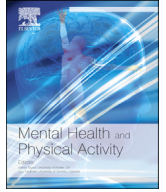




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Physical activity correlates in heavy episodic drinkers: Data from 46 low- and middle-income countries

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ABSTRACT

Objective: To investigate physical activity (PA) correlates among community-dwelling adults with frequent (i.e., at least twice per week), heavy episodic drinking habits (4 drinks for women and 5 for men) in 46 low- and middle-income countries.**Method:** Cross-sectional data from the World Health Survey were analyzed. PA was assessed by the International Physical Activity Questionnaire and participants were dichotomized into those who meet (≥ 150 min moderate-vigorous PA) or do not meet (< 150 min) recommended PA weekly targets. Multivariable logistic regression was used to assess the correlates.**Results:** The analysis included 4186 frequent heavy episodic drinkers (39.4 ± 13.9 years; 78.7% males). The prevalence of low PA was 24.4% (95%CI = 23.2%–25.8%). Older age [odds ratio (OR) = 1.02 per one-year increase], not married/cohabiting (vs. married/cohabiting OR = 1.31), higher (tertiary) education (vs. no formal OR = 1.67), being in the richest quintile (vs. poorest OR = 1.58), unemployed (vs. employed OR = 1.86), urban setting (vs. rural OR = 1.69) and mobility difficulties (OR = 1.07, per unit increase in a scale ranging from 0 to 10) were all significant correlates of low PA.**Conclusions:** PA is associated with a range of factors among people with frequent heavy episodic drinking habits. The identified correlates provide clues as to how PA may be increased in this vulnerable population. Future research should explore the role of specific environmental attributes relevant to PA on mental health populations (and people with alcohol use problems) in low- and middle-income countries.

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1. Introduction

Alcohol use disorders are among the most common and undertreated mental disorders with an estimated global lifetime prevalence of around 16% (Connor, Haber, & Hall, 2016). Globally, harmful use of alcohol causes approximately 3.3 million deaths every year (or 5.9% of all deaths), and 5.1% of the global burden of disease is attributable to alcohol consumption (WHO, 2014). Excessive use of alcohol is linked to more than 60 different chronic

diseases (Connor et al., 2016). The major causes of premature death to which it contributes are injury, alcoholic liver disease, cancers, gastrointestinal and heart diseases and stroke (Roerecke & Rehm, 2014). Beyond health consequences, alcohol use inflicts significant social and economic losses on individuals and society at large (Room, Babor, & Rehm, 2005; Skog, 2006).

Heavy Episodic Drinking (HED) - also referred to as 'binge' drinking - is defined by the World Health Organization (2002) as the consumption of 60 g or more alcohol (40 + grams for women) on a single occasion. A marginally lower threshold has been proposed by the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2017). Formerly labelled 'high risk' drinking (World Health Organization, 2002), HED is now recognized as a major public

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health issue in many countries as it is consistently associated with a range of serious acute harms, including accidents, violence and anti-social behaviors (Navarro, Doran, & Shakeshaft, 2011; Rehm et al., 2009). Indications of regular or frequent HED are especially concerning, as this may lead to both acute and chronic alcohol-related harms or the development of an alcohol use disorder (Rehm et al., 2009).

Current treatment options for people with alcohol use problems include pharmacotherapy, cognitive behavioral therapy, behavioral therapies based on conditioning, motivational enhancement therapy and 12-step facilitation (mutual peer support) (Connor et al., 2016). Despite advancements in these treatment modalities, relapse remains high with many individuals relapsing into the dependency syndrome following a period of abstinence. Pharmacotherapy has unwanted side-effects and compliance is often low (Reid, Teesson, Sannibale, Matsuda, & Haber, 2005). After formal treatment, meta-analyses find abstinence rates ranging from 25% (Miller, Walters, & Bennett, 2001) to 43% (Monahan & Finney, 1996) dependent on treatment intensity and length of follow-up. Considering these issues, there is a high need for novel adjunctive interventions that may help in alcohol abstinence. There is also a strong need to treat the co-morbid health problems associated with the disorder, which include higher prevalence of diabetes and cardiovascular disease (Vancampfort et al., 2016; Vancampfort et al., 2016).

Although the association between physical activity and alcohol consumption is complex, with many studies also reporting a positive association between these variables (Dodge, Clarke, & Dwan, 2017), available evidence suggests that planned exercise interventions in people with alcohol use disorders can have important health benefits. In a recent meta-analysis including 24 studies and 1204 unique persons with alcohol use disorders (mean age 37.8 years, mean illness duration 4.4 years) (Hallgren, Vancampfort, Giesen, Lundin, & Stubbs, 2017), it was demonstrated that although exercise did not reduce daily (standard mean difference, $SMD = -0.886$, $p = 0.24$) or weekly ($SMD = -0.353$, $p = 0.21$) standard drinking days, nor Alcohol Use Disorders Identification Test (AUDIT) scores ($SMD = -0.378$, $p = 0.18$), exercise significantly reduced depressive symptoms ($SMD = -0.867$, $p = 0.006$), and improved physical fitness ($SMD = 0.564$, $p = 0.01$) versus control conditions. Of clinical importance was that the pooled dropout rate in this meta-analysis was very high: 40.3% (95% CI = 23.3 to 60.1). As a comparison, in a recent meta-analysis of dropouts from physical activity interventions in schizophrenia ($N = 19$ studies, 594 participants) (Vancampfort et al., 2016), the pooled dropout rate was 26.7%, while in another meta-analysis among people with depression ($N = 40$ studies, 1720 participants) (Stubbs, Vancampfort, et al., 2016), an adjusted dropout rate of 18.1% was reported. Therefore, one of the most important challenges for health care professionals and researchers is to improve the adherence towards and reduce the dropout from physical activity interventions in people with alcohol use disorders. In a previous systematic review (Vancampfort et al., 2015), functional impairments and distress associated with alcohol use disorders including increased smoking rates, obesity, anxiety, depression and a lower self-efficacy were identified as possible barriers.

Given the important health benefits of physical activity and the high dropout of people with alcohol problems in physical activity interventions, there is a need for research to investigate at a population and multinational level what factors influence physical activity participation in people who drink at risky levels and who do not comply with the international recommendation of 150 min

of moderate to vigorous or 75 min of vigorous physical activity per week. To date, such data are currently lacking, and no studies have focused specifically on heavy episodic drinkers. Data on physical activity correlates in this population in low- and middle-income countries (LMICs) is even more scarce. Exploring socio-demographic, mental and physical health related correlates in LMICs is important given the suboptimal treatment of alcohol abuse (Patel et al., 2007), differences in knowledge regarding the benefits of physical activity (Pengpid et al., 2015), and different environmental factors (Atkinson, Lowe, & Moore, 2016) in LMICs. The lack of studies from LMICs also highlights the gap between where the majority of research is done and where the largest public health impacts of physical inactivity are found (Sallis et al., 2016). Information on physical activity correlates in HED in LMICs could guide the design and delivery of targeted interventions. Thus, given the aforementioned gaps within the literature, we aimed to assess physical activity correlates among community-dwelling adults with indications of frequent heavy episodic drinking in 46 LMICs.

2. Methods

2.1. Settings and protocol

Secondary data analysis of the World Health Survey (WHS) (2002–2004) (<http://www.who.int/healthinfo/survey/en/>) was done. The WHS is a cross-sectional study implemented in 70 countries worldwide. Single-stage random sampling and stratified multi-stage random cluster sampling were conducted in 10 and 60 countries respectively. All individuals aged ≥ 18 years with a valid home address were eligible to participate. Each eligible member of the household had equal probability of being selected with the use of Kish tables. The survey did not cover populations on military reservations, in group quarters or in living arrangements other than private households. Standardized questionnaires were used to collect information in all countries. Standard translation procedures ensured comparability between countries. Face-to-face or telephone interviews were carried out by trained interviewers. The individual response rate across all countries was 98.5% (Nuevo et al., 2012). Ethical approval was obtained from ethical boards at each study center. All participants provided informed consent.

2.2. Variables

2.2.1. Alcohol consumption

The question ‘Have you ever consumed a drink that contains alcohol (such as beer, wine, etc.)?’ with ‘yes’ and ‘no’ answer options was used to identify lifetime abstainers. Those who replied affirmatively were then asked the next question on the number of standard drinks of any alcoholic beverage the respondent had on each day of the past 7 days. A showcard with pictures was used to illustrate what was meant by a “standard drink”, and defined by WHS as containing between 8 and 13 g of ethanol depending on the country. The number of days in the past week in which 4 (female) or 5 (male) drinks were consumed was calculated (World Health Organization, 2002). Frequent, heavy episodic drinkers were defined as those who consumed the above amount of alcohol on two or more days of the past 7 days.

2.3. Physical activity

Items from the International Physical Activity Questionnaire (Craig et al., 2003) were used to categorize physical activity.

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