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A decade's difference: 10-year change in insomnia symptom prevalence in Canada depends on sociodemographics and health status

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ABSTRACT

Introduction: Insomnia is recognized as a public health issue. The objectives of this study were to characterize and compare the prevalence of insomnia symptoms in the Canadian population in 2002 and 2012, and to identify sociodemographic and psychosocial predictors of trouble sleeping.
Methods: Data from adult participants in the Canadian Community Health Survey–Mental Health cycles 2000-2002 (n = 34,118) and 2011-2012 (n = 23,089) were used. Participants responded to the question "How often do you have trouble going to sleep or staying asleep?", with those who indicated "most of the time" or "all of the time" classified as having insomnia symptoms. Logistic regressions, adjusted for covariates, were used to examine differences between cycles.
Results: The unadjusted prevalence of insomnia symptoms increased from 15.6% to 17.1% between 2002 and 2012, representing an absolute increase of 1.5%. The likelihood of insomnia symptoms was significantly influenced by age, sex, education, physical health, and mental health status. A 3-way year by age by sex interaction was statistically significant such that women aged 40-59 demonstrated approximately 29% increased likelihood of insomnia symptoms from 2002 to 2012. This was reduced to 24% when adjusted for physical and mental health. There were no significant differences for men across age groups.
Conclusion: Over a 10-year period, the prevalence of insomnia symptoms increased in Canada. This trend appears to be driven in part by greater levels of insomnia symptoms among middle-aged women.
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Introduction

Sleep of insufficient quality and/or duration is a prevalent and concerning health issue in North America.[1,2] Individuals who report poor sleep or "trouble sleeping" most often experience symptoms of insomnia characterized by difficulty initiating and/or maintaining sleep, despite having adequate opportunity for sleep, and feel that this causes significant daytime impairment. When these sleep disturbances happen more than 3 times per week for at least 3 months, individuals may meet the diagnostic criteria for insomnia disorder.[3] Individuals with insomnia symptoms are at higher risk for many physical health problems, including diabetes,[4] obesity,[5] and cardiovascular diseases (e.g., stroke, hypertension, and heart attack).[6] In addition to the impact on physical health, poor sleep adversely impacts mental health. Sleep of insufficient quality and/or duration has been linked to mood and anxiety disorders,[7,8] higher levels of perceived stress,[9] and impaired cognitive functioning.[7]

Sleep problems have severe economic consequences for the individual and society at large.[10] Insomnia symptoms have been linked to impaired work performance, increased disability and absenteeism, and increased use of health care services.[7] It is estimated that the annual cost of insomnia is $6.6 billion (CAN), which includes the direct costs of insomnia-motivated health care use, prescription medications, and over-the-counter medications. The estimated annual per-person costs (both direct and indirect) of individuals with insomnia ($5010) and individuals with some insomnia symptoms ($1431) are far greater than those who obtain good quality sleep ($421).[7]

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The majority of the annual financial loss, though, is attributable to the indirect expenses of work absenteeism and loss of productivity associated with insomnia.[7]

Common risk factors for insomnia include older age, female sex, low socioeconomic status, depression, anxiety, chronic health conditions, smoking, and substance use.[11,12] Previous studies have postulated that the increasing prevalence of insomnia symptoms may be due in part to the many societal changes that have occurred in recent years, particularly the development of a 24-hour society, growing frequency of technology use, higher rates of obesity and diabetes, increases in irregular work hours, and work stress.[1,13,14] It is likely that there have been changes at the population level in behavioral, psychosocial, and health-related risk factors for insomnia in the aforementioned areas, but further research is required to understand the causal pathways of these relationships.

Although the increasing prevalence of insomnia has been documented in several other industrialized countries,[1,13–15] this phenomenon has not yet been examined in the Canadian population. The objectives of this study were to:

1. Characterize and compare the prevalence of insomnia symptoms in the Canadian population between 2002 and 2012;
2. Identify sociodemographic and psychosocial predictors of trouble sleeping.

A better understanding of the factors related to trouble sleeping is necessary to effectively identify groups at risk for insomnia disorder and to inform the development of future prevention and intervention initiatives.

Methods

Participants

This study used data from the Canadian Community Health Survey–Mental Health (CCHS-MH) 2002 and 2012 cycles. The CCHS-MH is a national, cross-sectional survey that evaluated the mental health status of Canadians, with emphasis on mental health disorders, access to care and service use, level of functioning, potential relationships between sociodemographic variables and mental health, and assessment of changes over time.

Participants were chosen for the CCHS-MH in 3 stages. First, geographical regions known as clusters were selected. Households were then selected within each cluster, and 1 member of each household was selected at random. The number of households selected in each province was proportionate to the population of that province. Individuals from the 10 Canadian provinces over the age of 15 were eligible for participation. The following groups were excluded from the survey: inhabitants of the 3 territories, those living on reserves and other Aboriginal settlements, full-time members of the Canadian Forces, and individuals who were institutionalized. These excluded individuals represented approximately 3% of the target population in the 2012 cycle.

Data collection

The CCHS-MH was administered using computer-assisted personal interviewing. This method was chosen to allow for the customization of interviews based on each participant's characteristics and survey responses, as well as automatic correction for inconsistent or out-of-range responses. Interviews were conducted in person or by telephone, with the majority occurring in person. Proxy interviews were not used for this survey.

Data were collected from May to December 2002 for the 2002 cycle of the CCHS-MH. The total sample size was 36,984 with a response rate of 77%. For the 2012 cycle, data collection occurred between January and December 2012. The overall response rate for the survey was 68.9%, providing a total sample of 25,113 individuals. The present study examined adults aged 20 years or older, resulting in the exclusion of younger respondents.

Minimizing nonresponse

Before the interviewer made any contact with participants, each selected respondent was sent a letter and brochure that explained the survey's importance and the potential uses for the data. Additionally, when necessary, interviewers called and visited selected households on multiple occasions to encourage participation and maximize the response rate.

Weighting

In probability sampling, each participant in the sample represents multiple members of the population as well as himself or herself. A sampling weight was calculated for each respondent based on the number of individuals in the total population that were represented by that respondent. The inclusion of sampling weights in analyses is necessary for estimates to be representative of the entire population rather than the sample.

Study variables

This study examined insomnia symptoms in Canadian adults. Insomnia symptomatology was assessed using the question "How often do you have trouble going to sleep or staying asleep?" Responses were rated on a 5-point scale from 1 (none of the time) to 5 (all of the time). Participants who reported having trouble sleeping "most of the time" or "all of the time" were considered to have poor sleep. Age was divided into three groups: 20 to 39 years, 40 to 59 years, and 60 to 80 years and older. Sex was a binary variable with male and female as the 2 options. Demographic information, including marital status, education level, and province of residence, was also reported to characterize the sample.

Analyses

Frequencies were tabulated to characterize the sample based on demographic information, and χ^2 analyses were used to assess differences in demographic variables between 2002 and 2012. Logistic regression analyses examined whether the 10-year difference in year of analysis (i.e., 2002 vs 2012) was associated with a change in the likelihood of insomnia. Thus, an odds ratio (OR) >1 represents increased likelihood of insomnia in 2012 vs 2002, and an OR <1 indicates a decreased likelihood of insomnia in 2012 vs 2002. Analyses included insomnia as the outcome and year as the predictor variable. To examine the context of covariates, a model adjusted for age, sex, and education was evaluated, as was a model adjusted for age, sex, education, mental health, and physical health. This final model may represent an overadjusted model because insomnia may be both cause and consequence of mental and physical health. Results are expressed as unadjusted and adjusted ORs and 95% confidence intervals (CIs).

To evaluate whether the change in odds of insomnia by year of analysis was differentially predicted by age, sex, and health groups, interaction terms were computed for year-by-age, year-by-sex, year-by-education, year-by-mental health, and year-by-physical health. All significant interactions were followed up by post hoc stratified analyses adjusted for all other covariates. In addition, a 3-way interaction was computed for year-by-age-by-sex, with post hoc stratified analyses.

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