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Report

Factors Influencing Medical Consultation in People with Chronic Headaches and the Role of Pharmacists

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A migraine is a type of chronic headache characterized by severe pain, nausea, vomiting, and other symptoms, and anxiety experienced during interictal periods also affects patients' quality of life. However, consultation rates with doctors or specialists remain low. This study aimed to identify factors influencing medical consultation and examine the role of pharmacists. A questionnaire survey was conducted among 600 people in their 20s to 40s who regularly experience headaches. All respondents were divided into two groups: the Doctor-visited group (those who had visited a medical institution at least once) and the Non-doctor-visited group (those who had never visited a medical institution). The Doctor-visited group contained significantly more migraine sufferers ($p < 0.001$) and was significantly more likely to have consulted a pharmacist ($p < 0.001$). Among those in the Doctor-visited group who consulted a pharmacist, only 34% cited pharmacist's advice as the reason for visiting a doctor. The main reasons for not consulting a doctor included self-assessing their headache as "mild," "usual," or "temporary." Respondents' Headache Impact Test and Migraine Interictal Burden Scale showed a high correlation. However, some respondents did not seek professional support even when their headaches were highly disruptive, indicating that severity does not solely determine their decision to visit a medical institution. These results suggest that pharmacists should actively support patients' decision-making by assessing their headache disruptiveness and promoting appropriate medical utilization.

Key words headache, migraine, medical consultation, pharmacist

INTRODUCTION

A migraine is a chronic headache characterized by recurrent attacks with moderate to severe pulsating pain that may last 4 to 72 hours, often accompanied by nausea, vomiting, photophobia, and phonophobia. As a result, this condition significantly affects daily life. Furthermore, anxiety and fear of attacks can affect patients' quality of life, not only during attacks but also in the absence of attacks (interictal period).[1)] However, it has also been noted that migraine patients often underestimate the severity of their condition and do not seek appropriate medical attention or treatment.[2)] Recently, it was reported that only 57.4% of migraine patients seek medical attention[2)] and that the rate of consultation with specialists is low.[3)] In our previous survey, only 24.8% of patients consulted a pharmacist about their headaches.[4)] Moreover, 36.5% of migraine patients reported that they hesitated to see a doctor or receive treatment in the past,[2)] and interictal burden is generally not recognized by the patients themselves, which is one of the factors that prevents appropriate therapeutic intervention.[1,5)]

The Headache Impact Test (HIT-6)[6)] was developed to assess the impact of migraines on daily life[7)] and is used as a quantitative measure of the effectiveness of acute treatment. In addition, the 4-item Migraine Interictal Burden Scale (MIBS-4),[5)] which assesses the burden of the interictal phase of attacks, is useful in the long-term management of migraine patients and for clarifying those eligible for preventive treatment. However, previous studies have not sufficiently examined the factors that determine whether migraine patients seek medical treatment, or how the involvement of pharmacists affects their decision to seek medical treatment. Therefore, this study aimed to investigate the factors that affect this decision and the impact of pharmacist counseling on patient behavior, focusing on men and women in their 20s to 40s, who are in the prime of their working lives and regularly experience headaches, to clarify the actual situation of headache treatment.

METHODS

Questionnaire Study Using an internet research company (Cross Marketing Co., Ltd.), we conducted a survey target-

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ing people in their 20s to 40s who had experienced headaches within the past three months. Request emails were sent to registered monitors (45,974 people), and 1,018 people responded. We ultimately enrolled 600 respondents in their 20s, 30s, and 40s, and the number of people in each age group was set to 200. The response request email was sent on April 19, 2024, and the survey was discontinued on April 22, 2024, when the planned number of responses was reached. As a result, 600 completed surveys were collected.

The questionnaire consisted of multiple-choice questions and was completed anonymously to protect the respondents' personal information. An explanatory document outlining the purpose of the survey was provided, and a checkbox was included to obtain informed consent for the use of their responses in our research.

The questionnaire items included demographic information, headache characteristics, healthcare-seeking behavior, consultation history with pharmacists, and the perceived impact of such consultations. The study was conducted following approval by the Human Research Ethics Committee at Teikyo Heisei University (approval number: 2023-138).

Measurement Respondents were classified into two groups based on their medical visits for headaches: the Doctor-visited group (those who had visited a medical institution at least once) and the Non-doctor-visited group (those who had never visited a medical institution). Similarly, they were divided by pharmacist consultations: the Pharmacist-consulted (those who had consulted with pharmacist at least once) and Non-pharmacist-consulted groups (those who had never consulted with pharmacist).

Within each group, migraines were rated using a modified five-item screener[8] covering headache exacerbation, nausea, photophobia, osmophobia, and phonophobia in the past three months. Respondents reporting two or more symptoms as "sometimes" or "more than half of the time" were classified as having a migraine; others were classified as having other headaches. Among those with a migraine, respondents reporting visual aura symptoms "sometimes" or "more than half of the time" were classified as a migraine with aura (MA); others were classified as a migraine without aura (MO).

Headache impact was assessed using HIT-6 (six items, five-point Likert scale, total 36–78; higher scores indicate greater impact),[6] and interictal burden was assessed using MIBS-4 (four items, six-point Likert scale, total 0–12).[5] HIT-6 scores were categorized as ≤ 49 (little/no), 50–55 (some), 56–59 (substantial), and ≥ 60 (severe). MIBS-4 scores were categorized as 0 (none), 1–2 (mild), 3–4 (moderate), and ≥ 5 (severe).

Statistical Analysis Data are presented as the mean ± standard deviation (SD) or number (%). Comparisons were made between Doctor-visited vs. Non-doctor-visited and Pharmacist-consulted vs. Non-pharmacist-consulted groups using Student's t-test for continuous variables and χ^2 tests for categorical variables, considering a p-value of < 0.05 to be significant. Pearson's correlation was used to assess the relationship between HIT-6 and MIBS-4 scores, with $p < 0.05$ indicating significance. Given that only completed surveys were included, no missing data existed. Analyses were performed using Excel Statistics ver. 3.21 (Social Information Service).

RESULTS

Respondent Characteristics Respondent characteristics are shown in Table 1. Among the respondents, 224 were in the Doctor-visited group and 376 were in the Non-doctor-visit-

Table 1. Respondent Characteristics

		All		Doctor-visited		Non-doctor-visited		p-value
		n=600		n=224		n=376		
		n	%	n	%	n	%	
Age	means ± SD	35.4 ± 8.2		36.5 ± 8.3		34.7 ± 8.0		0.007*
Gender	Male	300	50.0	114	50.9	186	49.5	0.736
	Female	300	50.0	110	49.1	190	50.5	
Headache classification								
	Migraine	243	40.5	115	51.3	128	34.0	< 0.001*
	Other	357	59.5	109	48.7	248	66.0	
Migraine subtype classification		n=243		n=115		n=128		
	MA	76	31.3	41	35.7	35	27.3	0.163
	MO	167	68.7	74	64.3	93	72.7	
HIT-6 Score (36-78)								
	Severe (≧ 60)	248	41.3	109	48.7	139	37.0	< 0.001*
	Substanial (56-59)	116	19.3	48	21.4	68	18.1	
	Some (50-55)	119	19.8	42	18.8	77	20.5	
	Little or no (≦ 49)	117	19.5	25	11.2	92	24.5	
MIBS-4 Score (0-12)								
	Severe (≧ 5)	169	28.2	77	34.4	92	24.5	0.005*
	Moderate (3,4)	96	16.0	43	19.2	53	14.1	
	Mild (1,2)	95	15.8	30	13.4	65	17.3	
	None (0)	240	40.0	74	33.0	166	44.1	
Have you ever visited a medical institution for a headache?								
	Yes	224	37.3	224	100.0	0	0.0	< 0.001*
	No	376	62.7	0	0.0	376	100.0	

*: $p < 0.05$, Doctor-visited group vs. Non-doctor-visited group
MA: Migraine with aura, MO: Migraine without aura

ed group. The mean age in the Non-doctor-visited group was 34.7 years, significantly lower than that (36.5 years) observed in the Doctor-visited group ($p = 0.007$). The gender distribution was similar for the two groups (approximately 50% male and 50% female).

The presence of migraines was significantly higher in the Doctor-visited group (51.3%) than in the Non-doctor-visited group (34.0%, $p < 0.001$). Similarly, higher rates of "substantial" or "severe" disability were observed for the HIT-6 (70.1% vs. 55.1%, $p < 0.001$) in the Doctor-visited group, as well as higher rates of "moderate" or "severe" interictal burden for the MIBS-4 (53.6% vs. 38.6%, $p = 0.005$).

Past Pharmacist Involvement in Headache Management Table 2 shows responses on past pharmacist involvement in headache management. Pharmacist consultations were reported by 48.7% of the Doctor-visited group and 4.0% of the Non-doctor-visited group ($p < 0.001$). Among those in the Doctor-visited group who had consulted a pharmacist, 34.0% responded "very much" or "somewhat" to the question of whether the pharmacist's advice had prompted them to visit a medical institution. Furthermore, 51.4% indicated that the information provided by the pharmacist helped resolve concerns or questions about their prescribed medications. Regarding the pharmacist's role in promoting understanding of the appropriate use of prescription and over-the-counter (OTC) medications, including their side effects, 60.6% of the Doctor-visited group and 93.3% of the Non-doctor-visited group responded "very much" or "somewhat." Interest in pharmacist-recommended OTC medications was reported by 39.4% and 73.4% of the Doctor-visited and Non-doctor-visited groups, respectively. Additionally, among all respondents, 43.1% showed interest in headache prevention and 40.0% in lifestyle modifications. Self-management ability was reported to improve in 52.2% of the Doctor-visited group and 40.0% of the Non-doctor-visited group. No significant differences were found between groups for these items among those who had consulted a pharmacist.

Current Treatment Status Table 3 shows the current status of headache treatment. OTC medication use was higher in the Non-doctor-visited group (74.2%) than in the Doctor-visited group (66.1%, $p = 0.033$). Prescription medications were used by 45.1% of the Doctor-visited group. Additionally, 6.3% of the Doctor-visited group and 25.8% of the Non-doctor-visited group reported using neither OTC nor prescription medications, with the latter being significantly higher than the proportion of those in the Doctor-visited group ($p < 0.001$). Reasons for not using prescription medications in the Doctor-visited group included "Usual headache manageable with OTC medications" (24.6%), "Perception that the symptom is temporary" (17.9%), and "Perception that the headache is mild" (17.9%). When respondents in the Non-doctor-visited group were asked to select reasons for not visiting a doctor, the most common reason was "Perception that the symptom is temporary" (47.6%, $p = 0.003$), followed by "Perception that the headache is mild" (46.0%, $p = 0.009$) and "Usual headache manageable with OTC medications" (40.7%). Additionally, a significantly higher proportion of respondents in the Non-doctor-visited group selected the following reasons: "Previous improvement of similar symptoms with OTC medications" ($p = 0.035$), "Difficulty visiting a doctor due to work or school commitments" ($p = 0.038$), and "Lack of perceived need to seek medical care" ($p < 0.001$). Conversely, significantly more respondents in the Doctor-visited group who did not use prescription medications selected "Distrust of medical diagnosis or advice" and "Inconvenient access to medical facilities" ($p = 0.004$, $p = 0.021$). Among those using prescription medications, common reasons for seeking care were "Headache affects daily life," "Headache affects work or school," and "Headache symptoms have worsened."

Regarding treatment expectations other than headache relief, respondents who answered "very much" or "somewhat" expected "Relief of associated symptoms" (70.3%), followed by "Relief of prodromal or aura symptoms" (69.3%) and "Relief of symptoms during interictal periods" (51.5%).

Relationship between HIT-6 and MIBS-4 A correlation plot between the HIT-6 and MIBS-4 scores among all respondents is shown in Fig. 1-A. A moderate positive correlation was found ($r = 0.54$, $p < 0.001$), indicating that greater headache-related daily disruption is linked to higher interictal burden.

Figure 1-B shows that some respondents with HIT-6 scores

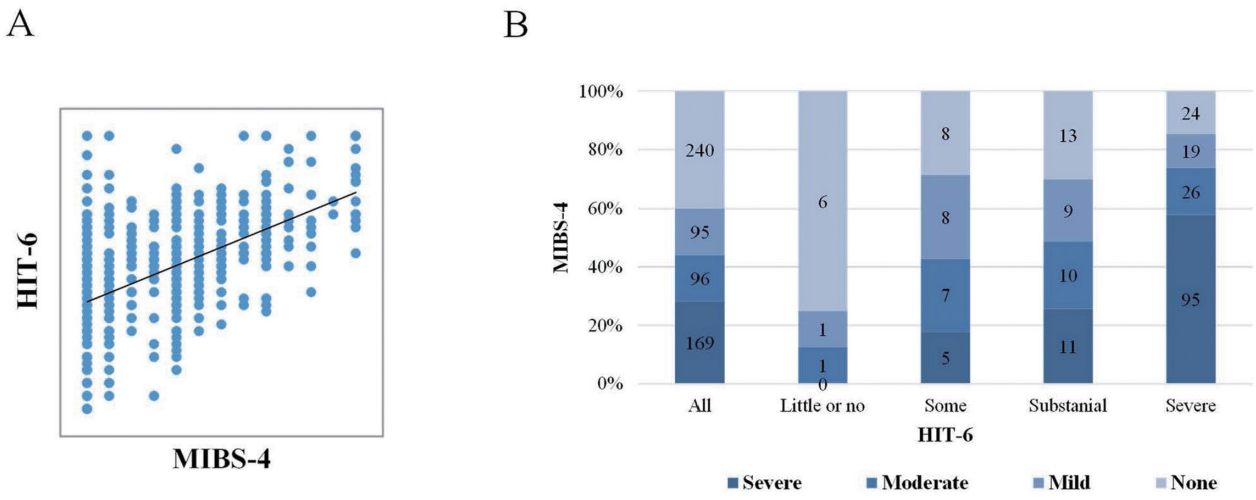

Fig. 1. Relationship between the HIT-6 and MIBS-4 Scores

A) Correlation chart for the HIT-6 and MIBS-4 scores (n = 600). B) MIBS-4 distribution based on the HIT-6 score (n = 600).

Table 2. Past Pharmacist Involvement in Headache Management

	All n=600		Doctor-visited n=224		Non-doctor-visited n=376		p-value
	n	%	n	%	n	%	
Have you ever consulted a pharmacist about a headache?							
Yes	124	20.7	109	48.7	15	4.0	< 0.001*
No	476	79.3	115	51.3	361	96.0	
What kind of impact have the advice and support of pharmacists had on you up to now?	n=124		n=109		n=15		
Consulting with a pharmacist was the reason for my visiting a medical institution.							
Very applicable	15	12.1	15	13.8	(-)		
Somewhat applicable	22	17.7	22	20.2			
Not very applicable	44	35.5	44	40.4			
Not applicable at all	28	22.6	28	25.7			
Consulting with a pharmacist enhanced my understanding of the appropriate use of prescription and OTC medications, including their side effects.							
Very applicable	20	16.1	17	15.6	3	20.0	0.084
Somewhat applicable	60	48.4	49	45.0	11	73.3	
Not very applicable	26	21.0	26	23.9	0	0.0	
Not applicable at all	18	14.5	17	15.6	1	6.7	
I was interested in the OTC medications that the pharmacist suggested.							
Very applicable	23	18.5	19	17.4	4	26.7	0.065
Somewhat applicable	31	25.0	24	22.0	7	46.7	
Not very applicable	38	30.6	37	33.9	1	6.7	
Not applicable at all	32	25.8	29	26.6	3	20.0	
I was interested in the pharmacist's suggestions for headache prevention and lifestyle modification.							
Very applicable	6	4.8	6	5.5	0	0.0	0.721
Somewhat applicable	47	37.9	41	37.6	6	40.0	
Not very applicable	40	32.3	34	31.2	6	40.0	
Not applicable at all	31	25.0	28	25.7	3	20.0	
The information from the pharmacist helped toresolve concerns or questions about their prescribed medications.							
Very applicable	24	19.4	24	22.0	(-)		
Somewhat applicable	32	25.8	32	29.4			
Not very applicable	38	30.6	38	34.9			
Not applicable at all	15	12.1	15	13.8			
Through the advice of the pharmacist, my ability to self-manage headaches has improved.							
Very applicable	20	16.1	20	18.3	0	0.0	0.058
Somewhat applicable	43	34.7	37	33.9	6	40.0	
Not very applicable	37	29.8	29	26.6	8	53.3	
Not applicable at all	24	19.4	23	21.1	1	6.7	

*: $p < 0.05$, Doctor-visited group vs. Non-doctor-visited group

below "some impact" still had MIBS-4 scores above "moderate."

Relationship between Severity Score and Consultation History Figure 2 shows the relationship between the HIT-6/MIBS-4 scores and consultation history with doctors and pharmacists. As the severity increased, the proportion of respondents with a history of medical consultation or pharmacist consultation increased. However, even among respondents with HIT-6 scores above "substantial impact" or MIBS-4 scores above "moderate," fewer than 50% had consulted a doctor, and fewer than 30% had consulted a pharmacist.

DISCUSSION

A comparison between respondents with and without a history of medical consultation suggested that being screened for migraines and having higher HIT-6 and MIBS-4 scores were associated with the motivation to seek medical attention.

In this study, 37.3% of the respondents were in the Doctor-visited group, and the mean age of the Non-doctor-visited group was significantly lower than that of the Doctor-visited group. This was similar to a previous report showing that despite migraine onset in early adulthood, the average time from headache onset to medical consultation was approximately 10 years, with a consultation rate of 46.4%.[9] Among the respondents in the present study, the MA-to-MO ratio was approximately 3:7, which was consistent with previous findings.[10] Notably, our survey did not include diagnoses or inter-

Table 3. Current Treatment Status

	All		Doctor-visited		Non-doctor-visited		p-value
	n=600		n=224		n=376		
	n	%	n	%	n	%	
We will ask about the treatment you are currently receiving for your headache. (Multiple answers possible)							
Use of OTC medications	427	71.2	148	66.1	279	74.2	0.033*
Use of prescription medications	101	16.8	101	45.1	(-)		
No medication	111	18.5	14	6.3	97	25.8	< 0.001*
Please let us know why you visited a medical institution. (Multiple answers possible)	n=101		n=101				
Headache affects daily life	68	11.3	68	30.4	(-)		
Headache affects work or school	50	8.3	50	22.3			
Headache symptoms have worsened	43	7.2	43	19.2			
OTC medications were not effective	26	4.3	26	11.6			
Prescription medications have become less effective	11	1.8	11	4.9			
Desire to understand the cause of the headache	32	5.3	32	14.3			
Desire to learn how to manage the headache	33	5.5	33	14.7			
Concern that the headache may indicate a serious condition	28	4.7	28	12.5			
Recommendation or encouragement from a pharmacist	3	0.5	3	1.3			
Recommendation or encouragement from a primary care doctor	9	1.5	9	4.0			
Recommendation or encouragement from family or friends	12	2.0	12	5.4			
Other	2	0.3	2	0.9			
Please let us know why you did not visit a medical institution or use prescription medication. (Multiple answers possible)	n=499		n=123		n=376		
Perception that the headache is mild	213	35.5	40	17.9	173	46.0	0.009*
Perception that the symptom is temporary	219	36.5	40	17.9	179	47.6	0.003*
Usual headache manageable with OTC medications	208	34.7	55	24.6	153	40.7	0.432
Previous improvement of similar symptoms with OTC medications	83	13.8	28	12.5	55	14.6	0.035*
Concern about medical or consultation costs	107	17.8	32	14.3	75	19.9	0.155
Difficulty visiting a doctor due to work or school commitments	59	9.8	21	9.4	38	10.1	0.038*
Distrust of medical diagnosis or advice	19	3.2	10	4.5	9	2.4	0.004*
Inconvenient access to medical facilities	22	3.7	10	4.5	12	3.2	0.021*
Difficulty obtaining a medical appointment	21	3.5	8	3.6	13	3.5	0.144
Lack of perceived need to seek medical care	72	12.0	6	2.7	66	17.6	< 0.001*
Other	15	2.5	4	1.8	11	2.9	
Apart from headache relief, what outcomes do you expect from prescription treatment?	n=101		n=101				
Relief of associated symptoms (such as nausea, vomiting, photophobia, phonophobia, and osmophobia)							
Very applicable	29	28.7	29	28.7	(-)		
Somewhat applicable	42	41.6	42	41.6			
Not very applicable	20	19.8	20	19.8			
Not applicable at all	10	9.9	10	9.9			
Relief of prodromal or aura symptoms							
Very applicable	24	23.8	24	23.8	(-)		
Somewhat applicable	46	45.5	46	45.5			
Not very applicable	21	20.8	21	20.8			
Not applicable at all	10	9.9	10	9.9			
Relief of symptoms during interictal periods							
Very applicable	17	16.8	17	16.8	(-)		
Somewhat applicable	35	34.7	35	34.7			
Not very applicable	34	33.7	34	33.7			
Not applicable at all	15	14.9	15	14.9			

*: $p < 0.05$, Doctor-visited group vs. Non-doctor-visited group

views with doctors, so there may be other types of headaches included in the classification of migraine headaches. Nevertheless, the respondents who were classified as having migraines reported associated symptoms such as nausea and photophobia (data not shown). Additionally, considering that the study targeted individuals in their 20s to 40s and was conducted online, selection bias may have occurred. Future research should include respondents from a wider age range and various access environments.

As noted above, increases in the HIT-6 and MIBS-4 scores were associated with increased visits to medical facilities; however, there were also respondents with high scores who did not visit medical facilities. This discrepancy suggests that patients' subjective perceptions of their symptoms

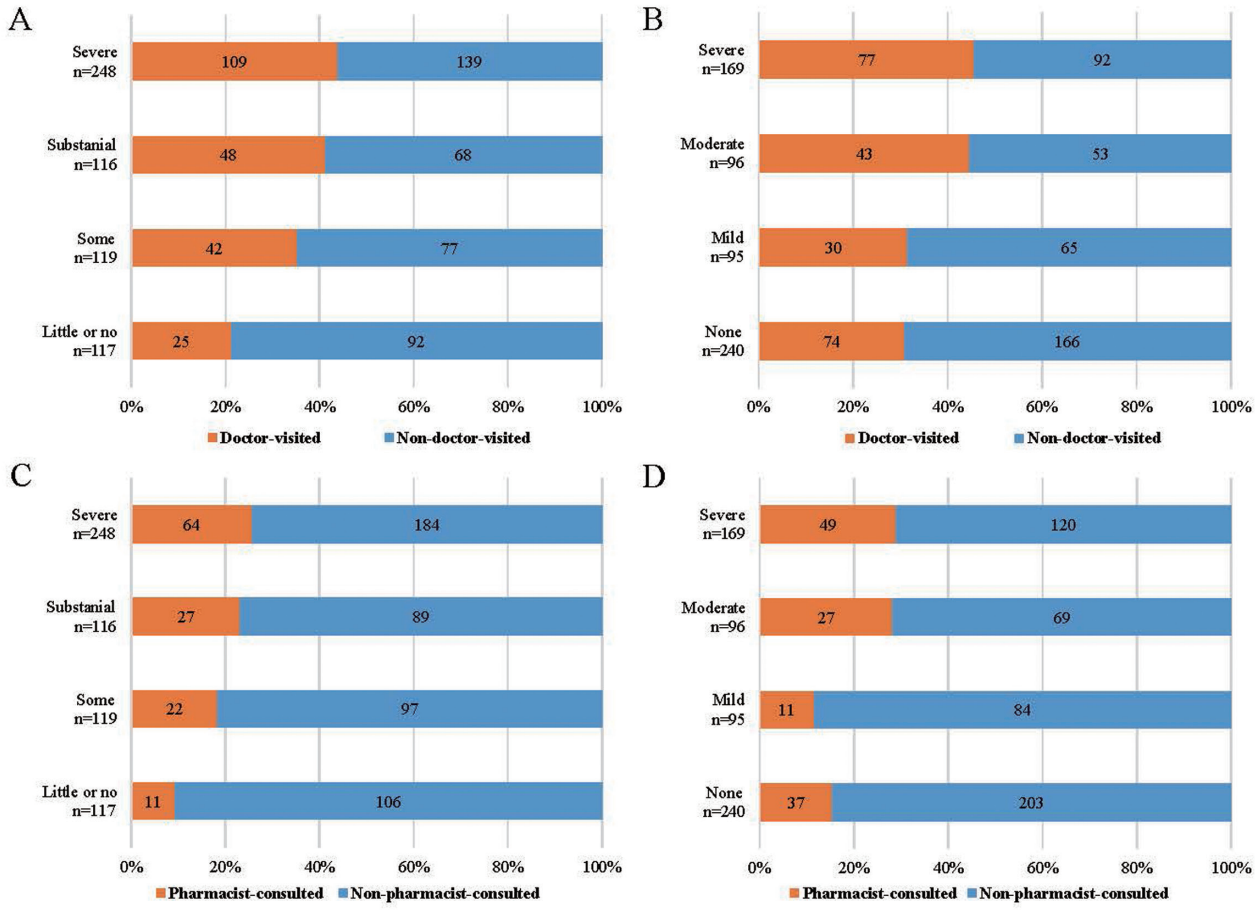

Fig. 2. Association between the HIT-6/MIBS-4 Scores and Consultation with a Doctor or Pharmacist

A) Relationship between the HIT-6 severity classification and doctor visits ($p < 0.001$, Doctor-visited vs. Non-doctor-visited). B) Relationship between the MIBS-4 severity classification and doctor visits ($p = 0.005$, Doctor-visited vs. Non-doctor-visited). C) Relationship between the HIT-6 severity classification and pharmacist consultation ($p = 0.003$, Pharmacist-consulted vs. Non-pharmacist-consulted). D) Relationship between the MIBS-4 severity classification and pharmacist consultation ($p < 0.001$, Pharmacist-consulted vs. Non-pharmacist-consulted).

may not align with objective measures of burden. A similar pattern was observed regarding pharmacist involvement, with approximately half of the Doctor-visited group consulting a pharmacist, and of these respondents, 34% reported that the pharmacist's advice motivated them to visit medical institutions. When classified using the HIT-6 and MIBS-4 scores, the proportion seeking expert support increased with higher scores; however, even in the group with high levels of impairment, this proportion remained below 50%. Many respondents who did not seek medical attention regarded their headaches as "mild," "usual," or "temporary." This finding is consistent with previous studies[2,5] suggesting that migraine patients often underestimate the severity of their symptoms and are unaware of the interictal burden. It also suggests that even patients with high HIT-6 and MIBS-4 scores do not necessarily seek medical care or consult pharmacists. In the Non-doctor-visited group, only 4% consulted a pharmacist, but the percentage of respondents who reported improved understanding of appropriate OTC medication use and side effects by consulting a pharmacist, as well as the percentage of respondents interested in OTC medications recommended by the pharmacist, was higher than that in Doctor-visited group. These results suggest that pharmacists play an important role in supporting headache self-management, particularly for patients who do not visit medical institutions. Approximately 74% of the Non-doctor-visited group reported managing their symptoms with OTC medications. Even among the Doctor-visited group, approximately 66% continued to use OTC medications, while the rate of prescription medication use remained low. Over 70% of the Doctor-visited group responded that consulting with a pharmacist promoted their understanding of the appropriate use of prescription and OTC medications, including their side effects. However, many in this group selected "mild," "usual," or "temporary" as reasons for not using prescription medications, suggesting a lack of appropriate medical intervention, like that observed in the Non-doctor-visited group. Pharmacists should actively guide patients to appropriate treatment and encourage behavioral changes when necessary. To help migraine patients become aware of the severity and interictal burden of their condition, incorporating assessment tools, such as HIT-6 and MIBS-4 (developed by Daiichi Sankyo Co., Ltd. and Eli Lilly Japan K.K.),[11] into the sale of OTC medications may help raise patients' awareness of headache management and encourage them to seek appropriate medical care. Furthermore, given that some patients cite reasons such as "difficulty visiting a doctor due to work or school commitments" or "lack of perceived need for medical care," it is necessary to establish more flexible and accessible consultation environments

at pharmacies and drugstores, as well as implement effective information dissemination strategies.

Conflict of interest The authors declare no conflict of interest.

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