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Social network as predictor for onset of alcohol use disorder: A prospective cohort study

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Abstract

Objective: Social network has been linked to alcohol use disorder in several studies. However, since the majority of such findings are cross-sectional, causal interpretation is difficult. The aim of the present study was to test if social network characteristics predict alcohol use disorder in a prospective design.
Methods: Information on social network and covariates was obtained from 9589 men and women aged 21–99 years in the Copenhagen City Heart Study, followed for registration of alcohol use disorder in the Danish National Patient Registry and the WINALCO database.
Results: Men who lived alone, were separated or divorced or widowers had a higher risk of developing alcohol use disorder: HR among men living alone vs. men not living alone was 2.28 (95% CI: 1.59–3.27), and HR among separated/divorced men vs. married men was 2.55 (95% CI: 1.33–4.89). No such associations were found among women. Frequency of contact with friends was associated with risk of developing alcohol use disorder among both sexes. For example, the HRs were 1.72 (CI 95%: 0.99–3.01) and 2.59 (95% CI: 1.42–4.71) among women who had contact with friends a couple of times per week and daily, respectively, compared with more rarely. Frequency of contact with family was not associated with risk of developing alcohol use disorder among either sex.
Conclusion: Living alone and not being married or cohabiting with a partner were predictors of developing alcohol use disorder among men. Further, frequent contact with friends was associated with higher risk of alcohol use disorder among both sexes.

1. Introduction

Alcohol use disorders are among the most prevalent mental disorders in the general population [1,2]. Alcohol use disorder is a public health concern and is ranked fifth among leading causes of disease burden measured as disability adjusted life years in high income countries [3]. At the individual level, alcohol use disorder often leads to financial, interpersonal and social loss, stigmatization, and social marginalization [4].

Social network has been linked to alcohol use disorder in several studies. For example, living alone, being unmarried, not having children, and lack of social support are all factors found to be associated with alcohol use disorder [5–10]. However, the majority of findings are cross-sectional and causal interpretation is difficult. It is plausible that living alone and lack of social support may just as well be a consequence of a long standing alcohol problem as well as a cause of problematic drinking patterns [11,12]. Alternatively, other factors associated with both social network and risk of alcohol use disorder are at play and constitute the causal explanation.

Therefore, the aim of the present study was to test, in a prospective design, whether social network characteristics such as living alone, being married, and frequency of contacts with friends and family predict the onset of alcohol use disorder. Data from the Copenhagen City Heart Study combined with the unique possibility in Denmark to obtain

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information on alcohol use disorder through registers enabled us to prospectively analyze if social network predicts onset of alcohol use disorder during a 21-year follow-up period.

2. Materials and methods

2.1. Study population

Data from the ongoing Copenhagen City Heart Study (CCHS) were used. CCHS began in 1976 with a random, age-stratified sample of 19,698 participants drawn from the Copenhagen Population Register [13]. Three follow-ups have been conducted. In the present study, we use data from the 10,135 participants from CCHS 1991-94 and when possible follow-up data on these individuals from CCHS 2001-03. In CCHS 1991-94, all individuals who were previously invited, and additionally 3000 were invited (response rate 61%). In CCHS 2001-03, all individuals previously invited and additionally 1062 were invited (response rate 50%). Detailed descriptions of the study have been published elsewhere [14,15]. At each examination, participants completed a questionnaire concerning their medical history, socioeconomic status, level of physical activity, smoking, and alcohol habits, and underwent electrocardiography and standardized laboratory examinations. The study was approved by the Ethical Committee of Copenhagen and Frederiksberg Municipality, Denmark.

2.2. Social network

In the questionnaire, participants were asked about social network characteristics: *Living alone* (yes/no), *civil status* (married or cohabiting with partner/unmarried/widow or widower/separated or divorced), *having children* (yes/no), f*requency of contact with friends* and *frequency of contact with family*, respectively (daily/a couple of times a week/more rarely/never/have none), and *satisfaction with contacts* (very/somewhat or not at all).

2.3. Alcohol use disorder

To obtain information on alcohol use disorder, the Danish unique person identification number was used to link the study population to two registers; the Danish National Patient Registry [16] that contains clinical diagnoses on all discharges from Danish hospitals since 1976, and additionally diagnoses on all outpatients since 1995, and the WINALCO database [17] that contains records of all individuals treated for alcohol problems at an outpatient clinic covering the greater Copenhagen and Frederiksberg municipalities from 1954 to ultimo February 2009. In the Danish National Patient Registry, diagnoses are classified according to the World Health Organization's International Classification of Diseases (ICD), using the ICD-8 revision until 1994 and the ICD-10 revision from 1994 and onwards. Alcohol use disorder was defined by ICD-8: 303 (alcoholism) and ICD-10: F10.1 (harmful use) and F10.2 (dependence syndrome).

Individuals registered with a relevant hospital diagnosis or registered in the WINALCO database were in the present study considered to have an alcohol use disorder.

2.4. Potential confounders

Several covariates were considered potential confounders of the hypothesized association between social network characteristics and alcohol use disorder: *Age*, *education* (<8 years/8–10 years/>10 years), *smoking* (smoker/previous smoker/never smoker), *physical activity* (low/moderate/high), s*elf-rated health* (not so well, bad or terrible/good/extremely good), *chronic diseases*, and *mental disorders*. Chronic diseases were defined as having one or more of the following diseases in a five-year period before baseline: stroke, chronic heart, chronic lung, gastrointestinal, endocrine, ischemic heart, infectious, cancer, urological, nervous system, blood, and muscular disease. Mental disorders were defined as having at least one mental disorder, other than alcohol use disorder, prior to baseline (psychotic disorders, mood disorders, neuroses or related disorders, personality disorders, adjustment disorders, or drug abuse disorders). Information on chronic diseases and mental disorders was obtained from the Danish National Patient Registry. The included covariates were chosen on the background of availability as well as a priori assumptions and literature findings of associations between the covariates and both social network and alcohol use disorder: It is likely that both *age* and *educational level* affect social network size and relations [18,19], and risk of alcohol use disorder has shown to decrease with age and higher educational level [20,21]. Further, *physical activity* might affect social network as it is often undertaken in a social environment, and physical activity has been found to decrease risk of alcohol use disorder [22]. Finally, both *physical chronic disorders* and *mental disorders* (and thus implicitly *self-rated health*) could potentially affect social relations, and are likely to be associated with alcohol use disorder [23,24].

2.5. Statistical analyses

As the aim was to investigate the effect of social network on the risk of alcohol use disorder, all individuals registered with alcohol use disorder before baseline were excluded. Hence, outcome was *first* registration with alcohol use disorder. Also, participants scoring six or above on the Brief Michigan Alcoholism Screening Test (Brief MAST) (available in CCHS 1991-93) were excluded, as such scoring is considered an indication of alcohol use disorder [25]. Exclusion left us with 9589 participants eligible for analysis.

Descriptive characteristics of the study population were based on the CCHS 1991-93 questionnaire. Relative risk estimates of alcohol use disorder were calculated using Cox proportional hazard models. Participants were followed from the date of participation in CCHS 1993-91 until the date of first registration with alcohol use disorder (event), death, emigration, or until end of follow-up (April 1st 2013)