



The association between alcohol use and long-term care placement among older Canadians: A 14-year population-based study



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HIGHLIGHTS

- We examined the association between alcohol use and long-term care placement.
- A sample of 5404 community-dwelling older Canadians were followed for up to 14 years.
- Moderate drinking was protective against placement in long-term care facilities.

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ABSTRACT

Studies have shown that moderate alcohol use confers protection against some of the dominant predictors of long-term care placement, including diminished cognitive functioning, physical disability, and injury. But little is known about the association between alcohol use and the likelihood of placement in long-term care facilities. A nationally representative sample of 5404 community-dwelling Canadians ages 50 years and older at baseline (1994/95) was obtained from the longitudinal National Population Health Survey. Alcohol use categories were developed based on the quantity and frequency of use in the 12 months before the interview. Cox proportional hazards models were used to estimate the association between alcohol use at baseline and subsequent placement in long-term care facilities after adjusting for covariates measured at baseline. During the 14-year follow-up period, 14% of lifetime abstainers, 10% of former drinkers, 7% of infrequent drinkers, 4% of moderate drinkers, and 3% of heavy drinkers were placed in long-term care facilities. Furthermore, the multivariate analysis revealed that abstainers, former drinkers, and infrequent drinkers were more than twice as likely to be placed in long-term care as moderate drinkers. Moderate drinking was protective against placement in long-term care facilities even after adjusting for an array of well-known confounders. The strong protective effect of moderate alcohol use on long-term care entry is likely due to a complex mix of physical, cognitive and psychosocial health factors.

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1. Introduction

Epidemiological studies generally show that alcohol use starts to decline in middle through older age (Platt, Sloan, & Costanzo, 2010). Increasing morbidity with age may explain in part this decline (Shaper,

2011). However, lower alcohol use with age may not be evident in the entire population — a meta-analysis of longitudinal U.S. studies found that the average quantity of alcohol use significantly declined with age in older men, but not older women (Fillmore et al., 1991). Numerous studies show that alcohol in excess is harmful to health (Giesbrecht, Stockwell, Kendall, Strang, & Thomas, 2011; Latino-Martel et al., 2011); however, other studies demonstrate that alcohol use may be potentially beneficial in moderation (Kaplan et al., 2012; Ronksley, Brien, Turner, Mukamal, & Ghali, 2011). Complicating the picture, alcohol use in moderation may have beneficial effects regarding cardiovascular disease, but is associated with elevated risks for several cancers including those of

Abbreviations: NPHS, National Population Health Survey; HRQL, health-related quality of life; HUI3, Health Utilities Index Mark 3.

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the oral cavity, pharynx, larynx, esophagus, and liver (Latino-Martel et al., 2011).

Several studies using baseline alcohol use levels point to an association between moderate use and better health-related quality of life (HRQL) (Powers & Young, 2008), functional status (Chen & Hardy, 2009), cognitive health (Lang, Wallace, Huppert, & Melzer, 2007), subjective well-being (Lang et al., 2007), mental health (Lang et al., 2007), self-rated health (Turvey, Schultz, & Klein, 2006), absence of chronic illness (Mukamal et al., 2008), and lower mortality risk (Mukamal et al., 2008).

There is also some evidence that moderate alcohol use is associated with low rates of hospitalization and long-term care placement. Balsa, Homer, Fleming, and French (2008) showed that older women consuming at least 12 drinks per year had reduced rates of hospitalization. In Australia, McCallum, Simons, Simons, and Friedlander (2005) found that any alcohol use reduced the risk of institutionalization by 45%. Similarly in China, Deng et al. (2006) found that moderate alcohol drinkers had a lower rate of nursing home placement. Many studies have shown that moderate alcohol use protects against some of the dominant predictors of long-term care placement such as diminished cognitive functioning (Chick, 1999; Lang et al., 2007; McGuire, Ajani, & Ford, 2007), physical disability (Cawthon et al., 2006), and injury (Peel, Bartlett, & McClure, 2007). In a review of the long-term effects of alcohol, Chick (1999) found that light drinking reduced cognitive decline. Other studies have found that problem drinking is associated with factors (e.g., disability, injury) leading to long-term care placement (Cawthon et al., 2007; Perreira & Sloan, 2002). A recent literature review found that cognitive and functional impairment were the most salient factors associated with long-term care placement (Luppa et al., 2010). However, none of the studies examined the role that alcohol use plays in the likelihood of long-term care placement in North America. Therefore, the present study assessed the association between alcohol use and placement in long-term care facilities in a large, representative sample of the Canadian population aged 50 years and older.

2. Methods

2.1. Data source

Data for this study were obtained from the 1994/95 to 2008/09 National Population Health Survey (NPHS). The longitudinal NPHS, conducted biennially by Statistics Canada, consisted of 17,276 noninstitutionalized members of private households in 1994/95 from all provinces, with the exclusion of individuals on Indian Reserves, Canadian Forces Bases and some remote areas in Québec and Ontario (Swain, Catlin, & Beaudet, 1999). In the initial cycle (i.e., baseline) of the NPHS (1994/95), the sample was created by first selecting households and then within each household choosing one member aged 12 and older to be the longitudinal respondent. The NPHS is based upon a complex design, with stratification and multiple stages of selection, and unequal probabilities of selection of respondents. The NPHS response rate at baseline was 83.6% and the average attrition rate across all the cycles for participants aged 50 years and older was 11.2%. The sample was representative of the Canadian population in 1994/95 (Swain et al., 1999). Panel members who died or who moved to long-term care facilities remain in the longitudinal sample. The present study focuses on 5404 participants who were aged ≥ 50 years at baseline.

2.2. Dependent variable

Placement in a long-term care facility was operationalized using the longitudinal pattern variable, which was applied to respondents who had resided in long-term care facilities for 6 months or more. In the NPHS, a long-term care facility is defined as one that accommodates residents who need nursing and personal care on a continuing basis with medical supervision as required and that provides a minimum of 90 minutes of care per day to each resident. These facilities typically care for elderly

residents but may also accommodate individuals with mental and physical disabilities as well as psychiatric patients. Specifically, long-term care facilities include nursing homes, residential care facilities, convalescent homes, seniors' residences, and group homes (Statistics Canada, 2012).

2.3. Independent variables

The NPHS alcohol measures correspond to the Dawson and Room (2000) summary of recommendations and are compatible with suggestions in the World Health Organization (2000) report *International Guide for Monitoring Alcohol Consumption and Related Harm*. Respondents were categorized according to a classification scheme based on the baseline quantity and frequency of alcohol use in the 12 months prior to the interview.

Alcohol categories were chosen and adapted following Molander, Yonker, and Krahn (2010) and Powers and Young (2008). Many studies define moderate and heavy alcohol use with average daily consumption based on the weekly or monthly number of drinks (Powers & Young, 2008; Turvey et al., 2006). The NPHS provides a more precise set of questions regarding the number of drinks on each day of the week. Thus, we used the total number of drinks per week and the maximum number of drinks per day to define moderate and heavy drinkers. Using this scheme, moderate drinkers were defined as those having 1 to 14 drinks per week with ≤ 3 drinks per day for women or ≤ 4 drinks per day for men. Over 85% of moderate drinkers had ≤ 7 drinks per week. The other alcohol categories included life-long abstainers, former drinkers (no drinks in the past 12 months), infrequent drinkers (< 1 drink per week), and heavy drinkers (> 14 drinks per week or > 3 drinks per day for women or > 4 drinks per day for men).

2.4. Control variables

The control variables, identified in previous research, included baseline age, gender, marital status (married or not married), education (< 12 , 12, or > 12 years), household income ($< \text{lower } [\leq \$15,000]$ or $\geq \text{middle to higher } [\geq \$15,000]$), smoking (current or occasional, former, or never smoked), number of potentially life-threatening illnesses (high blood pressure, diabetes, heart disease, cancer, and/or stroke) (Ferraro & Farmer, 1999), number of other chronic illnesses (i.e., allergies, arthritis/rheumatism, chronic bronchitis, sinusitis, epilepsy, urinary incontinence, Alzheimer's disease/dementia, glaucoma), body mass index, physical activity (measured with energy expenditure), HRQL, non-specific psychological distress (Kessler, Borges, & Walters, 1999), and past 12 month frequency of attending religious services ("not at all" to "once a week"). HRQL was assessed with the Health Utilities Index Mark 3 (HUI3) (Feeny, Furlong, Saigal, & Sun, 2004; Feeny et al., 2002). The HUI3 includes a functional status description system that is based on eight attributes: vision, hearing, speech, ambulation, dexterity, emotion, cognition, and pain/discomfort. There are five or six levels per attribute, ranging from no problem through severe disability. The overall HUI3 score ranges from -0.36 (highest possible level of disability across all attributes) to 1.00 ("perfect health").

Physical activity was assessed with a continuous measure of energy expenditure (kcal/kg/day), which was based on the frequency and duration of 20 leisure-time activities (e.g., walking for exercise, yoga) over the previous three months (Statistics Canada, 2012). Nonspecific psychological distress was measured with six items on a 5-point Likert scale, ranging from "none of the time" (0) to "all of the time" (4). The participants indicated the frequency in the past month that they felt "so sad that nothing could cheer you up," "nervous," "restless or fidgety," "hopeless," "worthless," or that "everything was an effort" (Kessler et al., 2002).

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