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# Sleep complaints in the Brazilian population: Impact of socioeconomic factors

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## ABSTRACT

National surveys are relevant for the study of sleep epidemiology since they can provide specific data about sleep in large dimension with important implications for the health system. Thus, the aim of this study was to investigate the prevalence of sleep complaints among the Brazilian population using a randomized cluster sample according to region and socioeconomic class. For this, a 3-stage sampling technique was used to randomly select Brazilian subjects of both genders older than 16 years. A total of 2017 subjects, from 132 different cities, were selected to estimate prevalence in the Brazilian population with a sampling error of  $\pm 2\%$ . Questions about sleep complaints were administered face-to-face by Instituto Datafolha interviewers on April 10 and 16, 2012. Data were expanded using a weighted variable. The results showed that 76% of the study population suffers from at least 1 sleep complaint, indicating that approximately 108 million Brazilians may be affected by sleep disorders. On average, each subject had 1.9 sleep problems with the most common complaints being light and insufficient sleep, snoring, moving a lot during sleep, and insomnia, which usually occurred more than 3 times per week. Low income was associated with higher number of sleep complaints only in Northeast and Southeast regions. In conclusion, this study showed a high prevalence of sleep complaints in a sample of the Brazilian population, suggesting that sleep disorders may be markedly frequent in the Brazilian population with a possible correlation with the socioeconomic situation of the interviewed subjects.

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## 1. Introduction

Worldwide populations, especially those living in industrialized countries, experience sleep curtailment, which is rapidly becoming a hallmark of modern society associated with significant social, financial, and human cost [23]. Chronic sleep restriction is often related to the changes due to modern life, such as work-related demands, social and

domestic responsibilities, and current lifestyles [5]. In addition, sleep disorders are becoming more and more common, resulting in a clinically significant impact on public health [15]. Ten percent of the American population is reported to suffer from chronic sleep disorders with health and safety consequences [32]. Similarly, over 3 decades, an increase in sleep complaints such as snoring, insomnia, and bruxism has been observed in the population of São Paulo, the largest city

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in Brazil [35]. Snoring is the most prevalent complaint, with increase of 20% in the last 2 decades [35].

National and epidemiological studies provide scientific knowledge about sleep for the population as well as the development of public health policies. In 2008, a national survey with a sample of 2110 subjects from 150 different cities estimated the prevalence of sleep disorders in the Brazilian population, indicating that 63% reported at least 1 sleep related complaint [6]. Brazil in particular has experienced continuous changes in lifestyle and environment recently, as the Brazilian economy develops and the middle class increases within an underlying context of social inequality, limited access to specialized support services, scarce financial resources, and a lack of structural adaptations [9].

Thus, in order to clarify the health and social challenges represented by the last 4 years on the sleep quality of the Brazilian population, we investigated subjectively the prevalence of sleep complaints in a representative sample of Brazil. We expect with this survey to understand how sleep complaints are influenced by socioeconomic factors in order to target high-risk groups for future interventions.

## 2. Material and methods

### 2.1. Study design

This is an observational cross-sectional study. The sample design was based on data from the 2010 Brazilian census, considering the projected population for 2011 (142,448,650 inhabitants) (<http://www.ibge.gov.br>), and following a 3-stage cluster sampling technique described elsewhere [16]. First, Federal Units were proportionally stratified by population and

city sizes. Then, cities were randomly selected as well as the research points. After data collection through structured interviews, checking in person (in situ) and by phone covered at least 20% of each survey [6]. There was no incentive for the subjects to participate in the study. This study was approved by Ethical Committee of UNIFESP (Protocol number # 573181).

### 2.2. Participants

This study was part of a national survey which included other topics besides sleep. Study questions about sleep complaints were asked in face-to-face sessions by non-specialized interviewers from Instituto Datafolha for all selected subjects on April 10 and 16, 2012. On these days, the interviewers went to the participants' home selected in the study. Subjects older than 16 years old, representing both genders and all socioeconomic classes according to the Brazilian Economic Classification Criteria (CCEB) (<http://www.abep.org/new/criterioBrasil.aspx>), were selected to represent Brazilian population in the current study. A total of 2017 subjects from 132 different cities were selected to estimate Brazilian population characteristics with a sampling error of  $\pm 2\%$ , considering a 95% confidence interval. For 0.5% or lower estimates, zero was assumed. Frequencies lower than 30 were not enough for statistical analysis.

### 2.3. Questionnaires

Screening questions of a non-validated questionnaire were asked about the presence of waking up with headache, kicking legs, insufficient sleep, sleep talking, nocturia, insomnia, excessive daytime sleepiness, breathing pauses, nightmares, bruxism, snoring, moving a lot during sleep, somnambulism,

	Q1	Q2 (If Q1=Yes)					
	Yes or No	3 or more times a week	1 to 2 times a week	2 to 3 times a month	Once a month	Less than once a month	Others. Which one?
Waking up with headache during the night							
Kicking legs							
Insufficient sleep							
Sleep talking							
Urinary urgency (nocturia)							
Insomnia							
Excessive daytime sleepiness							
Breathing pauses							
Nightmares							
Clenching or grinding teeth (bruxism)							
Snoring							
Moving a lot during sleep							
Somnambulism							
Light sleep							
Sweating while sleeping							
He (she) has not sleep problems							

**Fig. 1 – Questions about sleep complaints asked to all subjects: Q1. Do you have any of the following problems during sleep? Do you have other problems during sleep that are not presented on this card? Q2. How frequent is this problem?**

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