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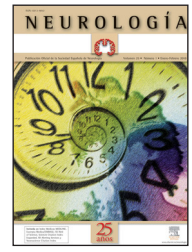

ORIGINAL ARTICLE

Validation of a diagnostic questionnaire for migraine adapted for a computer assisted telephone interviewing

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Abstract
Introduction: The use of questionnaires is a tool for obtaining information on cases and the variables to analyse in migraine study populations.
Methods: We have validated the questionnaire within the PALM study, based on IHS-II criteria and administered by telephone using computer assisted sampling (CATI). The questionnaire was validated using 50 randomly selected subjects, who had been assessed blind by a neurologist expert in migraine.
Results: Of the 24 patients diagnosed with strict migraine with the CATI interview, only in 2 (8%) of them did the neurologist determine that they did not suffer from migraine. Furthermore, of the patients in whom the diagnostic questionnaire concluded that they did not suffer from migraine, the specialist did not establish that diagnosis in any of them either. The analysis showed a sensitivity of 81.5%(95%CI, 66.8%96.1%) and a specificity of 91.3%(95%CI, 79.8%100%). The positive predictive value was 91.7%and the negative was 80.8%
Conclusions: The PALM questionnaire administered by telephone with computer support is a valid tool for use in determining the prevalence of migraine in study populations.

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PALABRAS CLAVE
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Especificidad

Validación de un cuestionario diagnóstico para migraña adaptado para encuesta telefónica asistida por ordenador

Resumen
Introducción: La utilización de cuestionarios es la fórmula de obtención de la información sobre los casos y las variables que analizar en los estudios poblacionales de migraña.
Métodos: Hemos realizado la validación del cuestionario dentro del estudio PALM, basado en los criterios de IHS-II y administrado telefónicamente según un muestreo asistido por ordenador (CATI). Se ha validado mediante el estudio de 50 sujetos elegidos aleatoriamente y analizados de forma ciega por un neurólogo experto en migraña.
Resultados: De los 24 pacientes diagnosticados de migraña estricta con la entrevista CATI, en tan sólo 2 (8%) de ellos el neurólogo determinó que no tenían migraña. Sin embargo, de entre los pacientes en que el cuestionario diagnóstico no concluyó que padecieran migraña no hubo ninguno en que el especialista estableciera dicho diagnóstico. El análisis reveló una sensibilidad del 81,5% (intervalo de confianza [IC] del 95%, 66,8%-96,1%) y una especificidad del 91,3% (IC del 95%, 79,8%-100%). El valor predictivo positivo fue del 91,7% y el negativo del 80,8%
Conclusiones: El cuestionario PALM, administrado telefónicamente con apoyo de ordenador, es un instrumento válido para su uso en la determinación de la prevalencia de migraña en estudios poblacionales.

Introduction

Migraine is a disabling disease with a high medical, social and economic impact[1,2]. Although its prevalence in Europe has been estimated at between 9.6 and 24.6%[3], the variability in this rate may depend on methodological factors and design differences. It is therefore essential for studies to be based on international ratings[4] and especially on the International Headache Society[5] criteria for the diagnosis of migraine. Among the different designs, there has been discussion about the various ways of obtaining the information needed to establish the definition of migraine in population studies[6]; the clinical interview, performed by doctors or nursing staff[7], has been compared with the use of questionnaires[8]. Many authors consider that diagnostic questionnaires are the best field-study method, and they have been used extensively in migraine epidemiology[9-30]. Recently, the ID-migraine[31] questionnaire, of which there are versions in different languages[32-37], has been used to determine migraine prevalence in the United States[38]. However, as part of their use, all questionnaires require validation in comparison with a structured clinical interview by a specialist, which remains the standard method for migraine diagnosis. This article presents the validation of a questionnaire for migraine diagnosis administered by a computer-assisted telephone method.

Subjects and methods

Subjects

A questionnaire for migraine diagnosis, which was based on the International Classification of Headache Disorders (ICHD)-II criteria (2004) following the adjustments described by Lipton et al.[38], was designed for the PALM study on migraine prevalence in Spain. The questionnaire was prepared to be administered as a computer-assisted telephone interview (CATI).

To validate the use of the questionnaire, a sample of 50 subjects randomly selected from participants in the population study who had responded to the questionnaire by telephone was established. Of the 50 people selected, 24 subjects fulfilled the diagnostic criteria for strict migraine according to the CATI telephone interview and 26 did not. Subsequently, a neurologist who had no prior knowledge of the telephone survey diagnosis evaluated all the subjects. The neurologist performed a complete clinical evaluation, blind to the diagnosis, including medical history and physical examination; the diagnosis of headache was established according to the ICHD-II criteria (table 1).

Data analysis

To estimate the sample calculation, we used data from Lipton et al.[38] for a confidence level of 95.5% and a sampling error of 15%; we calculated a sample size of 22 subjects per group, for both the criterion of positive for migraine and for the criterion of negative. The criterion validity indices of the migraine questionnaire, compared with the diagnosis by clinical interview with the neurologist, were estimated independently. The odds ratios were calculated using the Taylor method. The 95% CI was calculated in all cases. The statistical package used was STATA version 9.0.

Results

Of the 50 subjects selected, 39 were women and 11 were men, with an average age of 42 years. In 24 of the

Table 1 Characteristics and demographic data of headache for the study participants

	Subjects with migraine (n = 24)	Subjects without migraine (n = 26)	Total (n = 50)
Women	22 (44%)	17 (34%)	39 (78%)
Men	2 (4%)	9 (18%)	11 (22%)
Age	34.3 ± 10	50.7 ± 17.5	42.82 ± 16.5
Number of episodes			
<5	12 (24%)	6 (12%)	18 (36%)
5 to 30	9 (18%)	8 (16%)	17 (34%)
>30	3 (6%)	11 (22%)	14 (38%)
Duration			
Less than 4 h	0	3 (6%)	3 (6%)
4-12 h	7 (14%)	3 (6%)	14 (28%)
12-24 h	9 (18%)	1 (2%)	12 (24%)
24-48 h	1 (2%)	9 (18%)	4 (8%)
48-72 h	7 (14%)		8 (16%)
More than 72 h	0	9 (18%)	9 (18%)
Location of the pain			
Unilateral	14 (28%)	19 (38%)	33 (66%)
Bilateral	10 (20%)	7 (14%)	17 (34%)
Pulsating			
Yes	18 (36%)	15 (30%)	33 (66%)
No	6 (12%)	11 (22%)	17 (34%)
Worsens with exercise			
Yes	23 (46%)	14 (28%)	37 (74%)
No	1 (2%)	12 (24%)	13 (26%)

participants, the diagnosis was of strict migraine. In the remaining 26, a diagnosis of migraine could not be established (13 participants) or they were classified as probable migraine (13 subjects) by failing to meet one of the ICHD-II criteria. Of the 24 patients diagnosed with strict migraine in the CATI interview, in only 2 (8%) cases did the neurologist determine that they did not have migraine. However, among patients for whom the diagnostic questionnaire did not conclude that they suffered migraine, there were none for whom the specialist established this diagnosis. Statistical analysis revealed a sensitivity of 81.5% (95% CI, 66.8%96.1%) and a specificity of 91.3% (95% CI, 79.8%100%). The positive predictive value was 91.7% and the negative was 80.8%(table 2).

Table 2 Indices of criterion validity of the migraine diagnostic questionnaire adapted for telephone survey use

		95%CI
Sensitivity	81.5%	66.8%96.1%
Specificity	91.3%	79.8%100%
Positive predictive value	91.7%	80.6%100%
Negative predictive value	80.8%	65.6%95.9%
Odds ratio (+)	9.37	2.46-35.66
Odds ratio (—)	0.20	0.09-0.45

Discussion

The structured clinical interview with a neurologist is considered the standard method for the diagnosis of migraine. However, this approach requires great logistic efforts because it is necessary to coordinate visits to a neurologist for all the study subjects and this makes it difficult to analyse large populations. Other options for obtaining information from large population samples are self-administered questionnaires. Another model is the administration of surveys over the telephone, like our questionnaire. Telephoning has been used as a method of clinical interview to diagnose chronic headache[39], and as a questionnaire for posttraumatic headache[40].

Telephone questionnaires have also been designed to differentiate the types of migraine[41], as well as for migraine diagnosis[42-44]. There are also variations in the way telephone questionnaires are administered; in our design, this was handled through a computer-assisted model (CATI)[45]. Our results found sensitivity (81.5%) and specificity (91.3%) values similar to those of self-administered questionnaires[34,38]. The criterion validity indices of this study were calculated for only the diagnosis of strict migraine. Since it is important to have reliable, reproducible diagnostic tools available for epidemiological studies, the design of the questionnaire and its validity enable us to have a suitable tool for obtaining valid prevalence data in our epidemiological study.

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