

PAPER
PSYCHIATRY

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Psychiatric Disorders (Axis I and Axis II) and Self-Immolation: A Case–Control Study from Iran*

ABSTRACT: The objective of this study was to investigate preexisting psychiatric disorders in self-immolation patients. In a case–control study, 30 consecutive cases of deliberate self-inflicted burns, admitted to the regional burn center, were compared with 30 controls. Mental disorders were assessed via detailed clinical interview. Descriptive data revealed that 67% of self-immolation patients had adjustment disorder (all female), 10% drug and alcohol abuse/dependence (all male), 7% dysthymia, 3% major depression, 3% anorexia nervosa, 3% primary insomnia, 7% borderline personality disorder (50% male), 7% depressive personality disorder (100% female), and 3% antisocial personality disorder. In bivariate comparisons, adjustment disorders emerged as related to risk of self-immolation (odds ratio = 13.00). This study suggests that adjustment disorder is a risk factor for self-immolation. As a result, it has been suggested that increasing education about problem-solving approaches, and coping skills for females and at-risk groups are appropriate prevention programs and strategies in Iranian communities.

KEYWORDS: forensic science, case–control, risk factors, psychopathology, adjustment disorders, self-immolation, deliberate self-inflicted burns, suicide, Iran

Suicide by self-immolation is among the most difficult personal acts to understand (1). Scientists have recently begun to explore the psychological risk factors for self-immolation in an attempt to understand what individual difference factors might lead individuals to attempt to kill themselves through burning (2–8).

This method of suicide is reported most frequently in low- and middle-income countries, and is rather rare in developed countries (1–9). Iran is among the countries with the highest rates of self-immolation in the world. In different parts of Iran, between 1% and 10% of patients who attempted suicide and between 25% and 71% of patients who committed suicide were via self-immolation (1,6,9–11). Approximately 80% of hospitalized self-immolation patients die (9), many of them after days, weeks, or even months of burn care treatment that ultimately is unsuccessful.

As a result, prevention of self-immolation is a public health priority in Iranian society. Previously, we have worked to define the problem and conduct surveillance (1,2,6,9–12). To “Identify the cause: risk and protective factors,” is the next step in the scientific process of developing self-immolation prevention strategies (6,13).

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A literature review reveals that the risk factors of self-immolation differ between high- and low–middle-income countries. For example, in Iran and most low- and middle-income countries, young adolescent women are over-represented among self-immolation cases. In high-income countries, the prevalence of self-immolation tends to be among older male individuals (1–12). Our previous report from this study revealed that being the first or last child in family birth order, having marital conflict with spouse, and having conflict with other members of the family were associated with increased risk of self-immolation. Moreover, having children was associated with decreased risk of self-immolation (7,8).

One limitation of previous work about self-immolation is that it has been almost entirely descriptive (1). The purpose of this study was to fill in the existing gap in the self-immolation literature by examining risk factors associated with self-immolation using a case–control design and focusing on psychiatric risks for self-immolation.

Psychiatric disorders have been addressed in previous descriptive research as potential risk factors for self-immolation in low–middle-income countries and in case–control studies from developed countries (3–5,14). In this study, we examined the relationship between mental disorder and self-immolation to predict self-immolation risks using Axis I (clinical disorders) and Axis II (personality disorders and mental retardation) of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV).

Methods

Participants

Thirty patients who were admitted to the regional Burn Center (Imam Khomeini Hospital in Kermanshah province, Iran) as a result of deliberate self-burning were enrolled consecutively. We

included in this study only those patients who clearly and unequivocally made self-immolation with suicidal intent. This evidence came from the patient's confession to deliberate self-burning and/or reports from a reliable witness. Patients whose suicide seemed suspicious (i.e., those who denied suicidal intent and for whom there were no corroborating witnesses or data) were excluded from the study. Many patients had very serious burns, and some ultimately died as a result of complications from their injuries.

The control group was recruited from the community. Age, gender, and living area (district-county and rural/urban) were matched between the case and control groups.

Protocol

A clinical psychologist interviewed all case and control participants. Each interview took approximately 2–3 h. In rare cases where the clinical situation did not permit a single session, the interview was divided into two or three visits. At the conclusion of the interview, the clinical psychologist assigned DSM-IV diagnoses on both Axis I and Axis II. All protocols were approved by the Kermanshah University of Medical Sciences, Local Research Ethics Committee.

Analytical Method

The analysis of risk factors was undertaken in two steps. Step 1 involved examination and interpretation of descriptive data. Step 2 was a series of chi-square and odds ratio analyses designed to estimate the association and strength of the association between the outcome variable (self-immolation) and each of the risk factors. A value of $p \leq 0.05$ was used to identify significant differences.

Results

Descriptive data for the overall sample and for both controls and cases are outlined in Table 1. The majority of the participants in the study were female (87%), living in rural areas (80%), and married (60%). The sample had a mean age of 28 years and differences between the two groups (control vs. case) regarding all demographic characteristics were not statistically significant. Distribution of the samples regarding DSM-IV disorders in both groups are outlined in Table 2. As shown, 67% of the self-immolation patients had diagnoses of adjustment disorders, compared to 10% of the matched controls. This difference was statistically significant ($\chi^2 = 17.78$, $p < 0.001$, odds ratio = 13, 95% confidence interval = 3.55–47.60).

TABLE 1—Demographic data of case ($n = 30$) and control ($n = 30$) groups.

Variable	Groups		
	Cases	Control	Total
Gender n (%)			
Male	4 (13)	4 (13)	8 (13)
Female	26 (87)	26 (87)	52 (87)
Living area n (%)			
Urban	6 (20)	6 (20)	12 (20)
Rural	24 (80)	24 (80)	48 (80)
Marital state n (%)			
Single	12 (40)	10 (33)	22 (37)
Married	17 (57)	19 (64)	36 (60)
Divorced	1 (3)	1 (3)	2 (3)
Mean of TBSA (%)	60.2	—	—
Mean of age (year)	27.5	28.5	28

TBSA, total body surface area.

TABLE 2—DSM-IV psychiatry disorders of case ($n = 30$) and control ($n = 30$) groups.

Variable	Groups		
	Cases, n (%)	Control, n (%)	Total, n (%)
Axis I			
Adjustment disorders*	20 (67) [†]	3 (10)	23 (38)
Males [‡]	0 (0)	1 (25)	1 (13)
Females [‡]	20 (77)	2 (8)	22 (42)
Drug and alcohol abuse/dependence*	3 (10)	0 (0)	3 (2)
Males [‡]	3 (75)	0 (0)	3 (38)
Females [‡]	0 (0)	0 (0)	0 (0)
Dysthymia*	2 (7)	3 (10)	5 (8)
Males [‡]	0 (0)	0 (0)	0 (0)
Females [‡]	2 (8)	3 (12)	5 (10)
Major depression*	1 (3)	0 (0)	1 (2)
Males [‡]	0 (0)	0 (0)	0 (0)
Females [‡]	1 (4)	0 (0)	1 (2)
Anorexia nervosa*	1 (3)	0 (0)	1 (2)
Males [‡]	0 (0)	0 (0)	0 (0)
Females [‡]	1 (4)	0 (0)	1 (2)
Primary insomnia*	1 (3)	0 (0)	1 (2)
Males [‡]	1 (25)	0 (0)	1 (13)
Females [‡]	0 (0)	0 (0)	0 (0)
Generalized anxiety disorder*	0 (0)	2 (7)	2 (3)
Males [‡]	0 (0)	0 (0)	0 (0)
Females [‡]	0 (0)	2 (8)	2 (4)
Axis II			
Borderline*	2 (7)	0 (0)	2 (3)
Males [‡]	1 (25)	0 (0)	1 (13)
Females [‡]	1 (4)	0 (0)	1 (2)
Depressive*	2 (7)	0 (0)	2 (3)
Males [‡]	0 (0)	0 (0)	0 (0)
Females [‡]	2 (8)	0 (0)	2 (4)
Antisocial*	1 (3)	0 (0)	1 (2)
Males [‡]	1 (25)	0 (0)	1 (13)
Females [‡]	0 (0)	0 (0)	0 (0)

*Percentage between all members of groups.

[†] $p < 0.0001$.

[‡]Percentage between gender members of groups.

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

Among other subdomains of DSM-IV, we were able to identify trends for significant differences between the case and control groups. For example, 10% of self-immolation patients had diagnoses of drug and alcohol abuse/dependence, but no control participants had drug and alcohol diagnoses (Table 2).

Overall, among subdomains of the DSM-IV, Axis II, 17% of the patients in the self-immolation group were diagnosed with personality disorder characteristics including: 7% diagnosed for being “borderline,” 7% for “depression,” and 3% for “antisocial behaviors” (Table 2).

Gender

When the sample was looked at separately by gender, several interesting patterns emerged. First, 75%—or three out of the four male self-immolation patients—had diagnoses of drug and alcohol dependency or abuse. Those figures included: one with opium dependence, two with heroin dependence, two with alcohol abuse, and one with alcohol dependence (some cases had multiple diagnoses). None of the control group participants were identified with such diagnoses (Table 2).

Among women, 77% ($n = 20$) of self-immolation patients had adjustment disorder diagnoses while just 8% ($n = 2$) of the females in the control group were diagnosed as such (Table 2).

Discussion

Medical science has long recognized the fact that psychiatric disorders play an important role in suicide attempts and completions (14–29). Research examining suicide by self-immolation is much thinner, but also suggests psychiatric illness may increase risk of suicide by self-immolation (1–12). No previous research has examined the role of psychiatric disorders as potential risk factors for suicide by self-immolation using a case–control design in Iran. In fact, there are only a few case–control studies examining risk factors of self-immolation in the world, most of which were conducted in developed countries (3–5). Therefore, to our knowledge this is the first case–control study in any low- or middle-income country to review psychiatric risk factors of self-immolation.

Most previous studies from western countries tend to report major depressive disorders, psychoses, and alcohol and other drug addictions as the psychiatric conditions most closely related to self-immolation (3–5). However, in the current case–control design study, participants in the self-immolation group were more likely to be diagnosed with adjustment disorder than those in the control group.

Adjustment disorders are among the more commonly occurring mental disorders. Patients with adjustment disorders experience emotional distress in response to stressful events such as illnesses, relationship disputes, financial challenges, or changes in residence. Symptoms of adjustment disorders can vary widely, but depressed mood is among the most common. This is particularly true for the subtype, “Adjustment Disorder with Depressed Mood,” which is the subtype of adjustment disorder that is also most closely associated with of suicide (28,29).

Although suicide is associated with a wide range of mental disorders—including major depression, substance abuse and dependence, schizophrenia, and bipolar disorder—it also has been related to adjustment disorder diagnoses in previous work. In one retrospective study of pediatric patients who had attempted suicide in Hawai‘i, for example, adjustment disorder was among the more common diagnoses (17).

In a study reviewing the characteristics of 109 adolescent psychiatric inpatients admitted to an acute psychiatric ward in Taiwan, adjustment disorder was diagnosed in 10.7% of the patients (18). A review of factors related to suicide in New York state prisons revealed that adjustment disorder diagnoses were over-represented in these patients (19). Further evidence comes from a study of 92 adolescents (mean age = 15.6 years) who presented to the emergency department of an urban hospital for a nonfatal suicide attempt by ingestion (20). Adolescents whose attempts had been more severe—those admitted to intensive care or who had toxicity in their blood—were more likely to have been diagnosed with an adjustment disorder than those patients with less severe suicide attempts.

Another study examined 55 acutely poisoned patients treated in the intensive care unit of a hospital in Spain. Although a large number of patients were diagnosed with depressive disorders, nine of the 55 (16%) cases were diagnosed with adjustment disorders (21). Rather than assessing the rate of adjustment disorders in patients who have committed suicide, other research has examined patients with adjustment disorders to determine the level of suicide risk. In one retrospective study of 199 patients diagnosed with adjustment disorders, 60% had documented suicide attempts in the past, essentially all (96%) had suicidal ideation upon hospital admission, and half (50%) had attempted suicide immediately prior to admission (22). Among the group who had attempted suicide in the past, comorbid personality disorders were common (in particular, borderline personality disorder and antisocial personality disorder), and those comorbid conditions contributed greatly to suicide risk (22).

On the other hand, psychological autopsy data from several studies also indicate a high representation of adjustment disorders among suicide completers. In a Swedish sample of 58 consecutive suicide victims aged 15–29, 14% were classified as having adjustment disorders with depressed mood. Borderline personality disorder (28%) constituted another relevant group (23). Finally, we mention results of the National Comorbidity Study in the United States. Designed to collect data representing the full American population, study authors suggested 9% of suicide victims aged 10–29 had adjustment disorders. In contrast to patients with depressive disorders who attempted suicide, those with adjustment disorders were more likely to have comorbid substance abuse problems and were less likely to plan their suicide attempts. As in our own results, this study highlights the facts that adjustment disorders can be serious mental illnesses and that patients with adjustment disorders may attempt suicide. Many clinicians wrongly assume adjustment disorders are sub-clinical disorders without serious risk, but this is not the case, especially when comorbid substance abuse or personality disorders are present (17–29).

In one of the few previous descriptive survey studies conducted in Iran, adjustment disorders were among the most prevalent psychiatric predisposing factor (1,14,15). One study by Zarghami (14) revealed that 42.1% of their self-immolation patients had adjustment disorders, 16.7% nicotine dependence, 11% major depression, 8.8% dysthymia, 4.7% anxiety disorders, 4.1% schizophrenia, 4.7% opium dependence, 1.9% heroin dependence, 2.2% alcohol dependence, 1.7% psychotic disorders “Not Otherwise Specified,” 1.3% bipolar disorder, 0.9% conversion and dissociative disorders, 0.6% mental retardation, and 0.3% dementia.

Treatment and Prevention Strategies for Adjustment Disorder

Adjustment disorders are different from other mental illnesses in several ways, but one of the most prominent is the role of environmental risk factors for their development. Other disorders associated with risk of suicide, including major depressive disorder, substance use and dependence, and schizophrenia, are believed to have multiple biological and genetic risk factors, as well as psychosocial environmental risks. Emergence of adjustment disorders is believed to be much more dependent on environmental risks than other mental illnesses (14,15). Stated in terms of the diathesis-stress model, the diathesis probably plays a stronger role in risk for psychoses, major depressive disorder, and substance use disorders. The stress probably plays a stronger role in risk for adjustment disorders. If these stressors continue, or if premorbid functioning is poor, adjustment disorders are more likely to continue. Interventions should be designed to minimize the impact of these stressors on day-to-day functioning. Clinicians must appreciate the patient’s level of vulnerability, screen for suicidality in all adjustment disorder cases, and determine the patient’s capacity for adaptation; is this a previously healthy, high-functioning individual who has become symptomatic in the context of a serious life stress? Or is this an individual with chronic, ill-defined coping problems who is having difficulty dealing with a variety of longstanding circumstances? It is also important to understand and facilitate those factors that may mitigate the pathological responses to stress. Examples include helping to develop a warm and supportive relationship with family members and helping the patient increase the breadth of social support. A clinician could also work with parents of children with adjustment disorder to help them better cope with the stressful events in their family because positive parental adjustment minimizes the likelihood of pathological adjustment

in children. Short-term treatment may be sufficient for many patients with adjustment disorder, consistent with the conceptualization of the disorder as time limited. However, referral for more extended treatment following the reestablishment of baseline functioning may be desirable if there was preexisting symptomatology or if there are individual characteristics that predispose the patient to stress intolerance. This is particularly so in patients with continuing suicidal ideation (17–29).

In this study, we were also able to identify a trend in differences among males between case and control groups regarding alcohol abuse and alcohol dependence, and among females for most other subdomains of Axis I and Axis II. Although the differences between the two groups (case vs. control) were not statistically significant, this result could be of importance for more rigorous examination in future studies.

Limitations and Future Directions

In Iran and much of the world, suicide is stigmatized and condemned for religious or cultural reasons. In some countries, suicidal behavior is a criminal offense punishable by law. In other countries, provisions in health insurance policy coverage exclude treatment for suicidal intent. Therefore, for various reasons, suicide often is a secretive act that is deliberately hidden and considered taboo. Identification of at-risk populations, which this manuscript contributes to, will provide valuable information for targeted treatment and prevention programs. As discussed in the introduction, future work should begin to move toward treatment and prevention programs (13).

Conclusion

This study suggests that adjustment disorder is a risk factor for self-immolation. In male patients, drug abuse/dependency also emerged as a risk factor, whereas in female patients depressive disorders increased risk of self-immolation. We discuss the need to develop intervention strategies to prevent mental illness and to educate at-risk individuals about problem-solving approaches and coping skills.

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