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The six-year outcome of alcohol use disorders in men: A population based study from India

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ABSTRACT

Background: Despite the large and growing public health problem of alcohol use disorders (AUD) in India there is a dearth of evidence about the longitudinal outcomes in AUD. The aim of this study is to describe the course and outcomes of AUD in a population based sample of men in India.
Methods: A community cohort of 1899 adult (18–49 years at baseline) men who participated in a cross-sectional survey in Goa, India between 2006 and 08, were re-interviewed face to face 6 years later (2012–14). A range of outcomes including social problems (e.g., workplace problems, domestic violence), morbidity (e.g., range of physical and mental health problems), biological parameters (e.g., mean corpuscular volume [MCV], gamma-glutamyl transpeptidase [GGT]) and mortality were measured at follow up. For the association of AUD at baseline with outcomes at follow-up, multivariable logistic regression was used to estimate odds ratios (OR). Analyses were weighted to account for baseline sampling design, age distribution, rural and urban sample sizes, number of adults aged 18–49 years in the household (at baseline), and non-response (at baseline).
Results: 1514 (79.7%) were seen at follow-up; a loss to follow up of 20.3%. At follow up, 3.7% of baseline non-drinkers and 15.0% of baseline casual drinkers had AUD. 46.9% of baseline hazardous drinkers and 55.4% baseline harmful drinkers continued to have AUD at follow up. Of those with AUD at baseline, 21.8% had stopped drinking at follow-up. Compared to being abstinent, harmful drinking at baseline was associated with several outcomes at follow-up: workplace/social problems, hypertension, death, tobacco use, suicidality, anxiety disorders, and raised GGT ($p < 0.002$). Hazardous drinking at baseline was associated with tobacco use and raised GGT and MCV ($p < 0.002$) at follow-up.
Conclusion: Our findings of high persistent and new AUD in the community and the association with a range of long term adverse events are an important addition to the limited evidence about the course and outcomes of AUD in India, which have the potential for informing health policy.

1. Introduction

Alcohol Use Disorders (AUD) comprise a range of heterogeneous conditions related to excessive alcohol consumption and is recognised by the World Health Organization (WHO) as a distinct disorder; with hazardous drinking, harmful drinking and dependent drinking reflecting progressively more serious forms of the condition (Reid et al., 1999; WHO, 1994). AUD account for about 10% of Disability Adjusted Life Years (DALYs) caused by mental and substance use disorders, and an overwhelming majority (2.7 million) of the estimated 2.9 million deaths globally due to substance use disorders, are due to alcohol (Lim et al., 2012). In India, the prevalence of AUD among those who drink is relatively high (Prasad, 2009). The overall epidemiological picture of alcohol use in India is that almost half of all drinkers drink hazardously, and the signature pattern of hazardous drinking is one of heavy drinking, daily or almost daily drinking, under-socialized, solitary drinking of mainly spirits, drinking to intoxication and expectancies of drink-related dis-inhibition (Benegal, 2005). This results in high rates of alcohol-attributable mortality and prevalence of AUD relative to the per capita volume of alcohol consumed (Rehm et al., 2009).

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Despite this large and growing public health problem, India does not have a national alcohol policy. One of the reasons for this is the lack of high quality contextual evidence about the problem. One type of evidence that helps to direct alcohol policy is the long-term course and outcomes in AUD. These have been studied extensively in developed countries (Finney et al., 1991; Gerdner and Berglund, 1997; Gual et al., 1999; Hyman, 1976; O'Connor and Daly, 1985), and find that AUD leads to higher mortality, morbidity and consequent health service utilization (Hyman, 1976; McCabe, 1986; O'Connor and Daly, 1985). More specifically, such studies have demonstrated associations of AUD with heart problems, sleeping difficulties, amnesic episodes, peptic ulcers, tuberculosis, liver disease, cerebro-vascular accidents, cerebellar ataxia, peripheral neuropathy, accidents, occupational problems, marital issues, financial difficulties and criminal convictions (McCabe, 1986; O'Connor and Daly, 1985). Finally, relapse and remission figures reported in patients with AUD vary. Mann et al. (2005) found 40% of their AUD patients to be abstinent while McCabe reported (1986) that 34.5% of an AUD cohort had become abstinent or controlled drinkers over the 16 year follow-up period, and 22% were experiencing continuing alcohol-related problems. Overall, recovery rates over various follow-up periods ranged between 14 and 40% (Gual et al., 1999; Mann et al., 2005; McCabe, 1986).

In India, longitudinal evidence of the course and outcomes of AUD is limited by small sample sizes, short follow-up periods and restriction to treatment seeking participants (Kar et al., 2003; Kuruvilla and Jacob, 2007; Kuruvilla et al., 2004; Mohan et al., 2002a,b; Singh et al., 2008), the latter being extremely prone to selection bias due to low help-seeking behaviours of men with AUD (Kohn et al., 2004). Further, as most AUD patients who are in contact with services do not have their AUD recognized, or receive evidence-based treatments, the effective treatment gap is likely to be even larger (De Silva et al., 2014). Hence it is important to understand the longitudinal history and outcomes of the majority of people with AUD in the community who do not get any treatment at all.

The aim of this study is to describe the longitudinal course of AUD in a population based sample of men. Our hypotheses are that in a community sample of men with AUD at baseline there is a high persistence of AUD and high prevalence of a range of adverse health (and associated biological parameters), and social outcomes at six years follow up. This is the first community-based cohort study of the course of AUD in India.

2. Material and methods

2.1. Setting

The study was conducted in Goa, which has a population of just over 1.4 million people, of whom 62% live in urban areas (Government of India, 2011). Unlike most of India, Goa has a more liberal culture towards drinking, reflected in lower abstinence rates. In Goa, the prevalence of current drinking in men was 39% in a community sample (Pillai et al., 2013), 59% in primary care (D'Costa et al., 2007) and 69% in industrial workers (Silva et al., 2003). Previous studies in Goa have reported the prevalence of hazardous drinking in men to be 15% in primary care (D'Costa et al., 2007) and 21% in an industrial male worker population (Silva et al., 2003).

2.2. Study design

In 2006–08, a cross-sectional survey (adults aged 18–49 years) was conducted in the following study sites: urban (beach areas popular among tourists and a typical commercial and residential area), and rural areas (six contiguous villages) of Northern Goa (Pillai et al., 2013). The villages were selected based on accessibility and population size required for the baseline study, as many villages in Goa are sparsely populated and some are remotely located mining areas. As is typical of this part of rural Goa, all these villages are socio-demographically homogeneous, and primarily depend on agriculture and seasonal brewing of Feni (the local alcoholic brew) during summer. A two stage probability sampling procedure, based on electoral rolls, was used to select the population based sample. From a randomly selected household the participants were selected at random from those of eligible ages within the households. Refusal rates for randomly selected households were 1.5%.

The study was designed as a retrospective community cohort study, comprising the 1899 men (only men were selected because of the low prevalence of drinking in Indian women) who were screened in the baseline survey and we measured a range of outcomes in the cohort at follow-up from September, 2012 to September, 2014.

2.3. Exposure

The principal exposure is AUD as detected during the baseline survey, defined by the 10 item Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al., 1993). AUD was diagnosed using an AUDIT cutoff score of $\geq$8 and hence included hazardous, harmful and dependent drinkers (Saunders et al., 1993). The AUDIT has been validated in India (Pal et al., 2004), and used in cross-national studies, including India (Babu and Kar, 2010). For a previous study, the AUDIT has been translated into Konkani (Goan vernacular), using a systematic translation-back translation method with two teams of translators, followed by an item-by item analysis and selection by consensus (Silva et al., 2003). The cohort was made up of a range of exposures viz AUD (hazardous, harmful, dependent drinking), and casual drinking, and internal controls (i.e., abstainers).

2.4. Other baseline data

Baseline socio-demographic data were collected. Standard of Living Index (SLI) was computed as a wealth index and derived from information on ownership of household assets (Gwatkin et al., 2007). The SLI score was categorised as the lowest 40% (poor), middle 40% and highest 20% (rich). Asset-based indices have been found to be associated with consumption; and with development and health indices in India (Filmer and Pritchett, 2001).

2.5. Follow up procedures

All consenting participants were administered the self-report questionnaire by trained research workers. Standard protocolised procedures were adopted to measure height, weight and blood pressure, and for drawing and transporting blood samples. The research workers were blind to the exposure status of the participants to avoid misclassification of outcomes. Quality control was conducted by re-interviewing randomly selected participants by the research coordinator, random visits by the research coordinator to directly observe the research workers, and re-testing of randomly selected blood samples at an independent laboratory.

2.6. Follow up data

Besides the AUDIT score the following data was collected at outcome assessment:

2.6.1. Self report using structured questionnaire.

1. Problems at work directly related to drinking: These included four questions from the baseline survey which asked about