

## Prevalence of tension-type headache in adult general population: the PACE study and review of the literature

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**Abstract** The mean global prevalence of tension-type headache (TTH) in adult is 42 %. To date, there have been no Italian studies on TTH prevalence in the adult general population. Therefore, we conducted a cross-sectional study, called PACE (PARma CEfalea, or “Headache in Parma”), aimed at detecting the prevalence and clinical features of primary headaches in the city of Parma’s adult general population. Crude past-year prevalence for definite TTH was 19.4 % (95 % CI 16.8–21.9), namely 9.0 % (95 % CI 7.1–10.8) for infrequent TTH, 9.8 % (95 % CI 7.9–11.8) for frequent TTH, and 0.6 % (95 % CI 0.1–1) for chronic TTH. Crude prevalence for probable TTH was 2.3 % (95 % CI 1.3–3.3). Our study results indicate a TTH prevalence rate (19.4 %) at the lower limit of data ranges currently available for Western countries, and prevalence rates for infrequent forms (9 %) do not appear much different from those of frequent forms (9.8 %).

**Keywords** Headache · Tension-type headache · Past-year prevalence · Epidemiology · Review

### Introduction

Primary headaches are widely spread all over the world and are associated with a wide range of medical and psychiatric comorbidities [1, 2]. In the adult population, tension-type headache (TTH) has a mean global prevalence of 42 % [3]. In Italy, the prevalence of TTH in the general population has been little studied so far. Therefore, we deemed it useful to conduct a cross-sectional study, called PACE (PARma CEfalea, or “Headache in Parma”), aimed at detecting the prevalence and clinical features of primary headaches in the city of Parma’s adult general population. In this paper we report data about the past-year prevalence of TTH and its subtypes, including probable TTH (pTTH).

### Materials and methods

Materials and methods are extensively described elsewhere [4]. Briefly, our study was conducted between September 2007 and February 2009 in Parma. Our initial study sample consisted of all residents registered with a general practitioner (GP) in downtown Parma. We removed all subjects aged <18 years from the GP’s patient list. Our initial study sample consisted of 1,270 subjects, 681 women and 589 men. The responders ( $n = 904$ , 71.2 %) were interviewed face to face by one of the physicians of the Parma Headache Center through the administration of a specially designed, previously validated questionnaire [5] based on International Classification of Headache Disorders—2nd edition criteria [6]. Crude prevalence was the number of cases in every 100 inhabitants. The 95 % CIs for prevalence were calculated. Statistical analyses were performed using SPSS 17.0 for Windows. The study was approved by the Local Ethics Board on 13 February 2007.

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## Results

A total of 175 subjects (19.4 %, 95 % CI 16.8–21.9) had a diagnosis of definite TTH (dTTH): 102 were women (20.1 %, 95 % CI 16.6–23.6) and 73 were men (18.4 %, 95 % CI 14.6–22.3). Age distribution showed a stable prevalence until age 70, followed by a decreasing trend in the next life decades. (a) Eighty-one subjects (9 %, 95 % CI 7.1–10.8) had infrequent TTH (iTTH), 45 of them female (8.9 %, 95 % CI 6.4–11.3) and 36 male (9.1 %, 95 % CI 6.3–11.9); (b) 89 subjects (9.8 %, 95 % CI 7.9–11.8) had frequent TTH (fTTH), 54 of them female (10.6 %, 95 % CI 7.9–13.3) and 35 male (8.8 %, 95 % CI 6–11.6; (c) for chronic TTH (cTTH), crude prevalence was 0.6 %, 95 % CI 0.1–1 (0.6 %, 95 % CI 0–1.3 in women; 0.5 %, 95 % CI 0–1.2 in men). Twenty-one subjects had probable TTH (pTTH) (2.3 %, 95 % CI 1.3–3.3), 13 of them female (2.6 %, 95 % CI 1.2–3.9) and 8 male (2 %, 95 % CI 0.6–3.4).

## Discussion

Most studies on TTH are focused on pathophysiology [7] and epidemiological data are scarce. The crude past-year prevalence of dTTH in Parma's adult general population was 19.4 %, without differences in sex distribution. In European countries, the past-year prevalence of dTTH ranges from 5.1 % in Eastern Europe [8] to 74.0 % in Western Europe [9]. Our results are in agreement with those of Vukovic et al., who in Croatia found a dTTH prevalence of 21.2 %, 23.2 % in women and 19.1 % in men [10]. They are not much different, either, from those recently reported by Ayzenberg et al. [11], who in Russia observed a prevalence of 25.4 % for definite episodic TTH. To date only one record exists from the USA and it comes from a study conducted in 1998 by Schwartz et al. [12], which indicates a past-year dTTH prevalence of 40.5 %. This figure is almost double that calculated in Parma; however, the rates are not comparable because the interview mode used in the US study is different from that of the PACE study (telephonic vs. face-to-face interviews). As regards TTH frequency in males and in females, in several studies, including ours, there was no disparity between genders. The differences—sometimes very marked—in the various sets of data existing in the literature on past-year dTTH prevalence can be attributed to a variety of reasons, including the variability of

methodological approaches and the differences among study populations, which are mainly due to geographical, demographic, racial, economic, and psychosocial factors. We believe that it is crucial to conduct studies with comparable methodology, appropriate tools [5, 13] to clarify the actual prevalence of this headache type.

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**Conflict of interest** I certify that there is no actual or potential conflict of interest in relation to this article.

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