Psychiatry Research 210 (2013) 957–961

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

# Risk and protective factors predicting multiple suicide attempts

Kyoung Ho Choi [a], Sheng-Min Wang [b], Bora Yeon [b], Soo-Yeon Suh [c,d], Youngmin Oh [a], Hae-Kook Lee [b], Yong-Sil Kweon [b], Chung Tai Lee [b], Kyoung-Uk Lee [b,*]

[a] Department of Emergency Medicine, Uijeongbu St. Mary's Hospital, The Catholic University of Korea, Republic of Korea
[b] Department of Psychiatry, Uijeongbu St. Mary's Hospital, The Catholic University of Korea, Republic of Korea
[c] Institute of Human Genomic Study, Ansan Hospital, Korea University, Republic of Korea
[d] Department of Psychiatry, Stanford University, Stanford, CA, USA

ARTICLE INFO

*Article history:*
Received 7 May 2013
Received in revised form
12 September 2013
Accepted 25 September 2013

*Keywords:*
Self-injurious behavior
Demography
Mood disorder

ABSTRACT

This study compared demographical and clinical variables between first and multiple suicide attempters and investigated risk and protective factors predicting multiple attempts. 228 patients visiting emergency department after attempting suicide were divided into two groups: first attempter ($n=148$, 64.9%) and multiple attempter ($n=80$, 35.1%). Demographic variables, clinical characteristics, factors related with suicide behavior, and psychiatric resources between two groups were compared. Multivariate logistic regression analysis was conducted to investigate risk and protective factors predicting multiple attempts. The results showed that multiple attempters were younger, not married, more severe in psychopathology (e.g., psychiatric disorder, personality disorder, lower function, and suicide family history) and suicidality (e.g., repetitive/severe/continuous suicide ideation), and lower in psychiatric resources (e.g., interpersonal stress/conflict, conflicting interpersonal relationship, socially isolated, lower personal achievement, and lower ability to control emotion) than first attempters. Suicide ideation severity and conflicting interpersonal relationships predicted multiple suicide attempts, whereas past year's highest global functioning score and age over 45 protected against multiple suicide attempts. This study demonstrated that multiple suicide attempters have more severe clinical profile than first suicide attempters. Moreover, decreasing severity of suicide ideation, improving interpersonal relationships, and enhancing functioning level of suicide attempters might be important in preventing them from re-attempting suicide.



## 1. Introduction

Suicide is one of the leading causes of death worldwide (Rudd et al., 2013). An estimated 31.7 persons per 100,000 people die from suicide in South Korea, which is the highest among the Organization for Economic Cooperation and Development (OECD) countries (Korean National Statistical Office, 2012). After the death of a former president Roh, Moo-Hyun from suicide, suicide has gained even a great attention as a national problem in South Korea.

Previous study has shown that history of suicide attempt is one of the strongest predictors of subsequent suicide attempts (Brown et al., 2000). It is also generally acknowledged that history of multiple attempts is a better predictor of later suicide attempts than history of single attempt (Miranda et al., 2008). Moreover, with increasing suicide attempt number, the risk of reattempting suicide and eventual death from suicide also increases (Harris and Barraclough, 1997). Thus, demographical and clinical differences between those who make single suicide attempt (first attempters) with those reporting multiple suicide attempts (multiple attempters) have been extensively studied, especially in Western countries. Studies demonstrated that multiple attempters exhibit more severe psychopathology, more serious suicidal behavior, longer duration of depression, more inter-personal difficulties, and poorer coping strategies than first attempters (Forman et al., 2004; Reynolds and Eaton, 1986; Rudd, 2003). A more recent study has even extended previous works by investigating clinical and demographical difference between first and multiple attempters by conducting a prospective, longitudinal study in patients with personality disorder. The results demonstrated that multiple attempters are more likely to have borderline personality disorder and have higher impulsivity scores than first attempters (Boisseau et al., 2013).

Despite the fact that South Korea has the highest suicide rate among OECD countries, studies investigating demographical and clinical differences between first and multiple suicide attempters in South Korea are very limited. According to our knowledge, only

* Correspondence to: Department of Psychiatry, Uijeongbu St. Mary's Hospital, The Catholic University of Korea College of Medicine, 65-1 Geumo-dong, Uijeongbu 480-130, Republic of Korea. Tel.: +82 31 820 3609; fax: +82 31 847 3630.
*E-mail address:* mindcure@catholic.ac.kr (K.-U. Lee).

0165-1781/$ - see front matter © 2013 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.psychres.2013.09.026

one study conducted so far has compared demographical and clinical profiles between these two suicide groups in South Korean adults. The study showed that younger age was more associated with multiple attempters than with first attempters (Jeon et al., 2010). The study also showed that, among various psychiatric disorders, bipolar disorder had the strongest association with multiple suicide attempts. However, the main objective of this study was to assess the lifetime prevalence of suicidal behaviors among South Korean adults rather than investigating characteristic differences between first attempters with multiple attempters. Due to paucity of data in South Korea, clinicians have to rely on results from other countries when they have to differentiate profiles of multiples attempters from that of first attempters. However, culture and ethnicity plays an important role in suicide, which limits direct application of these data to South Korean suicide attempters (Joe et al., 2008; Pridmore and McArthur, 2009).

The purpose of our study was first to replicate previous research regarding comparison of first attempters with multiple attempters among patients visiting emergency department (ED) after attempting suicide in South Korean population. We also aimed to extend the previous research by investigating risk and protective factors predicting multiple suicide attempts. Our work also extends previous studies in several other important aspects. First, participant group of the present study is unique because South Korea not only has the highest suicide rate among OECD countries, but it also has a rising trend in suicide rates that contrasts with the trend in most other OECD countries (OECD, 2008, 2011). Moreover, all suicide attempters included in the study entered the emergency room within 48 h of making a suicide attempt. Third, wide range of variables including demographics, clinical characteristics, factors related with the presenting suicidal behavior, and patient's diverse recourses were compared between first and multiple attempters.

Since epidemiologic patterns and factors for suicide in Asia are shown to be different from those in Western countries, we hypothesized that certain factors would be different in our sample (Chen et al., 2012). For example, stress related with unemployment and financial problems could be more predominant in multiple suicide attempters because of South Korea's economic downturn since late 1990s (Hong et al., 2011). Nevertheless, in accordance with earlier researches, we hypothesized that multiple suicide attempters would generally show more severe psychopathology, suicidality, and deficits on individual resources.

## 2. Methods

### 2.1. Participants

228 patients who attempted suicide and visited ED of Uijeongbu St. Mary's hospital between December 2009 and March 2011 were included in the study. Patients enrolled were referred to psychiatry department from emergency department doctors as a part of clinical work-up for suicide attempters. Patients were eligible if they (1) were confirmed as a suicide attempter by information given by the patient themselves, or (2) denied making a suicide attempt, but objective information from their guardians or rescuers confirm that patients had attempted suicide. No age limit was utilized. All participants agreed to be interviewed by a psychiatric resident in the emergency ward. Exclusion criteria included those who (1) refused to consent to psychiatric interview, or (2) could not participate in psychiatric interview due to a serious medical condition caused by their suicidal behavior. Patients with suicide ideation only, without apparent behavior, were also excluded from our study. This study was approved by the Institutional Review Board of The Catholic University of Korea, Uijeongbu St. Mary's Hospital.

### 2.2. Measurements

A comprehensive psychiatric interview and the Brief Emergency Room Suicide Risk Assessment (BESRA) were administered to all 228 participants within 48 h after making a suicide attempt. BESRA is an instrument developed by our research team to help clinicians make rapid and accurate decisions in the ED by assessing patient's risk of presenting suicide attempt and reattempting suicide (Kim et al., 2011; Kweon et al., 2012). It includes patient's demographic variables, clinical characteristics, factors related with the presenting suicide behavior, and various individual psychiatric resources (Please see Supplementary Table 1).

Detailed information about the presenting suicide attempt such as established suicide risk factors and risk/rescue-rating scales, having confirmed reliability and validity, are also included in this tool (Misson et al., 2010). Risk/rescue-rating scales consist of ten items: 5 items assessing risk factors and five items assessing rescue factors (Weisman and Worden, 1972). Higher risk rating scores indicate that patient's suicide attempt was more serious, whereas higher rescue rating scores suggest that the patient attempted a less serious and a more rescuable suicide attempt. Other factors related with suicidal behavior including degree of suicide ideation and patient's diverse resources were assessed through comprehensive psychiatric interview. The psychiatry interview and BESRA were conducted by psychiatric residents in the emergency ward. To ensure that all the psychiatric residents understood the BESRA and performed psychiatric properly, they were instructed by two psychiatry specialists (a professor and a clinical instructor of psychiatry). Consensus meetings supervised by the same two psychiatry specialists were also conducted biweekly. The two psychiatry specialists were the ones who conceived the BESRA themselves, so they had full knowledge of the tool.

### 2.3. Statistical analysis

The statistical analyses were conducted using Statistical Analysis System software package (Version 9.2) (SAS Institute Inc, Cary, NC, USA). Patients were divided into two groups (single vs. multiple attempters) based on the number of suicide attempts. *T*-tests and chi-square analyses were performed on all variables comparing the first attempter group and the multi-attempter group. We selected all variables that were statistically significant ($P < 0.05$) from univariate analysis and performed multivariate logistic regression analysis (MLRA). Variables were entered into each MLRA using a backward stepwise method. All missing values were excluded from the analyses.

## 3. Results

### 3.1. The comparison of demographic and clinical factors between first and multiple attempters

There were 148 participants (64.9%) who had attempted suicide for the first time (first attempter) and 80 participants (35.1%) who had at least one past suicide attempts (multiple attempter) (Table 1). The results showed that among demographic characteristics, the age of multiple attempters was significantly lower than that of first attempters ($45.3 \pm 18.1$ for first attempters, $36.7 \pm 16.8$ for multiple attempters, respectively). Gender (male to female) ratio was not different between two groups (for first attempters 64 (43.2%):84 (56.8%), for multiple attempters 27 (33.8%):53 (66.3%)).

Multiple attempters were less likely to be married than were single attempters. The rate of family history of suicide was also significantly higher in multiple attempters than in single attempters. Among clinical characteristics, multiple attempters had significantly higher past history of axis I disorder and presence of personality disorder than first attempters. Past year highest global assessment functioning (GAF) scores were significantly lower in multiple attempters than in single attempters. In terms of factors related with the presenting suicide behavior, multiple attempters had significantly higher repetitive/severe/continuous suicide ideation than single attempters. In addition financial problems were significantly higher in first attempters whereas the interpersonal stress/conflict was significantly higher in multiple attempters. Comparison of two groups regarding various individual resources showed that multiple attempters were less likely to have higher personal achievement and lower ability to control their emotion than first attempters. Multiple attempters also were more likely to have conflicting interpersonal relationship and to be socially isolated.