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Alcohol use disorders increase the risk of completed suicide — Irrespective of other psychiatric disorders. A longitudinal cohort study

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Abstract

Knowledge of the epidemiology of suicide is a necessary prerequisite for developing prevention programs. The aim of this study was to analyze the risk of completed suicide among individuals with alcohol use disorders (AUD), and to assess the role of other psychiatric disorders in this association. A prospective cohort study was used, containing three updated sets of lifestyle covariates and 26 years follow-up of 18,146 individuals between 20 and 93 years of age from the Copenhagen City Heart Study in Denmark. The study population was linked to four different registers in order to detect: Completed suicide, AUD, Psychotic disorders, Anxiety disorders, Mood disorders, Personality disorders, Drug abuse, and Other psychiatric disorders. Individuals registered with AUD were at significantly increased risk of committing suicide, with a crude hazard ratio (HR) of 7.98 [Confidence interval (CI): 5.27–12.07] compared to individuals without AUD. Adjusting for all psychiatric disorders the risk fell to 3.23 (CI: 1.96–5.33). In the stratified sub-sample of individuals without psychiatric disorders, the risk of completed suicide was 9.69 (CI: 4.88–19.25) among individuals with AUD. The results indicate that individuals registered with AUD are at highly increased risk of completed suicide, and that registered co-morbid psychiatric disorders are neither sufficient nor necessary causes in this association.

Keywords: Epidemiology; Psychotic disorders; Anxiety disorders; Mood disorders; Personality disorders; Drug abuse; Prospective study

1. Introduction

Globally, suicide rates have increased by 60% over the past 45 years and in 1998 suicide was estimated to represent 1.8% of the total burden of disease (World Health Organization, 2005). In 2001 the World Health

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Organization reported that self-inflicted injuries including suicide accounted for more than 800,000 deaths worldwide per year (World Health Organization, 2001), and in the United States alone, there are approximately 30,000 completed suicides per year (Sher, 2004). The Danish national suicide rate has been decreasing, though, over the past two decades, with the rate being 16.6 per 100,000 in 2001 (Christiansen and Jensen, 2007).

Evidence linking alcohol use and suicidal behavior has been reported in the literature for several decades (Bernal et al., 2007; Conner and Duberstein, 2004; Murphy and Wetzel, 1990; Roy and Linnoila, 1986). However, since data on nonfatal suicidal behaviors are more readily available than data on completed suicide, most studies on suicide among people with alcohol problems have focused upon suicidal ideation or attempted suicide. The distinction between attempted and completed suicide is important due to demographic, personality and clinical dissimilarities (Conner and Duberstein, 2004) and more studies are needed to unravel risk factors of completed suicide.

Suicide is most frequently considered to be a complication of a psychiatric disorder (Christiansen and Jensen, 2007; Bernal et al., 2007), and research has documented that major depressive episodes (Bernal et al., 2007; Moller, 2003), affective disorders (Allgulander et al., 1992; Moller, 2003), anxiety disorders (Sareen et al., 2005), and schizophrenia and other psychoses (Allebeck and Allgulander, 1990b; Allgulander et al., 1992) are independent risk factors for suicidal behavior. Furthermore, large epidemiological studies have shown that comorbid psychiatric disorders are frequent in patients with alcohol use disorders (AUD) (Kessler et al., 1997; Regier et al., 1990). However, to our knowledge, the potential confounding effect of psychiatric disorders upon the association between AUD and completed suicide is unknown.

The high incidence worldwide of AUD, the high prevalence of suicides in this population, and the consequences for individuals, families, and society are all factors indicating the need for more research. The availability of a 26-year follow-up study of a large population sample (Appleyard et al., 1989; Schnohr et al., 2001) together with the data from four Danish registers provided us with a unique opportunity to assess the association between AUD and completed suicide as well as to adjust for both lifestyle factors and psychiatric disorders. Our hypothesis was that individuals with AUD were at increased risk of committing suicide — irrespective of the presence of other psychiatric disorders.

2. Methods

2.1. Study population

Data from the Copenhagen City Heart Study (CCHS) were used (Appleyard et al., 1989; Schnohr et al., 2001). The CCHS is an ongoing series of studies conducted in the Danish population, initiated in 1976. An age-stratified sample of 19,698 men and women aged 20 to 93 years who lived in the Copenhagen area were randomly drawn from the Central Population Register, using the unique person identification number and invited by letter to answer self-administered questionnaires in 1976–78, where 14,223 respondents returned the questionnaire, corresponding to 74% of the invited individuals. In the 1981–83 follow-up (CCHS-II), the study population was supplemented with 500 new participants aged 20–29 years and nearly 3000 new participants were enrolled in the 1991–93 follow-up (CCHS III). Detailed descriptions of the study have been published elsewhere (Appleyard et al., 1989; Schnohr et al., 2001).

2.2. Suicide

All Danish residents who die in Denmark are recorded in the Danish Causes of Death Register (Juel and Helweg-Larsen, 1999), using the World Health Organization's International Classification of Diseases (ICD) to classify cause of death. Individuals invited to participate in the CCHS were linked to this register, using person identification numbers, in order to determine completed suicide. The database contains causes of death until March 2004. Classifications used to define completed suicide were in the subdivisions of "Suicide and self-inflicted injury" (ICD-8: E950–959) or "Intentional self-harm" (ICD-10: X60–84). Classifications in the subdivisions of "Injury undetermined whether accidentally or purposely inflicted" (ICD-8) and "Event of undetermined intent" (ICD-10) were *not* defined as completed suicides in this study.

2.3. Alcohol use disorders

The study population was linked to three different registers in order to determine alcohol use disorders: The *Danish Hospital Discharge Register* (Jurgensen et al., 1986) contains information on all admissions to Danish hospitals since 1976; the *Danish Psychiatric Central Register* (Munk-Jorgensen and Mortensen, 1997) contains records of all individuals that have been admitted to a psychiatric hospital in Denmark since 1969; and the