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Research report

Prevalence of suicide attempters in emergency departments in Japan: A systematic review and meta-analysis

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ABSTRACT

Background: The number of hospital admissions related to suicide attempts is increasing worldwide. The Emergency Department (ED) is recognized in Japan as an opportunity to intervene with suicide attempters however, the prevalence of suicide attempters in the ED is unknown. Therefore, a meta-analysis was conducted to provide this information.
Methods: We conducted searches of databases (PubMed, PsycINFO, CINAHL, ICHUSHI, CiNii) to identify studies about suicide attempters in the ED in Japan. A meta-analysis was used to calculate the pooled prevalence proportion of suicide attempters in the ED, and their prevalence proportion of psychiatric disorder and method of suicide in suicide attempters.
Results: The search of Japanese studies identified 3338 records, of which 70 were included in the meta-analysis. A total of 25 studies reported the psychiatric diagnosis and 62 studies reported the method of suicide. The pooled prevalence proportion of suicide attempters was 4.7%. Mood disorders were the most frequent psychiatric disorders (ICD: 30%, DSM: 35%), and poisoning was the most frequent method of attempting suicide (52%).
Limitations: There might be a publication bias because only published studies were included. There also might be an information bias, such as reporting bias or misclassification, because most of studies included in the analysis used retrospective designs.
Conclusions: The results provide clear evidence of the prevalence of suicide attempters in the ED in Japan. The results indicate that suicide attempters in the ED have a higher proportion of mood disorders, and that the most common method of suicide is poisoning.

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1. Background

It is widely recognized that prior suicide attempts and a history of non-suicidal, self-harm behaviors are risks for death by suicide and repeated self-harm behaviors (Ekeberg et al., 1991; Isometsa and Lonnqvist, 1998; Nielsen et al., 1990; Nordstrom et al., 1995; Beautrais, 2004). For suicide attempters, the emergency department (ED) frequently functions as the primary, or sole point of contact with the health care system (Kurz and Moller, 1984; Talor and Stansfeld, 1984). In recent years, the number of hospital admissions attributable to attempted suicides and self-inflicted injuries has been increasing worldwide.

In the UK, it has been estimated that approximately 220,000 patients with self-inflicted injuries visit hospitals annually (Hawton et al., 2007). The average number of ED visits for attempted suicide and self-inflicted injuries, per year, in the United States of America (US) more than doubled from approximately 244,000 in 1993–1996 to 538,000 in 2005–2008 (Ting et al., 2012a). A national registry study in Ireland reported that the increased rate of deliberate self harm among Irish men in 2008 and 2009 coincided with the advent of the economic recession in Ireland (Perry et al., 2012).

A national US survey estimated there were approximately 412,000 annual ED visits for attempted suicide and self-inflicted injury during the 5-year period between 1997 and 2001, which was 0.4% of all ED visits (Doshi et al., 2005). The data were obtained from the National Hospital Ambulatory Medical Care Survey in the US, which is a national probability sample of ED visits.

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The suicide rate in Japan at approximately 25.0 per 100,000 individuals is the highest among developed countries (National Police Agency, 2012; World Health Organization, 2012). Therefore, ED visits are increasingly recognized in Japan as an opportunity for psychiatrists and clinical psychologists to intervene with suicide attempters. Indeed, the care of suicide attempters is specifically emphasized in the General Principles of Suicide Prevention Policy (GPSP), which was adopted in Japan (Cabinet Office, Government of Japan, 2007, 2012). Given this situation, a number of small studies have examined the prevalence of suicide attempters in the ED, as shown in the result section of this manuscript. However, the prevalence of suicide attempters among all individuals in the ED is still unknown in Japan.

Therefore, in this study, we conducted a systematic review and meta-analysis of the prevalence of suicide attempters among all individuals who are treated at the ED in Japan. In addition, the study examined: (a) the prevalence of psychiatric disorders among the suicide attempters; and (b) the methods of suicide.

2. Methods

2.1. Search strategies

We searched for published studies related to suicide in the following electronic databases, from their inception to March 2013: PubMed (from 1949), PsycINFO (from 1806), and CINAHL (from 1981). The search phrase was: ((suicid*) OR (self-harm*) OR (self harm*)) AND ((emergency) OR (critical care)) AND (japan*).

Two additional databases were also searched: ICHUSHI (from 1983) and CiNii (from 1881). ICHUSHU (http://search.jamas.or.jp/) contains bibliographic citations and abstracts from biomedical journals and other serial publications published in Japan. CiNii (http://ci.nii.ac.jp/) provides information about academic articles published in academic society journals, university research bulletins or articles included in the National Diet Library's Japanese Periodicals Index Database and other databases. Since these two databases are electronic databases in Japanese, we used comparable Japanese search terms without the term (japan*) to search them. In addition, we examined the list of references included in the articles.

2.2. Definition of terms used in this study

The terminology for suicide attempt and self-harm has been inconsistent (Hawton et al., 2012). Therefore, we defined suicide attempters as individuals who survived a suicide attempt or self-harm, and our definition of suicide attempt included self-harm.

2.3. Inclusion criteria

We included studies if they met the following inclusion criteria: (1) All participants had been treated at an emergency department because of a suicide attempt; (2) The study was conducted in Japan; and (3) The study was an original article.

2.4. Exclusion criteria

We excluded studies if they met the following exclusion criteria: (1) The number of all individuals treated at the ED was not described in manuscripts; (2) The subjects included only psychiatric patients with specific psychiatric diagnoses and specific methods of suicide.

2.5. Review process

All records that were identified from searches of the electronic databases and hand searches were loaded into the ENDNOTE software version X5 (Thomson Reuters, USA). After the records were loaded, we removed duplicate records and all the authors independently screened the titles and abstracts to identify potentially eligible studies. Then, articles that were potentially eligible for inclusion in the review were obtained and independently assessed for inclusion by all authors. In cases of disagreement, a decision was reached by mutual consent after discussion.

2.6. Extraction of data

All authors independently extracted data about the number of total individuals in the ED, suicide attempters, and psychiatric diagnosis. The diagnoses were classified in the studies, according to International Statistical Classification of Diseases and Related Health Problems (ICD, WHO) or the Diagnostic and Statistical Manual of Mental Disorders (DSM, APA), including the Mini-International Neuropsychiatric Interview (MINI) and the Structured Clinical Interview for the DSM-IV (SCID). We also extracted data about the method of suicide mentioned in the studies. Any disagreements about extraction of data were resolved by consensus after discussion.

2.7. Data synthesis and statistical analysis

Our primary outcome was the pooled prevalence proportion of suicide attempters in all individuals treated at the ED. The pooled prevalence proportion of deaths after admission to the ED was also calculated. Additionally, we calculated the pooled prevalence proportion of psychiatric disorder according to the ICD and the DSM in suicide attempters.

Using the ICD classification, we identified and extracted the data for: F1 disorders (mental and behavioral disorders due to psychoactive substance use), F2 disorders (schizophrenia, schizotypal and delusional disorders), F3 disorders (mood disorders), F4 disorders (neurotic, stress-related and somatoform disorders), F5 disorders (behavioral syndromes associated with physiological disturbances and physical factors), F6 disorders (disorders of adult personality and behavior). We identified substance-related disorders, schizophrenia, mood disorders, adjustment disorders, anxiety disorders, eating disorders, and personality disorders, according to the DSM from the extracted data. We did not divide the data into subcategories among the psychiatric diagnosis in the ICD and DSM, because some studies had few data about the subcategories among the psychiatric diagnoses.

Furthermore, we calculated the pooled prevalence proportion of method of suicide in suicide attempters. We identified the data about poisoning, cutting, jumping, hanging, and burning from the extracted data. The meta-analysis and related statistical analyses were carried out with the StatsDirect statistical software version 2.7.9 (Cheshire, UK). We calculated the pooled prevalence proportion and its 95% confidence intervals (Cls) with a fixed effects model and a random effects model (DerSimonian and Laird, 1986). If the heterogeneity was low, we used a fixed effects model to calculate the pooled prevalence proportion. Otherwise, we used a random effects model. We used the I^2 statistic and its 95% Cls to estimate heterogeneity. The I^2 was considered to be low when it was 0–24% (Higgins et al., 2003). We performed subgroup analysis by hospital type (university or others) or urban density (rural or urban areas).

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