User acceptance of an Internet training aid for migraine self-management

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Summary

We have developed an Internet training aid (MyMigraine) for migraine self-management derived from an evidence-based protocol for behavioural attack prevention. Its acceptance was tested in two studies concerning the opinions of new patients ($n = 10$), and the opinions of expert patients acquainted with the protocol ($n = 6$). The questionnaires employed 5-point scales. In study 1, all lessons were rated positively regarding clarity, instructiveness, importance and easy execution. After training, the patients were positive about user-friendliness and clarity (mean score 3.9), training content (3.5), satisfaction (3.6) and benefits (attack risk detection: 3.7; preventive coping: 3.9). In study 2, the expert patients provided positive ratings for the web application (mean score 4.1), digital support (3.8–4.4) and web adaptation of the protocol (4.1–4.8). The expert patients considered MyMigraine instructive, captivating and fun to work with, but emphasized the necessity of patient-to-patient contact. The training aid was very well accepted by new and experienced patients with chronic migraine.

Introduction

Migraine is a chronic paroxysmal brain disorder with disabling attacks of pulsating headache lasting 4–72 hours accompanied by nausea, vomiting, photo- and phonophobia. Behavioural training provided by clinical psychologists can reduce the attack frequency by 35–55%.[1] The effect holds with home-based application supplemented by telephone and written manuals.[2] A large Dutch trial showed that self-management training (SMT) provided by trained patient trainers at home to small groups, reduced attack frequency by 23% and strongly improved perceived control and self-confidence in attack prevention.[3,4]

We have developed an Internet training aid (MyMigraine) based on the self-management protocol[3–6] under the supervision of the Dutch Society of Headache Patients and the Society of Dutch Headache Centres. MyMigraine is a new method for help at a distance in behavioural prevention of migraine attacks. Its acceptance by migraine patients will be essential to its routine adoption and this was tested in the present study. The aim of the work was to answer two questions:

(1) Is MyMigraine well-accepted and feasible when offered to new participants?

(2) Is the conversion of the face-to-face SMT to the Internet successful as assessed by expert patients well-acquainted with the SMT protocol?

These questions were addressed in two studies.

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Methods

The randomized controlled trial on which the present studies were based was approved by the appropriate ethics committee. For study 1 we offered MyMigraine to subjects who had recently expressed interest in SMT. Of the 26 who gave informed consent, 14 met the inclusion criteria (1–6 migraine attacks/month; no medication overuse; restricted psychopathology[3]). Four of them subsequently withdrew due to personal circumstances and another treatment or health problem. The 10 participants were 80% female, with a mean age of 45 years (see Table 1). For study 2, five of the 13 patient trainers of the SMT study agreed to review MyMigraine, as did a patient who had published a book on migraine self-management. The characteristics of five of these six participants (mean age 42 years, 80% female) are shown in Table 2.

Internet training

MyMigraine was structured into eight lessons, preceded by general information for interested visitors of the website, and by a preview in the login-protected homepage for trainees (see Figure 1). Support was provided by 26 short

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Table 1 Characteristics of migraine patients (study 1)

No. (f)*	Age (years)	Profession (marital status)*	Attacks per month [headache diary]	Vasoactive drugs per attack	Other drugs for migraine
1 (f)	40	Fund raiser (M)	1.5	1	—
2 (f)	52	Office manager (M)	3.6	1.7	Prophylactic
3	68	Retired (M)	5.6	1.6	Prophylactic
4 (f)	40	Office manager (M)	5.6	2.4	—
5 (f)	44	Designer (L)	3.5	1.8	—
6	54	Lawyer (L)	3.8	2.3	—
7 (f)	31	Nurse (S)	3.3	1.8	Analgesic
8 (f)	43	Sales woman (D)	4.6	2.5	Analgesic
9 (f)	49	House keeper (M)	1.4	—	Other
10 (f)	33	Consultant (M)	2.2	0.5	—

*f = female; M = married; L = living together; D = divorced; S = single

films of three people acting as patients to illustrate ways of coping with the training tasks (see Figure 1), by web-dynamic exercises, and by interactive diaries to self-monitor migraine and self-relaxation (Figure 2 shows an example of the migraine monitor). Help-buttons gave access to, respectively, the headache diary, relaxation site with diary, homework site, library, and the 'safe' for personal materials to take home after completion of the training. Content was adapted from the SMT protocol[5,6] and each lesson covered six parts: introduction, view on migraine (trigger and early symptom detection), grip on migraine (relaxation and self-regulation), summary, homework and conclusion.

The training was embedded in an electronic content management system (CMS) with hierarchical and protected layers that required separate authorization. A 'back office' contained two management panels for case-managers supervising trainees, and for the coordinator supervising case-managers or following trainees directly (as applied in this pilot trial).

Procedures and measurements

New participants (study 1) were instructed to follow lessons regularly spaced by 1–2 weeks covering a total of 10 weeks. Lessons took 45–60 minutes, required 15–30 minutes daily for the relaxation training, and were directly evaluated on the Internet. Four questions (was it clear, instructive, important, easy to do?) were answered on visual analogue scales ranging from 0 = not at all, to 1 = very much/optimum. The coordinator provided help on request. No therapeutic support was provided. The expert patients (study 2) were approached to review all training materials progressively from lesson 1 to 8, but were not required to complete exercises. As user opinion was central to the pilot trial, the experts first underwent a 30-minute structured telephone interview to explore their views on the core elements, requirements and benefits of migraine self-management. This material was used to construct the post-training evaluative questionnaires (see below). After completing their review, the experts were invited for a presentation of results and participated in a meeting aimed at consensus through discussion regarding the top positive/negative points of attention and core issues for future improvement of MyMigraine.

The post-training evaluative questionnaires assessed acceptability with standardized questions (study 1: $n = 75$; study 2: $n = 49$) with responses ranging from 1 = not at all to 5 = very much and several open-answer questions (study 1: $n = 7$; study 2: $n = 8$). The questionnaires evaluated user-friendliness, clarity, technical problems, course content, satisfaction with and perceived benefit of the Internet training as experienced by new participants (study 1), and quality of the web application, digital support and web adaptation of content, as well as the general impression of the Internet training as perceived by the expert patients (study 2).

The data were analyzed with a standard statistical package (SPSS 16.0).

Table 2 Characteristics of expert patients with migraine (study 2)

No. (f)*	Age (years)	Profession (marital status)*
1 (f)	56	Teacher (M)
2 (f)	53	Consultant (L)
3 (f)	—	— (–)
4 (f)	46	Manager (S)
5 (f)	45	Designer (S)
6	60	Marketer (L)

*f = female; M = married; L = living together; S = single
There were missing data for subject 3

Results

Six participants in study 1 completed the training in 10 weeks with one lesson per week (50%) or 10 days (50%). Three participants needed more time due to extraordinary work or private pressures ($n = 2$), another health problem ($n = 1$) or reduced motivation due to severe hormonal migraine ($n = 1$). The post-training evaluations were therefore based on six subjects per study. The SDs of the scores were consistent, indicating that subjects with extreme scores did not inflate the outcomes.

Acceptance by new participants

The evaluations of the training lessons are summarised in Table 3. All aspects were positively valued, and only the clarity of lessons 3 and 6 was assessed less favourably. Mean scores per lesson ranged between 72 and 79 on a 100-point scale (SD 14 to 19) with a grand mean of 77 (SD 17). Comments were very positive regarding the content and voice-over of the information and instructions, and the focus on the patient's own strength and empowerment was greatly appreciated.

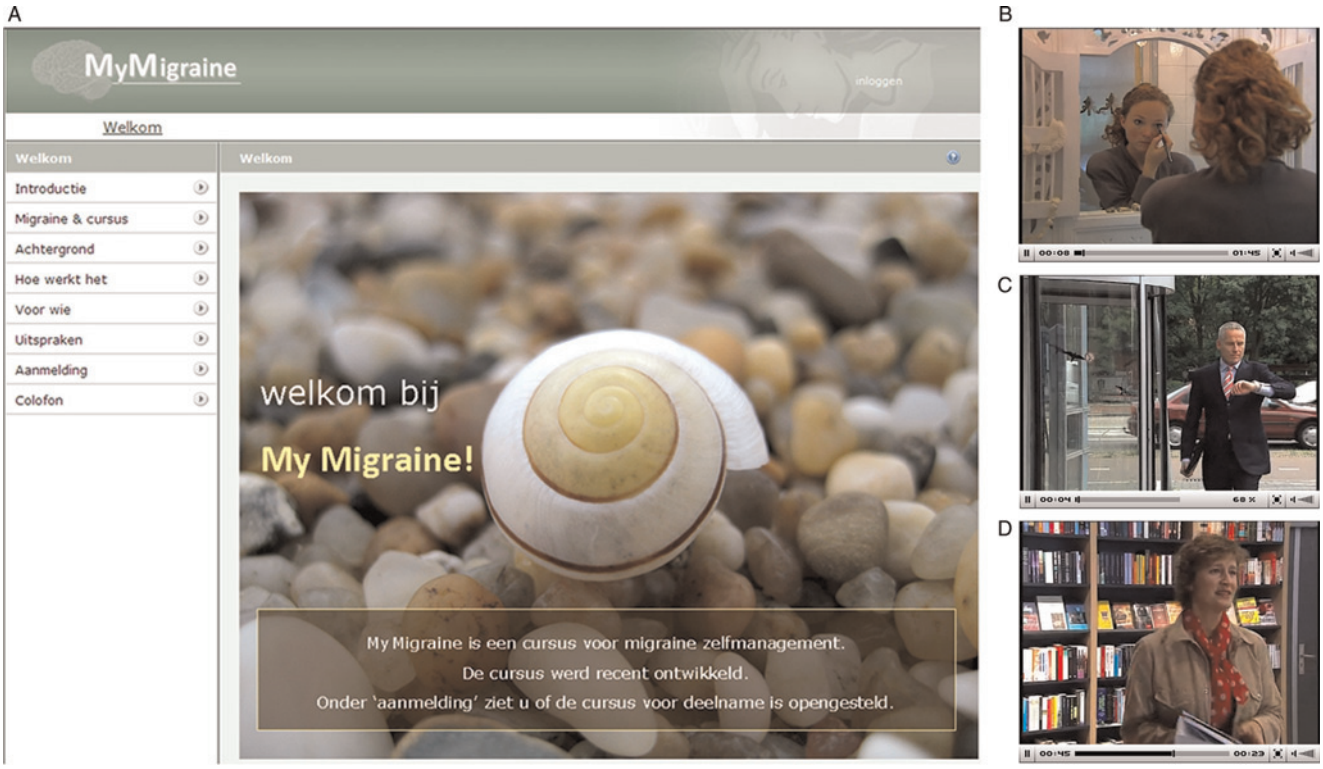

Figure 1 Homepage (A) and screenshots of the example patients (video clips, B–D)

The results of the evaluative questionnaires are summarised in Tables 4 and 5. Table 4 shows that the user-friendliness and clarity of the web application was well recognized with a mean of 3.9 on a 5-point scale, and scores ranging between 3.5 and 4.2 (SD 0.6 to 1.0). Table 5 shows that evaluations of the content of the Internet training were also positive (mean 3.5, SD 0.9), except for the usefulness of the relaxation monitor (mean 2.0), which is in contrast with a high appreciation of the relaxation exercises (mean 4.3) and training in self-relaxation in daily life (mean 4.0). The

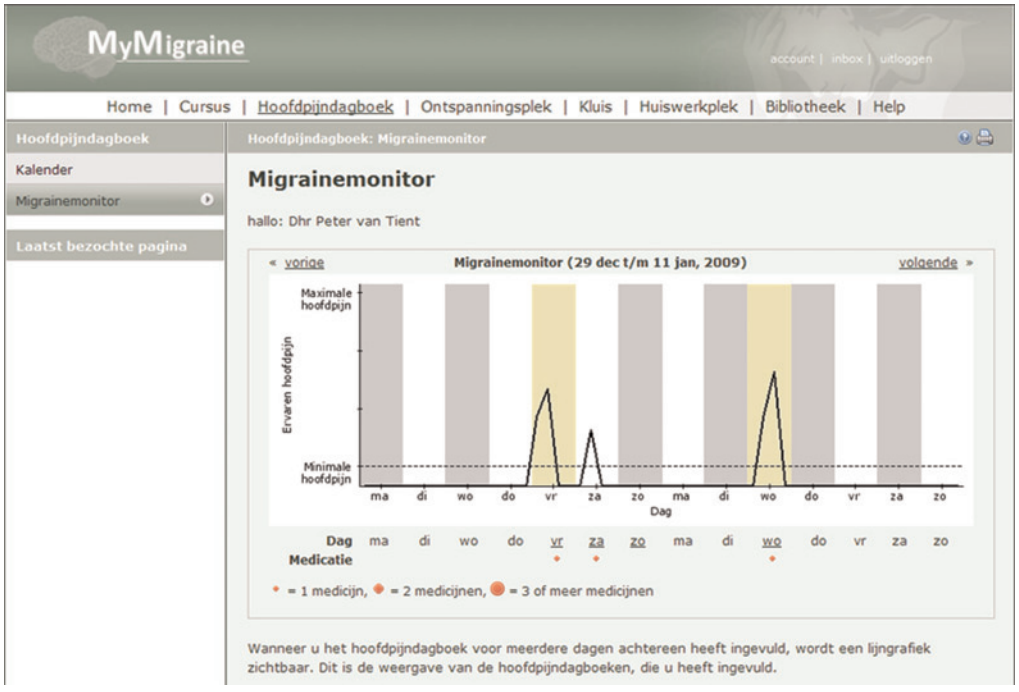

Figure 2 Migraine monitor of a potential participant. The monitor is updated directly after completion of the headache diary by the participant. Shaded bars indicate headaches, which meet the diagnostic classification criteria of a migraine attack[14]

Table 3 Mean scores (per evaluative item, per lesson) for appreciation of lessons 1 to 8 in study 1 (0 = not at all; 1 = very much/optimum)

Lesson	1	2	3	4	5	6	7	8
No. of subjects	10	10	10	10	7	6	6	6
Clear	0.77	0.69	0.59	0.67	0.68	0.59	0.69	0.70
Instructive	0.81	0.84	0.75	0.84	0.80	0.80	0.86	0.86
Important	0.73	0.76	0.80	0.76	0.82	0.82	0.85	0.88
Easy to do	0.80	0.83	0.73	0.81	0.80	0.70	0.70	0.73

satisfaction with MyMigraine was good (mean 3.6, SD 0.6) as were the perceived benefits: according to the participants the training improved their ability to detect early symptoms and triggers of attacks (view on migraine; mean 3.7, SD 0.5), and to counteract these risks by body relaxation and cognitive self-regulation (grip on migraine; mean 3.9, SD 0.8).

Technical problems occurred incidentally in 80% of the participants due to peculiarities of their browsers and to minor problems in the application that were solved. All participants were satisfied with the availability of the coordinator and helpdesk.

Acceptance by expert patients

The results of the evaluative questionnaires provided by the expert patients are summarised in Tables 6 and 7. Table 6 shows that the web application was well received (mean 4.1, SD 0.5 to 0.9) as were the five types of digital support (mean scores between 3.8 and 4.4 (SD 0.6 to 1.0); grand mean 4.2, SD 0.8). As shown in Table 7, the adaptation of the SMT protocol to the Internet was valued with scores of 4.1 to 4.8 (SD 0.3 to 0.9) and viewed as extremely meaningful (grand mean 4.8). MyMigraine fulfilled the patients' expectations and was experienced as instructive, captivating and fun to work with (mean 4.6, SD 0.5 to 1.0).

The main conclusions of the consensus meeting were:

(1) MyMigraine provides comprehensive SMT, and is user-friendly and feasible; it can bridge the distance for those with travel and scheduling problems and lower the threshold for those reluctant to disclose their migraine problem or share it in groups with other (female) migraine sufferers;

Table 4 Mean scores for the appreciation of (A) user-friendliness and (B) clarity of MyMigraine in study 1 ($n = 6$)

	Mean score
4A. Appreciation of user-friendliness (1 = not at all; 5 = very much)	
Total web application	3.8
Course through lessons	4.0
Migraine monitor	4.2
Relaxation monitor	3.8
Homework site	3.5
4B. Appreciation of clarity (1 = not at all; 5 = very much)	
Instruction for the help buttons	3.7
Training exercises	4.2
Migraine monitor	4.0
Relaxation monitor	3.8

Table 5 Mean scores for (A) the appreciation of course content and for (B) satisfaction and perceived benefit of MyMigraine in study 1 ($n = 6$)

	Mean score
5A. Appreciation of course content (1 = not at all; 5 = very much)	
Migraine monitor	3.0
Web dynamic exercise for symptom detection	3.7
Relaxation monitor	2.0
Relaxation exercises	4.3
Self-relaxation in daily life	4.0
Patient films	3.5
Focus on body posture and life style	4.0
Goal setting	3.5
Cognitive training	3.7
Migraine and health recipes	3.5
5B. Satisfaction and perceived benefit (1 = not at all; 5 = very much)	
Satisfaction with composition of the training	3.5
Satisfaction with content of the training	3.7
Benefit: better view on migraine (goal 1)	3.7
Benefit: better grip on migraine (goal 2)	3.9

(2) A serious limitation concerns the absence of interaction with other trainees, especially those who are more experienced with migraine self-management. Opportunities for contact are essential to (a) promote self-reflection, understanding and learning through positive modelling, (b) strengthen motivation and endurance when progress is slow or seems to fail, and (c) increase positive experience through social sharing and support;

(3) MyMigraine must be extended with opportunities for contact and suggestions about stand-by patient trainers or online coaches available on call, and patient-to-patient contact through a forum and through privacy protected chat-rooms for small groups of trainers.

Discussion

The present study established the user acceptance of MyMigraine. The Internet training was well received and feasible in new patients, and expert patients confirmed that

Table 6 Mean scores for the appreciation of (A) the web application and (B) the digital support of MyMigraine in study 2 ($n = 6$)

	Mean score		
6A. Appreciation of the web application (0 = not at all; 5 = very much)			
User friendliness	4.0		
Clarity of information	4.0		
Device is pleasant	4.3		
Device is well realized	4.0		
6B. Appreciation of the digital support (0 = not at all; 5 = very much)			
	Mean score		
	Meaningful	Useful	Well realised
Migraine monitor	4.8	4.5	4.0
Relaxation monitor	3.8	3.5	4.0
Relaxation site	4.7	4.2	4.0
Web dynamic exercise for symptom detection	4.5	4.0	4.0
Patient films	4.8	4.2	4.3

Table 7 Mean scores for (A) the appreciation of the conversion to the Internet of MyMigraine and for (B) the general impression of the Internet training in study 2 ($n = 6$)

	Mean score		
	Meaningful	**Useful**	**Well realised**
7A. Appreciation of the conversion to the Internet of MyMigraine (0 = not at all; 5 = very much)			
Structure of the Internet training	5.0	4.8	4.2
Content of the Internet training	5.0	5.0	4.4
Purport of the Internet training	5.0	4.6	4.4
Goal setting and evaluation	4.0	4.2	4.2
Cognitive training	5.0	4.8	4.5

7B. General impression of the Internet training (0 = not at all; 5 = very much)	**Mean score**
Fulfilled expectation	4.3
Was fun to work with	4.8
Was captivating	4.8
Was instructive	4.8

the web conversion of the face-to-face SMT had been successful. The experts rated the migraine monitor, web-dynamic symptom detection exercise and relaxation training as best assets (while asserting that cognitive training was improved). The monitoring of relaxation progress was viewed as less important by all users, however.

At stake now is the clinical utility and efficacy of MyMigraine. The training demands time of the patients and working through. For those who completed it in time, one lesson per week was no serious problem (mean 2.0, SD 0.6). However, 40% needed more than 10 days per lesson, and endurance and motivation was also a problem. There were no dropouts, which is an accomplishment given that Internet intervention is severely threatened by attrition.[6,7] Options for contact and support as suggested by the expert patients is a sensible measure to strengthen motivation and compliance and – as multidisciplinary care is important in migraine[8] – the Internet training should operate within usual care services. This accords with recent evidence that therapist contact strengthens the effect of Internet interventions,[9,10] and with viewing these interventions as the promising interface between self-care and professional health service, to be extended with online personal support and contacts face-to-face if the problem or patient demands it.[11]

To increase contact and support in MyMigraine we are currently testing the inclusion of mobile monitoring and coaching through mobile phones as part of the application.[12,13] We are planning a large efficacy trial to develop a protected web community for patient-to-patient and professional support, and the embedding of MyMigraine into Dutch headache care. The user acceptance reported in the present study is the prerequisite for these steps.

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