



Seriousness and lethality of attempted suicide: A systematic review



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ABSTRACT

The concepts of seriousness and lethality of suicide attempts are essential to the assessment of suicide risk and, therefore, to prevent suicidal behavior. A review of the literature was conducted in order to identify the most important factors that increase the seriousness and potential lethality of attempted suicide. The factors identified were incorporated into four main categories: progression along the suicide continuum; age and gender; mental disorders and method of suicide. Although each category contains independent risk factors for the severity of the suicide attempt, their combination both within and, above all, between them, has emerged as the most important predictor of suicidal behavior.

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1. Introduction

Studies conducted in various continents have shown rates of attempted suicide to be escalating and provide evidence that this phenomenon is continually underestimated (Demirçin, Akkoyun, Yılmaz, & Gökdoğan, 2011; Hawton & van Heeringen, 2009; Nock et al., 2008).

Attempted suicide is an act of self-harm carried out with the intention of dying (Meneghel, Corinto, Pavan, & Pavan, 2004), which lies at one extreme of the suicide continuum (Meneghel et al., 2004; Pavan et al., 2007).

The suicide continuum, in fact, includes a series of elements that progressively go from the lowest to the highest suicidality: fleeting and unplanned suicide ideation, chronic suicide ideation, suicide-like gestures, diffuse risky lifestyle, vague suicide plan, specific suicide plan, non-serious suicide attempt, serious suicide attempt and, finally, completed suicide resulting in death (Maris, Berman, & Silverman,

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2000). Thus, attempted suicide lies almost at the extreme of the suicidal continuum, which culminates in the completed act of suicide (Moscicki, 1995).

The concept of lethality of a suicide attempt, that is the severity of the medical condition caused by the attempt (Pedinielli, Delahousse, & Chabaud, 1989), is essential to the assessment of suicide risk and, therefore, to prevent suicidal behavior. To this end, many studies have evaluated the proportion between attempted and completed suicide in different conditions in order to identify the factors that most affect the severity of suicide attempts.

The aim of this review is to exanimate the most important factors that increase the seriousness and potential lethality of attempted suicide. Schematically, these factors can be differentiated into four main categories: progression along the suicide continuum; age and gender; mental disorders and method of suicide.

The first category includes all the risks linked to approaching suicide resulting in death, with particular reference to their implication in making suicide attempts more serious: suicidal ideation, degree of intent to commit suicide, planning of the act and, above all, previous suicide attempts and, particularly, serious suicide attempts.

Age and gender are very important predictors of lethality of suicide attempts: in fact, suicide attempts are more common in young females, but more serious in older males. A short subsection is devoted to the impact of life events, especially adverse childhood experiences, on the seriousness of future suicide attempts.

As for the third category, it refers to the fact that the majority of both attempted and completed suicides are subsequent to mental disorders which are, therefore, both the main risk factor and the main lethality indicator for suicide attempts. In particular, mood disorders and substance use disorders appear to be the most significant predictors of suicide attempts and their comorbidity is one of the most important indexes of suicide attempt seriousness. A subsection of this article is devoted to the role of impulsivity, whose relationship with attempted suicide seriousness, although undeniable, is complex and still unclear. Another subsection is dedicated to biological components linked with mental disorders, particularly those implicated with the regulation of serotonin, which seems to have a key role in the seriousness of suicide attempts.

Finally, many studies have illustrated that the more violent the method of suicide, the more serious the suicide attempt. Nevertheless, this association is complicated by many factors, such as age, gender, culture and method availability.

2. Method

2.1. Selection of studies

A literature review utilizing the three main psychological and medical databases, Psychinfo, Medline and Web of knowledge, was conducted. Keyword searches using the following terms were employed: suicide attempt and lethality or seriousness; suicide attempt and complete suicide; and risk factors and complete suicide. This search generated a total of 572 studies. The abstracts of all studies were read

and only those that evaluated the seriousness or lethality of suicide attempts or the risk factors of complete suicide were selected. Four main predictors of seriousness of suicide attempts were found and were subsequently used to conduct another search, using the three previously mentioned databases. The same criteria for selection were employed.

3. Results

3.1. Suicide continuum

Although it is not always possible to demonstrate the presence of all the steps that comprise the suicidal continuum (suicidal ideation, degree of intent to commit suicide, planning of the act and previous suicide attempts), most authors agree on a basic suicide continuum that goes from suicidal ideation without planning to a serious suicide attempt (Berman, Silverman, & Bongar, 2000; Ghazinour, Mofidi, & Richter, 2010; O'Connell, Chin, Cunningham, & Lawlor, 2004; Scocco, de Girolamo, Vilagut, & Alonso, 2008). Data shows how the various elements of this continuum may be considered predictors of the seriousness of the suicide attempt.

However, the association between suicidal ideation and lethality of suicide attempts is admittedly uncertain.

As shown in Table 1, many studies have illustrated that suicidal ideation may be predictive of suicide attempts, since a significant part of ideators progress to making an attempt (Borges et al., 2010; Johnston, Pirkis, & Burgess, 2009; Kessler, Berglund, Borges, Nock, & Wang, 2005; Kuo, Gallo, & Eaton, 2004; Lee et al., 2007; Nock et al., 2008; Pirkis, Burgess, & Dunt, 2000; Scocco et al., 2008). This may commence a vicious cycle, since Andover, Gibb, and Miller (2008) found that a history of suicide attempts favors the occurrence of severe suicidal ideation. Nevertheless, suicidal ideation shows a low correlation with the lethality of suicide attempts (Large & Nielssen, 2012), at least independently of other risk factors such as mental disorders, gender and previous suicide attempts (Borges et al., 2010; Diaz et al., 2003; Large, Ryan, & Nielssen, 2011; Scocco et al., 2008). In fact, even when suicidal thoughts are declared, they result weakly associated with completed suicide (Large, Sharma, Cannon, Ryan, & Nielssen, 2011).

Conflicting data were found regarding the association between the degree of suicide intent and the degree of lethality of the attempt. Some studies have demonstrated an important correlation (Horeish, Levi, & Apter, 2012), while others only a small association (Brown, Henriques, Sosdjan, & Beck, 2004), but all concur that individuals who have accurate expectations about the likelihood of dying from their attempts, commit more serious attempts. Other studies have shown a positive relationship between the degree of suicide intent and the lethality of suicide methods (Harriss, Hawton, & Zahl, 2005; Haw, Hawton, Houston, & Townsend, 2003; Zhang & Xu, 2007): the stronger the suicide intent, the more lethal the means chosen by the attempter. Other studies have found that high intent of suicide is related to significantly higher lethality in subjects with a psychiatric diagnosis and/or recent stressful life-events (Kumar, Mohan, Ranjith, & Chandrasekaran, 2006; Plutchik, Van Praag, Picard, Conte, & Korn, 1989). Recent research

Table 1
Difference between ideation and planning of suicide attempts.

Study	Population	Ideation	Plan	Attempts among ideators	Attempts among planners
Kessler, Borges, and Walters (1999)	USA	9.8% (lifetime)	2.8% (lifetime)	18% (lifetime)	55% (lifetime)
Kessler et al. (2005)	USA	3.3% (12 months)	1.0% (12 months)	9.7% (12 months)	32.8% (12 months)
Lee et al. (2007)	China	3.1% (lifetime)	0.9% (lifetime)	26.1% (lifetime)	47.1% (lifetime)
Nock et al. (2008)	17 countries from all continents	9.2% (lifetime)	3.1% (lifetime)	15.4% (lifetime)	56% (lifetime)
Scocco et al. (2008)	Italy	3.0% (lifetime)	0.7% (lifetime)	8.2% (lifetime)	48.8% (lifetime)
Johnston et al. (2009)	Australia	13.3% (lifetime)	4% (lifetime)	20% (lifetime)	59% (lifetime)
Borges et al. (2010)	Developed countries vs undeveloped countries	2% vs 2.1% (20 months)	0.6% vs 0.7% (20 months)	8% vs 9% (20 months)	32.6% vs 41.8% (20 months)

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