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Personality disorders and health problems distinguish suicide attempters from completers in a direct comparison

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ABSTRACT

Background: Whether suicide attempters and completers represent the same population evaluated at different points along a progression towards suicide death, overlapping populations, or completely different populations is a problem still unresolved.

Methods: 446 adult suicide attempters and knowledgeable collateral informants for 190 adult suicide probands were interviewed. Sociodemographic and clinical data was collected for both groups using semi-structured interviews and structured assessments. Univariate analyses and logistic regression models were conducted to explore the similarities and differences between suicide attempters and completers.

Results: Univariate analyses yielded significant differences in sociodemographics, recent life events, impulsivity, suicide intent, and distribution of Axis I and II disorders. A logistic regression model aimed at distinguishing suicide completers from attempters properly classified 90% of subjects. The most significant variables that distinguished suicide from attempted suicide were the presence of narcissistic personality disorder (OR=21.4; 95%CI=6.8-67.7), health problems (OR=20.6; 95%CI=5.6-75.9), male sex (OR=9.6; 95%CI=4.42-20.9), and alcohol abuse (OR=5.5; 95%CI=2.3-14.2).

Limitations: Our study shares the limitations of studies comparing suicide attempters and completers, namely that information from attempters can be obtained from the subject himself, whereas the assessment of completers depends on information from close family or friends. Furthermore, different semi-structured instruments assessed Axis I and Axis II disorders in suicide attempters and completers. Finally, we have no data on inter-rater reliability data.

Conclusions: Suicide completers are more likely to be male and suffer from alcohol abuse, health problems (e.g. somatic illness), and narcissistic personality disorder. The findings emphasize the importance of implementing suicide prevention programs tailored to suicide attempters and completers.

Keywords: attempted suicide, suicide, personality disorder, impulsivity, alcohol abuse

Declaration of interest: none

INTRODUCTION

Suicide is a leading cause of death worldwide (Manoranjitham et al., 2010). Annual costs of suicide attempts and completed suicides are about \$33 billion in the United States alone (Coreil, 2001). Despite the mounting literature on suicidal behavior, it is still a matter of debate whether or not suicide attempters and completers represent the same population evaluated at different time-points along a path towards suicide death (DeJong et al., 2010), similar, overlapping populations (Beautrais, 2001; Moscicki, 1994), or completely different populations (Fushimi et al., 2006; Linehan, 1986).

A previous suicide attempt is the strongest predictor of both subsequent suicide attempts (Sokero et al., 2005) and completed suicide (Coryell and Young, 2005; Fawcett et al., 1990; Isometsa and Lonnqvist, 1998). However, only about 10% of suicide attempters eventually complete suicide (De Moore and Robertson, 1996; Runeson et al., 2010; Tejedor et al., 1999). Further, that between 60 and 90% of suicide completers do not have previous suicide attempts (DeJong et al., 2010; Fushimi et al., 2006; Isometsa and Lonnqvist, 1998) suggests that suicide attempters and completers are two different, although overlapping, populations.

Research on socio-demographic and clinical risk factors for completed suicide in adults has mainly been either epidemiological (Hawton et al., 1997; La Vecchia et al., 1994; Statham et al., 1998), case-control studies using psychological autopsy (Blasco-Fontecilla et al., 2009b), or prospective studies of completed suicide (Bradvik, 2003; Bradvik and Berglund, 2000; Gladstone et al., 2001; Iribarren et al., 2000; Suominen et al., 2009; Tamakoshi et al., 2000) -many of them in cohorts of suicide attempters (Angst et al., 2002; Isometsa and Lonnqvist, 1998; Loas, 2007; Ostamo and Lonnqvist, 2001; Runeson et al., 2010; Suokas et al., 2001; Suominen et al., 2004a; Suominen et al., 2004b; Szanto et al., 2003; Tejedor et al., 1999; Tidemalm et al., 2008). Some of these studies are based on the same sample (Bradvik, 2003; Bradvik and Berglund, 2000; Runeson et al., 2010; Tidemalm et al., 2008).

Studies comparing suicide attempters and completers using similar methodologies (Beautrais, 2001; Bhatia et al., 2000; Brevard et al., 1990; Conner et al., 2003b; DeJong et al., 2010; Fushimi et al., 2006; Holmstrand et al., 2006; Innamorati et al., 2008; Iribarren et al., 2000; Michel, 1987; Michel et al., 1994; Tejedor et al., 1999) are key to understanding the differences between individuals who attempt and those who complete suicide, and can serve the ultimate goal of improving our predictive accuracy for detecting those at risk of dying by suicide (Innamorati et al., 2008).

Most studies comparing attempters and completers find suicide attempters are more likely to be women (Conner et al., 2003a; DeJong et al., 2010; Fushimi et al., 2006; Iribarren et al., 2000), younger (Conner et al., 2003a; DeJong et al., 2010; Fushimi et al., 2006; Iribarren et al., 2000), socially isolated (Beautrais, 2001), show low intent to die (Michel, 1987), have a history of prior attempts (DeJong et al., 2010; Fushimi et al., 2006), and prior psychiatric treatment (DeJong et al., 2010). The most common method for the attempt is overdose (Fushimi et al., 2006; Iribarren et al., 2000; Michel, 1987). Conversely, suicide completers are more likely to: be older (Conner et al., 2003a; DeJong et al., 2010; Fushimi et al., 2006; Iribarren et al., 2000), male (Conner et al., 2003a; DeJong et al., 2010; Fushimi et al., 2006; Iribarren et al., 2000), have high intent to die (Michel, 1987), leave a suicide note (DeJong et al., 2010), carry a diagnosis of non-affective psychosis (Beautrais, 2001), use alcohol or drugs before committing suicide (DeJong et al., 2010), and use more serious or lethal methods (DeJong et al., 2010; Michel, 1987), such as firearms (Iribarren et al., 2000) or hanging (Fushimi et al., 2006). The strongest risk factor for completed suicide is a prior suicide attempt (Iribarren et al., 2000). The ratio of completed suicide to hospital admission for attempted suicide is higher in males than in females, particularly among males aged 15- to 24 years (Iribarren et al., 2000). The results regarding marital status, social support, childhood and recent stressful life events are inconsistent (DeJong et al., 2010; Innamorati et al., 2008).

Of note, a computer assisted literature review uncovered few studies comparing the role of personality traits (Hirvikoski and Jokinen, 2012) and disorders (Holmstrand et al., 2006) among attempters and completers. In addition, the results are inconsistent across studies. In his seminal paper, Pokorny (1983) reported that personality disorders (PD) were frequent among suicide attempters, but not among suicide completers. Others reported that PDs existed in approximately one-third of those who committed suicide (Henriksson et al., 1993; Isometsa et al., 1996). Holmstrand et al. (Holmstrand et al., 2006) reported a trend for suicide completers to be more likely diagnosed with DSM-III-R cluster B PDs than suicide attempters.

We aimed to expand and refine our knowledge of the characteristics of serious suicide attempters compared to completers using sociodemographic and clinical variables. Based on the literature, we hypothesized that suicide attempters are characterized by younger age, female sex, and higher impulsivity than suicide completers, whereas suicide completers are more likely to be older males diagnosed with a narcissistic PD who face stressful life events, particularly those associated with health issues.

MATERIALS AND METHODS

Samples and Procedure

Participants were 636 individuals aged 18 years or older who attempted or completed suicide. All were white Caucasians. Suicide attempters or knowledgeable collateral informants of the suicide probands provided written informed consent before participating in the study. The study was approved by the appropriate ethics committees and performed in accordance with the Declaration of Helsinki.

Serious suicide attempters comprised 446 subjects (296 females and 150 males) admitted to the emergency department at two university hospitals between 1999 and 2003. A suicide attempt was defined as "a self-destructive behavior with intent to end one's life independent of resulting damage" (O'Carroll et al., 1996; Silverman et al., 2007). Suicide completers (n=190, 45 females and 145 males) were identified through the Judge's office, which makes determinations regarding cause of death based on findings by forensic police. Pathologists confirmed the cause of death. Exclusion criteria included dementia, organic brain damage, and mental retardation. All interviewers were doctoral level clinicians who underwent specific training in suicidal behavior research assessment under the direct supervision of the principal investigator of this study (Enrique Baca-Garcia, EBG).

In the case of suicide completers, we followed published procedures for psychological autopsy (Hawton et al., 1998). All the interviews were carried out between 3 and 18 months after the suicide. Both groups had DSM-IV diagnoses made using semi-structured instruments. Axis I and Axis II disorders in suicide attempters were diagnosed using the DSM-IV version of the Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998) and the International Personality Disorder Screening Questionnaire (IPDE-SQ) (Cooke, 2004; Egan, 2003; Loranger, 1995), respectively. Further information on the assessment instruments used in suicide attempters can be found elsewhere (Blasco-Fontecilla et al., 2009a; Blasco-Fontecilla et al., 2009b; Blasco-Fontecilla et al., 2010). In the case of suicide completers, Axis I and Axis II diagnoses were obtained using the Structured Clinical Interview for DSM Axis I (SCID-I) (First et al., 1996) and Axis II diagnoses (SCID-II) (First et al., 1997), respectively. Both interviews have been validated for determining psychiatric diagnosis by psychological autopsy (Kelly and Mann, 1996; McGirr et al., 2008). Trait impulsivity was determined by using the Spanish version of the Barratt Impulsiveness Scale (BIS-11) in both groups (Oquendo et al., 2001). The BIS-11 measures cognitive, motor, and non-planning impulsivity, and contains 30 self-report items scored 0 to 4 (Patton et al., 1995). We used the BIS cut-off points reported in a previous study (Madrid females: 46.5 points; Madrid males: 50.5) to define high- and low-impulsivity scores (Baca-Garcia et al., 2006). The Suicidal Intent Scale (SIS), a 15-item interviewer-rated questionnaire, was used to

evaluate the severity of suicidal intent (Beck et al., 1974). Each item scores 0 to 2 (total score range: 0 to 30). The SIS has two factors: planning and expected lethality (Diaz et al., 2003). Recent life events over a 2-month period were assessed by the St. Paul Ramsey Life Experience Scale (Roy et al., 1986). The St. Paul-Ramsey Scale rates the impact of different types of life events on the individual using a seven point scale of severity ranging from 1=no significant stressor (e.g., common cold) to 7=multiple family deaths (Zalsman et al., 2006).

Statistical analyses

We initially conducted univariate analyses to explore whether sociodemographic variables, recent life events, Axis I and Axis II diagnoses, impulsivity, suicide intent, and personal and familial history of suicidal behavior were associated with suicide attempter or completer status. χ^2 and the Fisher Exact Test (FET) (two-tailed) were used to perform comparisons between suicide attempters and completers as appropriate.

We conducted logistic regression models using the backward stepwise procedure. All categorical variables found to be significant at least at trend-level in univariate analyses were included in the regression model as potential predictive variables: sex; age; sociodemographic variables (marital status, years of education, employment status, living arrangements, and having children); recent life events (conjugal, occupational, stressful living situation, health, other life events, and the question “is your health situation associated with life events?”); mental disorders (major depression -current and past-, dysthymia, agoraphobia, social phobia, and alcohol abuse); Axis II disorders (paranoid, schizotypal, histrionic, narcissistic, borderline, and avoidant PDs), the BIS score, and familial antecedents of suicide completion. We used the Hosmer and Lemeshow Test for assessing the fitness of the model. Since we found collinearity between narcissistic PD and methods of suicidal behavior, we did not include methods in our logistic regression analyses.

All analyses were performed stratifying by sex, and age was dichotomized into <37 and ≥ 38 (females) and <52 or ≥ 53 (males) according to a previously published admixture analysis (Blasco-Fontecilla et al., 2012). We used SPSS for Mac-version 19 (SPSS Inc., Chicago, USA) in all analyses.

RESULTS

As expected, significant differences between suicide attempters and completers were found with regard to sex (Fisher exact test [FET] $p < 0.001$) and age (FET $p < 0.001$ in both sexes). Suicide completers were mainly males (77.3%) whereas females were overrepresented among suicide

attempters (66.4%). Mean age (\pm standard deviation, SD) of suicide attempters and completers was 36.6 (\pm 14.2) years (females: 34.9 \pm 13.4 years; males: 39.9 \pm 15.3 years) and 55.8 (\pm 19.6) years (females: 50.8 \pm 16.6 years; males: 57.2 \pm 20.2 years), respectively.

As shown in Table 1, both male and female suicide completers were significantly more likely to be married/cohabiting or widowed, to have fewer years of education, to be retired, to be living with relatives, and to have children than suicide attempters. Female completers were significantly more likely to be on disability.

--Please insert Table 1 about here--

As expected, suicide attempters and completers differed in the method of suicidal behavior ($\chi^2=347.97$; $gl=3$; $p<0.001$). 85.7% of suicide attempters attempted suicide by drug overdose, 9.8% by suffocation-cutting-fire arms, 3.4% by jumping from height, and 1.7% by hanging. As for suicide completers, 55.5% completed suicide by hanging, 24.9% by jumping from height, 10.1% by drug overdose, and 9.5% by suffocation-cutting-fire arms. The most frequent method of suicide attempt among females was drug overdose (73.2%), whereas female completers most frequently died by hanging (34.5%) ($\chi^2=136.74$; $gl=5$; $p<0.001$). For males, drug overdose (59.3%) and hanging (61.6%) were again the most common methods of suicide attempt and completed suicide, respectively ($\chi^2=135.03$; $gl=7$; $p<0.001$).

The majority of suicide attempters (84.8%) and completers (80.5%) presented with at least one Axis I disorder (Table 2). Among females, suicide completers were more likely to be diagnosed with a current major depressive episode (MDE) and dysthymia than suicide attempters. Among males, suicide completers were more likely to be diagnosed with current alcohol abuse than suicide attempters. Narcissistic PD was significantly more frequent in suicide completers than in attempters of both sexes. In addition, 46.7% of suicide completers and 47% of suicide attempters had a history of previous suicide attempts. After stratifying by sex, female completers were significantly more likely to have a history of suicide attempts than female attempters. However, this was not the case for males. Suicide completers of both sexes more frequently had a family history of completed suicide (but not a family history of suicide attempts) than suicide attempters (see Table 2).

--Please insert Table 2 about here--

As expected, suicide attempters scored significantly higher on measures of impulsivity (BIS) than suicide completers, whereas the reverse was true with regard to suicide intent (SIS) (see Table 3).

--Please insert Table 3 about here--

With respect to recent life events as measured by the St. Paul Ramsey scale, suicide completers were significantly more likely to report problems with health than suicide attempters in both sexes. Compared with suicide completers, female suicide attempters were more likely to have conjugal problems. Male completers were significantly more likely to have life events related to a stressful living situation compared to male attempters, while male attempters had higher rates of occupational stressors. Attempters of both sexes were more likely than completers to report that their health situation was secondary to the presence of life events (see Table 4).

--Please insert Table 4 about here--

The logistic regression model correctly classified 90% of the subjects: 93.9% of the suicide attempters and 81.4% of the suicide completers. The Hosmer Lemeshow test was non-significant ($\chi^2=3.99$; $df=8$; $p=0.857$), indicating that the model fit the data well. The effect of age was not significant ($OR=0.87$; $95\%CI=0.28-2.58$), and consequently was not included in the final model. Suicide completers were twenty times more likely to be diagnosed with narcissistic PD and health problems, ten times more likely to be males, and five times more likely to be alcohol abusers than suicide attempters. Suicide completers were also five times more likely to have a family history of completed suicide than suicide attempters. In contrast, suicide completers were less likely to be separated/divorced, to be impulsive, and to be diagnosed with a paranoid PD than suicide attempters. Furthermore, they were less likely to report that their health situation was associated with life events, as compared with suicide attempters. See Table 5 for a complete description of the characteristics that differentiated attempters from completers.

--Please insert Table 5 about here--

DISCUSSION

Our findings support that, even though suicide completers and suicide attempters share some clinical and sociodemographic characteristics, several distinctive features distinguish the two groups. The main variables that characterized suicide completers in multivariate analyses were (in decreasing order of ORs) a diagnosis of narcissistic PD, health problems, male sex, living alone or

with family (compared to living with unrelated roommates), alcohol abuse, a stressful living situation, being retired or employed (compared to being unemployed or on disability), having a family history of suicide, and occupational or conjugal life events. Conversely, suicide attempters more commonly had a health situation associated with life events, were more likely to be separated or divorced, had higher impulsivity and higher rates of paranoid PD. Surprisingly, the presence of affective disorders did not distinguish suicide attempters from completers in our study. The results of the present study underscore some modifiable factors (e.g., alcohol abuse, health problems) that are potential targets for public health interventions aimed at decreasing suicide risk.

In accordance with the literature, the male-female ratio was approximately 4:1 among suicide completers and 1:3 among suicide attempters (DeJong et al., 2010; Moscicki, 1994), and suicide completers were older (DeJong et al., 2010; Fushimi et al., 2006; Moscicki, 1994; Schneider et al., 2006). As for psychiatric diagnoses, previous studies have consistently shown that affective disorders are the most frequent Axis I diagnoses in both suicide attempters and completers, as we report here (Fushimi et al., 2006). However, in line with the findings by Dejong et al. (2010), the presence of affective disorders did not differentiate between suicide attempters and completers in our study. Alcohol abuse was about five times more likely among suicide completers than among attempters and was the only Axis I disorder that differed between the two samples. Similarly, Dejong et al. (DeJong et al., 2010) reported that the use of drugs or alcohol prior to suicidal action was more frequent among suicide completers than attempters. Alcohol abuse is a core correlate of suicidal behavior (Wang and Stora, 2009) and may precipitate suicide by impairing judgment (DeJong et al., 2010; Garcia-Nieto, 2013). Indeed, subjects showing comorbid depression and alcohol use disorders are at particularly high risk for suicide (Cornelius et al., 1995; Szanto et al., 2007). This is important, because alcohol abuse may serve as a warning sign for eventual suicide, and the implementation of preventive programs focused on alcohol use prevention might prove useful to further decreasing suicide rates (Szanto et al., 2007). Interestingly, in the present study this finding was only statistically significant in males, which is clinically coherent with the perception that alcohol abuse is a core element in male suicide completers, and in keeping with previous literature. For instance, in the Hungarian prevention study Szanto and colleagues (Szanto et al., 2007) reported that alcoholism was present in 75% of male suicide completers and in 21% of female suicides.

The majority of suicide attempters and completers presented with at least one PD. The most common among attempters of both sexes were borderline and avoidant PDs, while narcissistic and obsessive-compulsive PDs (in both men and women) and borderline PD (only in women) were the most common among suicide victims. More than 20% of male and female suicide completers met

criteria for narcissistic PD. This is striking given that the prevalence of narcissistic PD in community samples in the US ranges between 0 and 6.2%, with most studies reporting prevalences lower than 3% (Sansone and Sansone, 2011). This finding is of particular clinical interest because narcissistic PD may not be included in the upcoming DSM-V. As others and we have previously suggested (Garcia-Nieto, 2013; Pies, 2011; Ronningstam, 2011), the uniqueness of narcissistic PD with regard to suicidal behavior could be interpreted as supporting evidence in favour of keeping narcissistic PD in DSM-V. Thus, we concur with Miller et al. (Miller et al., 2009), who called into question the developing DSM-V classification plans to collapse the narcissistic PD subtype into the antisocial/psychopathic DSM-V category. Narcissistic subjects are emotionally fragile and prone to suicidal crises (Blasco-Fontecilla et al., 2009a). Narcissistic personality is a clinical marker of higher suicide risk, at least among depressed older people (Heisel et al., 2007), and health problems can precipitate suicide attempts in depressed narcissistic subjects (Blasco-Fontecilla et al., 2010).

Consistent with the literature, we found a high prevalence of a personal history of suicide attempts among both suicide attempters and completers. An important finding is the high prevalence of family history of suicide among suicide completers. Previous studies have convincingly demonstrated the familial clustering of suicidal behavior (Brent et al., 2002; Murphy and Wetzel, 1982; Qin et al., 2003). Biological relatives of subjects who attempted or completed suicide show a high prevalence of suicidal behavior, ranging from 14% (Murphy and Wetzel, 1982) to 40% (Runeson, 1998). There is also evidence that supports that this clustering is independent from familial transmission of mental disorders (Egeland and Sussex, 1985; Qin et al., 2002, 2003). Interestingly, our study showed that a family history of completed suicide (but not suicide attempts) was significantly more common among suicide completers of both sexes, and served to differentiate between suicide completers and attempters. This finding suggests that the predisposition to suicide completion might be genetically transmitted, which is in accordance with previous studies (Brent et al., 1996; Qin et al., 2002; Statham et al., 1998).

A personal history of previous suicide attempt was frequent in both suicide completers and attempters (47%), also in line with other studies (DeJong et al., 2010; Sinclair et al., 2005). Interestingly, after stratifying by sex, female suicide completers were more likely to have a history of suicide attempts (69%) than female attempters (49%), thus suggesting that a previous suicide attempt might be a more valuable factor to predict suicide completion in females than in males. This finding supports the hypothesis that suicide completers and attempters are groups that overlap, and that this overlap is more pronounced in females.

Regarding impulsivity and suicide intent, impulsivity was greater among suicide attempters than among suicide completers in both sexes. Impulsivity has been traditionally associated with suicide attempts (Baca-Garcia et al., 2005; Mann et al., 1999), although it may also play a role in completed suicides among young people (McGirr et al., 2008). In addition, DeJong and colleagues (DeJong et al., 2010) suggested that completers appear to carefully plan their suicidal behavior and to be less impulsive during their suicidal crises, which fits perfectly with our study. We may conclude that, even if impulsivity appears to be very important in the genesis of suicidal behavior, its role is more relevant for suicide attempts than for suicide completion. On the other hand, suicide completers scored higher scores on the SIS than suicide attempters. Suicide intent is characteristically higher in suicide completers than in suicide attempters (Michel, 1987). Even more important, suicide intent seems to be a good predictor of eventual suicide after a suicide attempt (Suominen et al., 2004a).

Taken together, all these data strongly suggest that suicide completers represent a particular suicidal population characterized by elevated suicide intent and low trait impulsivity. This finding is of interest because we have previously reported that expected lethality -one of the two factors of suicide intent- is inversely related to impulsivity (Blasco-Fontecilla et al., 2009a). In our previous study, narcissistic suicide attempters showed higher expected lethality as compared with the remaining cluster B PDs, but a higher level of impulsivity did not characterize them. Indeed, even though narcissistic PD is clustered along with borderline, histrionic, and antisocial PDs in DSM-IV cluster B, the relationship between narcissism and impulsivity has recently been challenged (Miller et al., 2009). Further research is warranted to confirm whether or not impulsivity and suicide intent are inversely correlated dimensions in suicide attempters and completers.

Another finding of interest was that suicide completers were also more likely to suffer from life events, particularly health problems, than suicide attempters in both sexes. Somatic illness has been reported to be more frequent among suicide completers, particularly in males, than in the general population (Da Cruz et al., 2010; Waern et al., 2002). This is relevant because most suicide completers contact a physician or an emergency department within the year prior to their suicide, thus providing an opportunity for detection and prevention (Da Cruz et al., 2010).

Strengths and limitations

The major strength of the present study is that we compared two different populations of suicide attempters and completers using a similar methodology, with members of the same research group assessing both suicide attempters and completers. Our study was modeled on the protocol for

suicide studies developed at Columbia University, New York. This makes the comparison between suicide attempters and completers more sound. Another strength is that all analyses were stratified by sex, which represents a major advantage compared with previous studies.

Our findings must also be interpreted in light of some limitations. First, our study shares the limitations of studies comparing suicide attempters and completers, namely that information from attempters can be obtained from the subject himself, whereas the assessment of completers depends on information from close family or friends (Michel, 1987). Nevertheless, the reliability and validity of proxy-based diagnoses in both suicide attempters and completers have been reported to be good by several authors (An et al., 2010; Conner et al., 2001; Deep-Soboslay et al., 2005; Kelly and Mann, 1996; Zhang et al., 2003; Zouk et al., 2006). Moreover, the possibility that some future suicides will occur in our group of attempters cannot be ruled out. These cases may blur the differentiation between suicide attempters and completers. Second, different semi-structured instruments assessed Axis I and Axis II disorders in suicide attempters and completers. Ideally, both samples should have been evaluated through the same instruments. However, the use of SCID-I and SCID-II in emergency department settings is impractical. In any case, the MINI and the SCID-I have shown to be closely correlated and may be used interchangeably in some circumstances (Jones et al., 2005). In addition, the IPDE-SQ and the SCID-II were equally useful in a study designed to diagnose borderline PD in an outpatient sample (Chanen et al., 2008). Finally, we have no data on inter-rater reliability data. However, in a recent study aimed at evaluating the inter-rater reliability, following a similar methodology and including some of the researchers of the present study (LG, HBF, RGN, EBG), the level of agreement among ratters was appropriate (García-Nieto et al., 2012).

CONCLUSIONS

~~All these data indicate that~~ Suicide attempters and completers are two distinct populations that partially overlap. As suggested by others (Fushimi et al., 2006), both populations display some sociodemographic and clinical differences that may allow clinicians to differentiate between them ~~both populations. Male sex, health problems, alcohol abuse, and narcissistic PD characterized suicide completers as compared with suicide attempters. All these factors should be taken into account in those patients at higher risk of suicide; namely those diagnosed with affective disorders and previous suicidal behavior.~~ The results of the present study highlight some modifiable factors (e.g., alcohol abuse, health problems) that are potential targets for public health interventions aimed at decreasing suicide risk.

Finally, we added some proposals to refine the stress-diathesis model of suicidal behavior (Mann et al., 1999), a comprehensive and valuable clinical and preventive model. Our findings suggest that trait impulsivity and female sex serve to characterize suicide attempters, whereas male sex, health problems, alcohol use and narcissistic PD better characterize suicide completers. This is in keeping with suggestions that suicide attempters and completers are characterized by, at least partially, distinctive diatheses (Conwell et al., 1998; Conwell et al., 1996; Duberstein et al., 2004). In addition, suicide completers, particularly males, exhibited a less disturbed personality and mental disorder profile than suicide attempters (Daigle, 2004). This may actually divert the attention of clinicians from those subjects most at risk, and hamper their engagement in mental health services, thus worsening their prognosis. Our results strongly suggest that Primary Care Physicians could play a critical role in suicide prevention strategies specifically focused on suicide completers. ~~As a matter of fact, primary care is frequently reported as the most frequently visited clinical service during the month prior to suicide (Trofimovich et al., 2012).~~

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