



A meta-analytic review on social relationships and suicidal ideation among older adults



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ABSTRACT

Social relationships play an important role in mental health as well as suicidal ideation in later life. In contrast with the other well-established risk factors, despite an increasing number of related studies, no meta-analyses focusing on social relationships and late-life suicidal ideation have been published. Synthesis of data across the studies using different measurements of social relationships would allow for comparison of the effects on late-life suicidal ideation that have not been studied before. Therefore, we conducted a meta-analysis on the studies published between January 1, 2000 and November 31, 2016 extracted from 7 medical and social science databases. 31 studies with 83 estimates of Odds Ratios ("ORs") on the associations between social relationships and late-life suicidal ideation were identified to compute effect sizes using a random-effect model. Sensitivity analyses were also performed to evaluate their heterogeneity and bias. Moderator analyses were further conducted to determine moderating factors of the associations. Eventually, across the 31 studies (203,152 participants), the overall random effect size was $OR = 1.57(95\% CI [1.40, 1.76])$, indicating a 57% likelihood increase of suicidal ideation for elderly participants with discordant social relationships. The functional measures ($OR = 1.77; 95\%CI [1.48, 2.10]$) of social relationships, however, were more predictive than structural measures ($OR = 1.37; 95\%CI [1.25, 1.51]$). Among all the measures of social relationships, elderly mistreatment ($OR = 2.31; 95\% CI [1.81, 2.94]$) had the strongest effect size, followed by perceived loneliness ($OR = 2.24; 95\%CI [1.73, 2.90]$) and poorly perceived social support ($OR = 1.59; 95\% CI [1.37, 1.83]$). The associations between social relationships and late-life suicidal ideation were moderated by country income levels, social-cultural context, study types, and various measurements of social relationships. More importantly, our study is the first meta-analysis to provide significant evidence for improving social relationships, especially in perceived bonds, is a promising strategy in reducing late-life suicide risks.

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1. Introduction

Suicides in the elderly have become a serious public health problem globally. Suicide rates are higher for both men and women in later life than younger age groups, and peak at old age (Van Orden and Conwell, 2011; WHO, 2014). For example, based on the Integrated National Mortality Surveillance System (INMSS), the suicide rate of the Chinese older population was 34.5 per 100,000, 6.2-fold higher than the rate of the population under 65 years (5.5/100,000) in the year 2013–2014 (Zhong et al., 2016). In some

regions of the world, however, the rates of late-life suicides have decreased in recent years; nonetheless, the expanding population of older adults raises the possibility that the absolute suicide cases among the elders in the coming decades will rise (Conwell, 2014).

What factors cause suicide rates to be at a high level in later life? According to the accumulative studies, psychiatric illness, physical illness, poor functioning have well been identified as the main risk factors linked to late-life suicidality. Furthermore, social relationships have been identified as the significant factors affecting suicidality among older adults (Fässberg et al., 2012). From a life course perspective, people become increasingly more socially isolated in later life. Previous research has found that the high rate of late-life suicidality in the elderly is associated with the unique experiences of aging or a set of interpersonal stressors that this group frequently experiences, including retirement, social

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isolation, loss of spouse, and living alone (Conwell et al., 2002; Purcell et al., 2012; Lee et al., 2013; Ju et al., 2016). Compared with the young and middle-aged adults, social relationships might influence on suicidality particularly for the elderly. Therefore, understanding the nature and magnitude of the association between social relationships and late-life suicidality is of great importance and relevance to maintaining the mental wellbeing of older adults.

By now, despite more and more studies are available on social relationships and late-life suicidality, few attempts have been made to produce an overall estimate of the strength of the association between social relationships and suicidal outcomes, and no meta-analyses focusing on social relationships and suicidality in later life have been published. So far, there is only one published systematic review by 16 articles which examined the social relationships and suicidality in older adulthood in 2012 (Fässberg et al., 2012). Furthermore, comparison of synthesis of data across varied studies using different measurements of social relationships have not been made. Therefore, at present, it is not known whether any single aspect of social relationship is more predictive of suicidality in later life than others.

Social relationships refer to the connections that exist between people who have recurring interactions, and perceived by the participants to have personal meaning (August and Rook, 2013). This definition includes relationships between family members, friends, neighbours, coworkers, and other associates. Among the most fundamental characteristics of social relationships are the extent to which an individual is socially isolated (objective isolation) and the extent to which the individual feels socially isolated (subjective isolation) (Cacioppo and Cacioppo, 2014). Social relationships have been defined and measured in diverse ways across the studies, and were usually classified into categories as structural social relationships and functional social relationships (Berkman et al., 2000; Holt-Lunstad et al., 2010; House et al., 1988; Schwarzbach et al., 2014). Many previous studies conceptualized structural social relationships as the existence and interconnections among differing social ties and roles, such as marital status, social network, living alone, social isolation, and social integration. Functional social relationships are actions provided or perceived to be available by social connections such as received social support, perceived social support, perceived loneliness, etc. (Holt-Lunstad et al., 2010; Santini et al., 2015; Schwarzbach et al., 2014).

A large body of evidence suggests that social relationships are associated with human health. People with fewer social network ties have been found to have an elevated risk of mortality and morbidity, suicidality, several diseases, prolonged postsurgical recovery, disability, etc. (Berkman et al., 2000; Cohen, 2004; Holt-Lunstad et al., 2010; House et al., 1988; Santini et al., 2015; Uchino, 2006; Fässberg et al., 2012). With respect to late-life suicidality, there are several quasi-experimental studies designed to increase social bonds with family, friends, coworkers, and their communities, suggesting that this is a promising strategy to reduce late-life suicide rates (Fässberg et al., 2012; Lapierre et al., 2012; Oyama et al., 2008). On both theoretical and empirical bases, social relationships have been found to be especially important on understanding late-life suicides and their prevention (Conwell et al., 2011). Although, suicidal mortality was excluded in Holt-Lunstad's study, based on a meta-analysis conducted on 148 studies (Holt-Lunstad et al., 2010), the influence of social relationships on the risk of death are comparable with well-established risk factors on mortality. Hence, there is an imperative need for a meta-analysis on the associations between social relationships and suicidal outcomes in later life to enhance the wellbeing of older adults.

Suicidal outcomes include a broad range of aspects such as suicidal ideation, non-fatal self-harm/suicide attempts, and even

completed suicides. Suicidal ideation is closely linked to suicide attempts and deaths by suicide (Borges et al., 2015; Borges et al., 2006; Posner et al., 2011). Since targeted suicide prevention and treatment strategies focus on the population with suicide risks, suicide risk assessments often begin after finding evidence of suicidal ideation (Han et al., 2016). Thus, a better understanding of suicidal ideation may help health professionals to sooner identify the at-risk older adults and provide them with the help they needed. Moreover, from many previous studies, different suicidal outcomes do not share the same risk factors. For example, in a recent Chinese study (Li et al., 2016), some social factors were related to both suicidal thoughts and attempts (e.g. loneliness), but others were uniquely related to either suicidal thoughts (e.g. filial piety) or suicide attempts (e.g. religious affiliation). There are significant variances of social factors relating to suicidal outcomes. It is not appropriate or perhaps impracticable to carry out an integrated meta-analysis on the associations between social relationships and multiple suicidal outcomes.

Therefore, we specifically focus on suicidal ideation due to its important significance on other suicidal outcomes and its sufficient availability of published papers permitting a meta-analysis. This meta-analytic review will be conducted to determine (1) the overall magnitude of the association between social relationships and late-life suicide ideation across the research studies (2) which aspects of social relationships are more predictive than others, and (3) which factors could have moderating effect on the associations.

2. Methods

2.1. Search procedure and selection process

Searches were conducted online through both medical and social science data bases including PubMed, Psych Info, Scopus, ERIC, ASSIA, Web of Science and China journals full-text database (CNKI) using the terms of "late-life OR elderly OR older adults" AND "suicide* OR death wish OR death thought". However, no terms relating to specific social relationship were conducted. Studies published in peer-reviewed journals written in English or Chinese between January 1, 2000 and November 31, 2016 were included. Therefore, 7471 articles were yielded from the combined searches and titles, and abstracts, and where necessary, full text of the above articles were screened by researchers for further exclusion.

Upon identification of the existing literature related to elderly suicidality, literature screening (see Fig. 1) was conducted by the following exclusion criteria: (1) Articles did not report any suicidal outcome related to suicidal ideation/wishes/thoughts; (2) Articles did not report any variable related to social relationships; (3) Articles did not target on subjects aged 50 years or above in later life; (4) Non-quantitative studies (e.g. qualitative studies, theoretical studies, conceptual studies, reviews, commentaries, critiques, etc.); and (5) Articles did not report sufficient information to extract an effect size of association between any social relationship and late-life suicidal ideation. Three papers (Bonnewyn et al., 2016; Kim et al., 2014; Vanderhorst and McLaren, 2005) are excluded in this study because they did not provide Odds Ratios ("ORs") or any other metrics (such as mean and standard deviation, frequency, proportion, T-score, etc.) for us to transform those values into ORs or In ORs by Comprehensive Meta-Analysis software (CMA). Eventually, 31 articles met the inclusion criteria, representing an update of the last review (Fässberg et al., 2012) on 7 published studies relating to the associations between social relationships and suicidal ideation/wishes/thoughts.

We used 50⁺ as the cut-off point based on the following reasons. Although the ages of 60 or 65 is roughly equivalent to the retirement age in most developed countries, and is usually said to be the

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