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Abstract

Background: Headache is the most common disorder of the central nervous system, and one of the most prevalent noncommunicable diseases.

Aims: We aimed to determine factors associated with chronic headache among adults in the Islamic Republic of Iran.

Methods: This was a cross-sectional study that recruited 10 063 participants from the baseline data of the Ravansar non-communicable disease cohort study in western Islamic Republic of Iran in 2021. Participants who had headaches for ≥ 15 days per month for ≥ 3 months were considered as having chronic headache. Logistic regression was used to examine the associations.

Results: The prevalence of chronic headache was 10.49% (n = 1054), and was significantly higher among females (14.55%, n = 769) than males (5.98%, n = 285) (P

Conclusions: Depression, urban residence, smoking, comorbidity, and being married were associated with an increase in the risk of developing chronic headache, while higher education level, menopause and normal sleep were associated with a decrease in the risk of developing

chronic headache.

Keywords: chronic headache, prevalence, risk factors, adults, Iran

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Introduction

Headache is the most common central nervous system disorder and one of the most prevalent noncommunicable diseases worldwide (1). Chronic headache is defined as a headache that lasts for 15 days or more in a month over a period of more than 3 months (2). The global prevalence of chronic headache is 2–3% (3), and it is recognized as the third most common cause of years of life lost to disability (4). Years lived with disability due to chronic headache increased from 4.8% globally in 1990 to 9.0% in 2013 (5).

The estimated prevalence of headache may be affected by age, sex, race, geography and socioeconomic status, and varies according to the population being evaluated (6,7). Female sex, low income, divorce and death of spouse are recognized as nonmodifiable risk factors for chronic headache (8). Stressful life events, anxiety, depression, obesity, inactivity and drug overdose can be seen as modifiable risk factors (9,10). Previous studies have reported the prevalence of chronic headache and noted that symptoms and duration differ among males and females (11,12). Research has shown greater pain and tolerance among males with chronic headache than among females. Unruh has reported more frequent, more severe, and longer lasting headaches among females than among males (13). Clinical studies have shown that females often have more acute and more severe pain, and use analgesics more than males. Severe and frequent headaches limit daily activities, reduce quality of life, and can lead to loss

of professional activity. They also lay a great burden on individuals, families and society (1).

Notably, chronic and severe headaches account for a significant share of headache-related productive time lost: approximately one-third of chronic headache attacks occur on workdays and two-thirds of these result in substantial loss of productivity (14). Stewart et al. found that, among common pain conditions, headache was the most commonly reported condition resulting in lost productivity time in the workforce in the United States of America (15). Individuals suffering from this health problem had 4 times more productive time lost than those who had less-frequent attacks (14).

Various studies have reported the increasing burden of headache-related disorders throughout the world (3,4), and considering the fact that this is a preventable condition, it is important to conduct studies in this field. Therefore, we conducted this study to determine the factors associated with chronic headache among adults participating in the Ravansar non-communicable disease cohort study.

Methods

Study design and participants

This cross-sectional study was conducted using baseline data from the Ravansar non-communicable disease cohort study, in the western region of the Islamic Republic of Iran in 2021. This was a part of the Prospective Epidemiological Research Studies in IrAN (PERSIAN), conducted on different ethnicities in coordination with the Ministry of Health and Medical Education. Ravansar is a city in Kermanshah Province, the largest province in western Islamic Republic of Iran. The population of the Ravansar District is about 50 000, mainly of Iranian Kurdish ethnicity. Details and profiles of the Ravansar non-communicable disease cohort study have already been published (16). Eligibility criteria for the cohort study were: age 35–65 years, a permanent inhabitant of the Ravansar region (Ravansar town and all villages in its vicinity) and Iranian nationality. All participants in the Ravansar cohort study were included in the present study (n = 10 063).

Data collection

Sociodemographic and economic characteristics such as age, sex, education, marital status, wealth index and medical information were collected using digital questionnaires, which were completed by trained experts. Individual habits such as cigarette smoking, alcohol use and physical activity were surveyed.

The standard physical activity questionnaire from the PERSIAN Cohort Study was used to assess the participants. The questionnaire had 22 items about sport, work and leisure-related activities on an average weekday. Physical activity levels were classified as low [24–36.5 metabolic equivalent (MET) hours per day], moderate (36.6–44.4 MET hours per day) and heavy (≥ 44.5 MET hours per day) (16,17). Wealth index was defined based on selected assets: home ownership, area per capita, rooms per capita, washing machine, motorcycle, car (based on price) for personal use, dish washer, freezer, personal computer, vacuum cleaner and TV in the household and having a cell phone, laptop and access to the Internet. Principal component analysis was used to create the wealth index (18). Participants were classified into 5 quintiles: poorest, second poorest, middle, second richest and richest. Sleep duration was measured over 24 hours and was applied quantitatively (19,20). Normal sleep was defined as sleeping 7 or more hours per night in adults (21). Body composition, including weight and body mass index (BMI), was measured using Inbody 770 (Inbody Co., Seoul, Korea) with a precision of 0.5 kg for body weight. Depression was defined based on the use of antidepressants, self-reported depression and verbal confirmation from a physician. Hypertension was defined as a having systolic/diastolic blood pressure ≥ 140/90 mmHg and/or use of antihypertensive drugs. Comorbidity was defined as the co-occurrence of more than one disorder in the same individual, which in this study included stroke, myocardial infarction, cardiac ischemia and cancers (14 types). Among females, menopause was defined as having had no menstrual period for the previous 12 months, based on self-report.

Definition of chronic headache

The main outcome of this study was chronic headache, which was defined as having headache for 15 days or more per month for a duration of ≥ 3 months (2). The probable medication overuse headache is a chronic daily headache and a secondary disorder in which acute medications used excessively cause headache in a headache-prone patient (22).

Statistical analysis

Data were presented as mean and standard deviation (SD) for continuous variables and frequency (percentage) for categorical variables. The t-test was used to compare the continuous variables between males and females and the chi-squared test for categorical variables. Bivariate and multivariate logistic regression analyses were performed for reporting crude and adjusted odds ratios (ORs) with 95% confidence interval (CI). Analysis was carried out using STATA, version 14.2. The significance level was set at 0.05.

Ethics approval and consent

The research and technology deputy and the ethical committee of Kermanshah University of Medical Sciences approved the study protocol (Number: KUMS.REC.1398.1038). Participants provided oral and written informed consent.

Results

Overall, 10 063 participants were examined. Mean age was 48.10 [standard deviation (SD) 8.25] years; 4773 (47.43%) participants were male. The prevalence of chronic headache in the whole study population was 10.49% (95% CI: 9.90, 11.09), and was significantly higher among females (14.55%, n = 769) than among males (5.98%, n = 285) (P Table 1).

Sleep duration, depression, hypertension, comorbidity and use of oral contraceptive pills were statistically significantly more prevalent in the chronic headache group than in the non-chronic headache group (P Table 2). More than 85% of those with chronic headache lived in urban areas whereas for the non-chronic headache group the distribution was more evenly split (P