



## Illness perception in patients with migraine: An exploratory study in a tertiary care headache centre

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### ABSTRACT

**Background:** Illness perception is significantly related to several outcome measures in different medical conditions. However, little is known about headache-related causal attributions and cognitive and emotional representations in patients with migraine.

**Objective:** To examine perceived causes of headache and demographic, clinical, and psychological correlates and predictors of illness perception in patients with migraine attending a tertiary care headache centre.

**Methods:** A sample of 143 patients with migraine (85.3% women, mean age  $44.0 \pm 12.1$  years) completed the Brief Illness Perception Questionnaire (Brief IPQ), the Symptom Questionnaire (SQ), and the Migraine Disability Assessment (MIDAS) Questionnaire. A set of demographic and clinical characteristics was also collected.

**Results:** Stress, heredity, and nervousness were the most frequent perceived causes of headache. Female gender was significantly related to higher Brief IPQ “consequences” and “emotional response” scores. Increased psychological distress and a poorer clinical course were significantly associated with more negative illness representations. In multiple regression analysis, a longer illness duration, increased depressive symptoms, and higher levels of headache-related disability and painfulness of headache attacks independently predicted a worse illness perception.

**Conclusions:** In patients with migraine, depressive symptoms and a worse disease status, characterized by a longer history of suffering, higher disability and more painful headache attacks, may negatively affect illness perception. It could also be that dysfunctional illness representations lead to depressive symptoms and decrease patients' motivation to adhere to treatments, resulting in a worse outcome. Future studies should examine whether the improvement of illness perception through specific psychological interventions may promote a better adaptation to migraine.

### 1. Introduction

Migraine is a primary headache disorder characterized by headache attacks with specific clinical features, such as unilateral location and pulsatile quality, associated with nausea or photophobia and phonophobia [1]. Migraine affects about one out of ten adults in Western countries [2], determines a great burden of societal costs, especially in terms of healthcare resources utilization and lost productivity [3], and is significantly associated with several psychosocial problems [4]. There is growing evidence that the way patients respond to migraine may significantly account for poor outcome measures. For instance, pain catastrophizing significantly predicts increased migraine-related

disability and chronicity [5,6], and rumination may mediate the relationship between migraine and psychological distress [7]. Several studies highlighted how patients' representations of their illness significantly affect their psychological adjustment and several functional outcomes in different medical conditions [8,9].

The term “illness perception” was introduced to describe the set of emotional and cognitive representations of illness, and it is based on the common-sense model of self-regulation of health and illness proposed by Leventhal and colleagues [10]. According to this model, people, when facing an illness they suffer from or fear, develop cognitive and emotional representations of such health threat that shape their coping behaviours. Illness representations concern the following contents:

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“identity” (the words used to describe the illness and its symptoms), “causes” (the idea about the causes of one’s illness), “consequences” (the beliefs about severity of an illness and how much it affects one’s functioning), and “timeline” (the beliefs about duration and course of the illness) [10]. Lau and Hartman [11] described also a “cure and control” dimension of illness representations: the subject’s view about the degree of personal control over the illness and its curability. The Leventhal and colleagues’ model has been empirically confirmed by several studies, especially thanks to the development of the Illness Perception Questionnaire (IPQ) [12] and its revised [13] and brief [14] versions. The use of these psychometric instruments documented significant relationships between illness perception, coping strategies, and different psychological and physical outcomes in various clinical populations [8,9,15,16].

Illness perception has been frequently included among the assessment targets and treatment goals of pain-related disorders, including fibromyalgia [17], low back pain [18], vulvodynia [19], chronic orofacial pain [20], and non-cardiac chest pain [21]. As to headache-related disorders, only few studies focused on illness perception, as assessed by the IPQ.

In a large sample representative of the French general population, a higher Brief Illness Perception Questionnaire (Brief IPQ) total score was significantly associated with an increased probability of consultation for migraine among subjects with migraine, probable migraine or chronic daily headache with migrainous features [22]. In subsequent analyses in the same sample, a worse illness perception was significantly related to both non-response to acute headache therapy [23] and chronicity [24]. Two independent studies administered the Revised Illness Perception Questionnaire (IPQ-R) to patients with chronic daily headache recruited in headache clinics in the United Kingdom [25] and in Italy [26]. In both studies, patients with more negative illness representations had significantly higher levels of psychological distress. In another study, the IPQ scores of patients with chronic daily headache remained stable over a 6-month follow-up, and they were quite similar to those of patients with temporomandibular disorder [27]. These preliminary findings suggested a significant association between illness perception and important outcome measures in headache-related disorders. However, correlates of illness perception in patients with migraine, especially in those attending tertiary care headache centres, remain largely to be studied.

The aims of the present study were to examine perceived causes of headache and to identify the demographic, clinical, and psychological correlates and predictors of illness perception in patients with migraine attending a tertiary care headache clinic.

## 2. Methods

### 2.1. Participants and procedure

The study was performed at the Headache Centre of the IRCCS Institute of Neurological Sciences - AUSL of Bologna (Italy) between July 2014 and February 2016.

All consecutive patients attending the Headache Centre for routine follow-up were eligible for the study if they were aged between 18 and 70 years and satisfied the International Classification of Headache Disorders, third edition (ICHD-3) beta version, criteria for migraine without or with aura (codes 1.1 and 1.2) or chronic migraine (code 1.3) [1]. Age < 18 years or > 70 years, insufficient comprehension of the Italian language, cognitive impairment, as defined by a score lower than 27 at the Mini Mental State Examination [28], unwillingness or being too ill to fill out psychological questionnaires, pregnancy, secondary hypertension, secondary headaches, and being on treatment for a psychotic, substance-related or neurocognitive disorder were the exclusion criteria. Secondary headaches were ruled out by clinical examination, biochemical tests, and neuroimaging studies, when indicated.

During the study period, week by week all the follow-up scheduled visits in the Headache Centre were preliminarily reviewed to identify those patients satisfying the inclusion criteria. All patients identified as potential participants were invited to participate in the study at the time of their scheduled follow-up visit.

The study protocol was approved by the Ethic Committee of the local Health Service of Bologna-Imola, Italy (protocol number: 14112). All participants received a detailed description of the study and gave written informed consent.

### 2.2. Psychometric assessment

#### 2.2.1. Brief Illness Perception Questionnaire (Brief IPQ)

The Brief IPQ by Broadbent and colleagues [14] assesses cognitive and emotional representations of illness through nine items. Each of the first eight items is made of a question rated on a 10-point continuous linear scale. The last item asks the patient to list the three most important perceived causes of his/her illness. In order to focus on headache-related illness perception, the wording “your illness” was changed into “your headache” in all the items.

The first five items concern the cognitive representations of illness: “consequences” (item 1; how much the illness affects the patient’s life), “timeline” (item 2; perception of illness duration), “personal control” (item 3; perceived control over one’s illness), “treatment control” (item 4; confidence in treatment), and “identity” (item 5; intensity of symptoms experienced from one’s illness). Items 6 and 8 assess the emotional representations of illness: “concern” (the degree of concern about one’s illness) and “emotional response” (how much the illness makes the patient feel unpleasant emotions). Item 7, “coherence”, measures illness comprehensibility: how much the patient clearly understands his/her illness. We also calculated a total Brief IPQ score, with a higher score indicating a worse illness perception. The Brief IPQ has been used in several clinical populations, and its concurrent validity, predictive validity for psychological and physical outcomes, and sensitivity to change after interventions have been documented [29].

#### 2.2.2. Symptom Questionnaire (SQ)

The Symptom Questionnaire (SQ) by Kellner [30] is a 92-item, self-report instrument made of four scales assessing the following dimensions of psychological distress: anxiety, depression, somatization, and hostility. Each item consists of a brief statement or an adjective rated as “yes/no” or “true/false”. The score of each scale may range from 0 to 23, and the higher is the score the more severe is psychological distress. Sensitivity of the SQ in recognizing changes after treatment and differences in psychological distress between different diagnostic groups has been proved [31,32].

#### 2.2.3. Migraine Disability Assessment (MIDAS) Questionnaire

The Migraine Disability Assessment (MIDAS) Questionnaire was developed by Stewart and colleagues [33]. Through five items, it assesses reduced activity (scored as number of days in the past three months) because of headache in the following areas: work or school, household work, and family, social or leisure activities. Two additional questions (MIDAS-A and MIDAS-B) concern the number of days with headache and painfulness of headache attacks (on a 0-to-10 scale) in the past three months. Internal consistency and test-retest reliability of the MIDAS Questionnaire have been demonstrated [33–35].

### 2.3. Clinical features

Diagnoses were made according to the ICHD-3 beta version after an extensive neurological evaluation [1]. For each participant, the following clinical parameters were collected: illness duration (distance in years from the onset of the headache attacks), type of migraine course (chronic vs. episodic), migraine-related disability (assessed by the MIDAS total score), painfulness of headache attacks (measured by the

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