. The opinion of the third independent reviewer was sought if agreement could not be achieved.

## 3. Results

Among the studies identified by the search strategy, 72 required further full-text screening. Forty-nine studies met inclusion criteria. The studies were conducted in different countries and regions, including: Mainland China, Hong Kong, Taiwan, Malaysia, USA, Canada, Australia, and England. In total, 8 studies on suicidal ideation were included (5 on Mainland China, 1 on Hong Kong, 2 on Taiwan), 6 studies on suicide attempts (4 on Mainland China, 1 on Hong Kong, 1 on Taiwan) and 35 completed suicide studies (21 on China, 5 on Hong Kong, 1 on Taiwan, and 8 on overseas Chinese). Findings are presented according to suicidal ideation, suicide attempts, and death by suicide rate assessed.

### 3.1. Prevalence of suicidal ideation

Suicide ideation was measured by asking respondents if they had ever had any suicidal thoughts, or feeling miserable, or feelings that life was not worth living, at the point of the survey (Chan, Liu, Chau, & Chang, 2011; Yen et al., 2005). Suicidal ideation rate are synthesized by the region, study population studied as well as methodology used in Table 1.

Due to the lack of large-scale studies on both rural and urban areas in Mainland China using standardized assessment tools, studies among rural and urban community-dwelling older adult in China suggest that suicidal ideation rate ranges from 2.2 to 16.7% (Fu, Feng, Zhou, Tang, & Xiao, 2007; Gong, Zhang, Wang, & Liang, 2011; Ma et al., 2009; Tao, Zen, Zhong, Cha, & Liang, 2011; Yip, 1996; Zhang, Stewart, Phillips, Shi, & Prince, 2009). A rural and urban comparison study in Beijing, China, reported that the urban sample reported 2.3% of overall lifetime prevalence suicidal ideation, which was higher than their rural counterpart sample (Ma et al., 2009). In other studies on rural community-dwelling older adults, women group and older age reported higher ideation rate (Fu et al., 2007; Jun, 2006). Compared to other samples of community-dwelling older adults with no mental disorder diagnosis, suicidal ideation rate among was extremely high among elderly patients with mental health illness, with 41.2% estimate of prevalence reported in an inpatient sample in Shanghai, China (Zhang, Feng, Wu, & Su, 2006).

The prevalence of suicidal ideation in Hong Kong is reportedly similar or higher among older adults to that in the Western countries. Research in Hong Kong community-dwelling older adults found 6% of the sample ever had suicidal ideation

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