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Research report

Risk factors for suicide attempt among Israeli Defense Forces soldiers: A retrospective case-control study

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ABSTRACT

Background: A major risk factor for suicide is suicide attempts. The aim of the present study was to assess risk factors for nonfatal suicide attempts.

Methods

The study's cohort consisted of 246,814 soldiers who were divided into two groups: soldiers who made a suicide attempt ($n=2310$; 0.9%) and a control group of soldiers who did not ($n=244,504$; 99.1%). Socio-demographic and personal characteristics as well as psychiatric diagnoses were compared.

Results

The strongest risk factors for suicide attempt were serving less than 12 months (RR=7.09) and a history of unauthorized absence from service (RR=5.68). Moderate risk factors were low socioeconomic status (RR=2.17), psychiatric diagnoses at induction (RR=1.94), non-Jewish religion (RR=1.92), low intellectual rating score (RR=1.84), serving in non-combat unit (RR=1.72) and being born in the former Soviet Union (RR=1.61). A weak association was found between male gender and suicide attempt (RR=1.36). Soldiers who met more frequently with a primary care physician (PCP) had a higher risk for suicide attempt, as opposed to a mental health professional (MHCP), where frequent meetings were found to be a protective factor ($P<0.0001$). The psychiatric diagnoses associated with a suicide attempt were a cluster B personality disorder (RR=3.00), eating disorders (RR=2.78), mood disorders (RR=2.71) and adjustment disorders (RR=2.26).

Limitations: Mild suicidal behavior constitutes a much larger proportion than among civilians and may have secondary gain thus distorting the suicidal behavior data.

Conclusions: Training primary care physicians as gatekeepers and improved monitoring, may reduce the rate of suicide attempts.

1. Introduction

Suicide is a leading cause of death worldwide among adolescents and young adults. In 2013, it was the third most common cause of death in adolescents and the second leading cause of death in young adults in the U.S. (CDC WISQUARS website, 2014). According to the Israel Ministry of Health, suicide is the second leading cause of death in males and the third in females aged 15–24 years (Levinson et al., 2006, 2007).

A more common phenomenon and a major risk factor for suicide is nonfatal suicide attempt (Barber et al., 1998; Wilcox et al., 2010). Suicide attempts occur in 3% of adolescents in the U.S. (Spirito and Esposito-Smythers, 2006). Worldwide, about two million adolescents attempt suicide annually, and of these, approximately 700,000 require medical attention following their

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attempt (Shaffer et al., 2001). The relationship between non-fatal suicide attempts and suicide is debated in terms of whether they are two behaviors on the same continuum or separate phenomena? (Beautrais, 2001; Hawton, 2001; Linehan, 1986; Maris, 1992; Mann, 2003). Two different major study approaches compete with the investigation of this question: the deteriorating suicide continuum approach and the suicide distinguishing approach which differentiates between the various groups. While according to the first approach it is possible to conclude from suicidal behavior to complete suicide consistent with Joiner's Interpersonal-Psychological Theory of Suicide; that is suicide attempters and decedents may represent a single population moving progressively toward more severe acts of self-directed violence (Joiner, 2005; Joiner et al., 2009). According to the second approach you cannot learn from a group of people trying to commit suicide and reach conclusions from it (Linehan, 1986; Nock, 2009). Despite these differences, it was found that a previous suicide attempt is one of the strongest predictors of a future nonfatal suicide attempt or of suicide (Cavanagh et al., 2003; Mann et al., 2005; Spirito and Esposito-Smythers, 2006). Moreover, although suicidal behavior is heterogeneous and varies in degree of intent and amount of clinical damage done, suicide deaths and non-fatal but highly lethal suicide attempts are similar from demographical, clinical, and neurobiological perspectives, and therefore probably have a common diathesis (Mann, 2003). That may explain why the more serious the past nonfatal suicide attempt, the greater the risk of future suicide (Beautrais, 2003; 2004).

The definition of a suicide attempt, according to the Columbia Classification Algorithm of Suicide Assessment (C-CASA), is a potentially self-injurious behavior, associated with at least some intent to die as a result of the act (Posner et al., 2011).When evaluating a suicide attempt one should take into account the degree of intent to die and the severity of the suicide attempt (Beautrais, 2001; Brown et al., 2004; Silverman et al., 2007).

1.1. The present study

The military context is unique in many respects regarding suicide and suicidal behavior. First, suicide is the leading cause of death in the Military including The Israeli Defense Forces (IDF) during peace time (Hochman et al., 2014; Shelef et al., 2014). Secondly, the past decade has shown greater interest in military suicide, mainly due to reports of a dramatic increase in the suicide rate in the U.S. Army, with the civilian rate remaining fairly stable (Nock et al., 2013, 2014; Kessler et al., 2014; Schoenbaum et al., 2014). Thirdly, the military population age group of 18–24 years has the highest risk for fatal plus nonfatal suicide attempts (Beautrais, 2001; Schoenbaum et al., 2014). Fourthly, the military service experience itself is a risk factor (Apter et al., 1993; Bodner et al., 2007; Lubin et al., 2010), due to difficult and stressful conditions characteristic of military service (Yacobi et al., 2013). Finally, availability of firearms is a ubiquitous risk factor for military suicide (Hoge and Castro, 2012; Lubin et al., 2010; Reisch et al., 2013).

The profile of soldiers who died by suicide is different from those who made nonfatal suicide attempts (Apter et al., 2008; Maguen et al., 2015), according to previous studies it is estimated that for every suicide there are approximately 20–25 attempts that did not end in death (McIntosh, 2000; Simon and Shuman, 2008). Hence, and due to the fact that suicide attempts increase the risk for future nonfatal attempts and for death by suicide (Spirito and Esposito-Smythers, 2006; Cavanagh et al., 2003; Mann et al., 2005), it is of great importance to evaluate the risk factors for nonfatal suicide attempts.

In the present study we compared soldiers who made a nonfatal suicide attempt during their military service with soldiers who did not do so in order to identify differences that may relate to risk of suicide. To our knowledge this is the largest suicide-attempt study ever conducted in the Israeli army, comparing soldiers who made a suicide attempt with soldiers who never made a suicide attempt. Identifying the characteristics which increase the risk for suicide attempts may help inform a more effective prevention strategy which would focus on identifying those soldiers at a higher risk for suicidal behavior, from their time of induction.

2. Methods

2.1. Settings

National military service is mandatory for all Israeli citizens reaching the age of 18. Men serve three years in the IDF, while most women serve two. Israeli soldiers represent a mentally healthier population (Gal, 1986), since in advance of their enlistment, they undergo a series of tests and examinations in order to determine their suitability for military service (Bodner et al., 2006). At the conclusion of the screening process, approximately 60% of males and 40% of females are typically found fit to serve. Previous mental health history or mental disorders influence the determination of the soldier's suitability for service. While soldiers with severe previous psychiatric diagnoses (i.e. Major Depression, Bipolar Disorder and Psychosis) are excluded from service, soldiers with mild or moderate severity psychiatric disorders are monitored by mental health professionals during their military service by required periodic follow-up examinations.

The IDF computerized database includes extensive data on soldiers, including date of recruitment, military role, intellectual capability rating, and an electronic medical record. All mental health officers use the Computerized Patient Record (CPR) system and every examination executed by the mental health officer is recorded. Due to the nature of military service, soldiers are with other soldiers most of the time. Furthermore, soldiers are educated to report to their commanders about suicidal behavior immediately after they recognize it. Doctors outside the military are required to report suicidal behavior in soldiers. Hence, most suicide attempts should be detected. After the attempt, soldiers first undergo a general medical clinical exam. After that, a military mental health care officer examines the soldier shortly after the attempt in order to determine whether the soldier would require closer supervision or hospitalization. In addition, the lethality and severity of the suicide act is assessed – classifying it as mild, moderate or severe (i.e. there is a standing order to report any suicide attempt and to file a computerized report about it). Those who make a suicide attempt during military service, anywhere from mild to severe, are monitored and must undergo periodic follow-up examinations throughout their military service.

2.2. Study population

The study population consisted of 246,814 active compulsory service soldiers in the IDF who did not meet the study's exclusion criteria. There were two cohorts defined by period of induction into the IDF – the first was inducted during 2008 and the second during 2010 – and both were followed from induction throughout three years of service for men and two years of service for women.

Each cohort was split into two groups:

a. Soldiers having attempted suicide ($n=2310$; 0.9%; hereinafter termed *attempters*). Soldiers in this group were examined by a mental health care officer immediately after the suicide attempt, and the potential and actual lethality of the suicide act was determined by the method previously reported (Posner