Impact of a Self-Help Intervention on Performance of Headache Management Behaviors: A Self-Efficacy Approach

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ABSTRACT
This study evaluated the importance of modeling and performance accomplishment of behavior on enhancing headache management self-efficacy and increasing acquisition and implementation of four headache self-management behaviors: headache diary use, limiting medication overuse, relaxation, and stretching. Primary headache disordered patients (n = 51) were randomly assigned to 3 conditions: self-efficacy videotape treatment (SET; education + modeling and performance of behavior), information-only videotape treatment (IOT; education only), or no-treatment comparison (NTC). The SET group reported higher self-efficacy scores than the NTC at immediate post-treatment. At 1-month follow-up, the SET group reported more headache diary use than the IOT and NCT groups, whereas both the SET and IOT groups reported more frequent performance of the relaxation and stretching behaviors than the NTC group. Despite a smaller sample size, the SET treatment produced a slight increase in headache management self-efficacy immediately after treatment, as well as increased performance of three of the four headache management behaviors at 1-month follow-up. A reduction in self-efficacy following the immediate posttreatment period suggests that multiple treatment exposure may be necessary to effect long-lasting change with respect to self-efficacy, behavioral performance and ultimately changes in headache activity. Although limited in their ability to provide feedback and reinforcement, the potential benefits for patients and health care professionals warrant continued development and study of behavior theory-driven self-help treatment for headache. Future studies should include a larger sample that consists of motivated patients with less severe headache problems who may be more apt to benefit from such theory-driven strategies.

INTRODUCTION
Headache disorders are chronic, often incapacitating conditions that afflict millions of individuals during their most productive years. Unfortunately, a large proportion of these headache sufferers go undiagnosed or fail to receive adequate treatment.[1]
Moreover, with increasing health care constraints such as limited patient access, reduced time afforded to see patients, increasing treatment costs, and complex referral processes, it is challenging to make an accurate diagnosis and secure the

appropriate level of care for headache sufferers, let alone tackle concomitant psychosocial issues. Thus, headache disorders represent a justifiable target for low-cost interventions that facilitate patients' adoption of self-management behaviors and involve minimal contact with health care professionals.

Behavioral treatments for headache are delivered in either a clinic-based or minimal-therapist-contact treatment (MTCT) format. MTCT treatments teach patients how to help themselves through the use of written, videotape, and computer media formats with only minimal contact from health professionals (e.g., periodic telephone consultations, initial modeling of self-management behaviors, etc.). MTCT headache treatments have largely focused on relaxation, biofeedback, and cognitive techniques.[2-4] Research shows that MTCT interventions yield similar or superior results to both equivalent clinic-based treatments and common pharmacological therapies.[5,6] In addition, MTCT interventions are on average four to five times more cost-effective than clinic-based treatments.[7]

"Self-help" interventions go one step farther by attempting to facilitate adoption and maintenance of behaviors without any direct assistance from health professionals. Only a few studies have focused on self-help treatments for headache. Kohlenberg and Cahn compared the effects of self-help written materials, consisting of education about headache types and instructions for biofeedback, relaxation, and cognitive-behavior therapy, with information-only written materials (i.e., a popular book on headache treatment and diagnosis) among 51 migraineurs.[8] Post-treatment reductions in headache frequency for the self-help and information-only groups were 62% and 14%, respectively. More recently, headache patients randomized to a 6-week internet-based self-help treatment involving relaxation and problem-solving training reported a 31% average reduction in headache activity after treatment as compared with only a 3% average reduction reported by those patients randomized to a patient control group.[9] In both studies, however, ability to generalize the results was hindered by a high attrition rate (50% or more), an inherent limitation of self-help treatments.

Self-help behavioral treatments for headache may be more likely to yield successful behavior and clinical outcomes and effecting enduring change when their development is driven by a theory of health behavior change.[10] Self-efficacy, a widely studied theoretical construct of health behavior change, has garnered attention as an important determinant in the perception and behavioral management of several chronic pain syndromes such as fibromyalgia,[11] low back pain,[12] rheumatoid arthritis,[13] and headache.[14] Self-efficacy refers to the belief or level of confidence in one's capabilities to successfully execute a course of action or behavior required to produce a desired outcome.[15] Research supports the hypothesis that the relationship between self-efficacy and chronic headache pain relief is mediated by active and enduring efforts to prevent and manage pain as well as the alleviation of distress that may exacerbate pain sensations and discomfort.[16] Recent studies among chronic headache sufferers have found self-efficacy to be associated with a number of variables including reduced anxiety, headache frequency, stressful events, and level of disability.[14,17,18] In addition, self-efficacy beliefs have been found to mediate improvements in various cognitive variables and headache activity brought about by relaxation and biofeedback methods.[19,20]

Therefore, given the potential effectiveness of self-help treatments for headache and the empirically supported notion that self-efficacy perceptions fuel behavior change necessary for effective headache management, the primary aim of this pilot study was to evaluate the impact of a single viewing of a self-help videotape program designed to increase patients' self-efficacy in relation to four headache management behaviors through modeling and behavioral performance. Headache self-management self-efficacy was defined as a patient's confidence in his or her ability to successfully perform a behavior necessary to prevent a headache from occurring and/or manage their pain once a headache began.

METHOD
Participants
An a priori power analysis based upon an expected medium effect size, an alpha level of .05, and an average correlation of .80 among the four measurement periods indicated that 13 subjects were needed in each group (n = 39) to detect a significant group difference with respect to headache management self-efficacy.[21]

The participants were 51 primary headache disordered patient volunteers recruited from an outpatient university hospital headache clinic located in the mountain west region of the United States. Inclusion criteria were: (i) a diagnosis of migraine or tension-type headache according to the International Headache Society classification and diagnostic criteria[22] and (ii) aged 18 to 50 years. Exclusion criteria were: (i) change in headache medication during previous month, (ii) signs indicating serious physical or psychological disorder and (iii) diagnosis of cluster headache. Fifty-one patients completed baseline questionnaires; 13 patients did not complete the 1-month follow-up assessment, giving a final sample of 38.

 Design
This study employed a prospective, pretest-posttest randomized-groups design with two additional repeated measures (baseline and 1-month follow-up).

Variables and Measures
Table 1 provides a time line detailing periods at which measurement data were collected for each of the outcome variables. *Headache self- management self-efficacy beliefs* were measured using a four-item headache management self-efficacy scale. Each item was matched with one of four headache self-management behaviors. These behaviors were (i) use of a headache diary to identify and avoid headache triggers, (ii) avoiding overuse of headache pain medications, (iii) performance of a deep-breathing relaxation and imagery exercise, and (iv) engagement in daily stretching exercises. Self-efficacy in relation to each behavior was estimated by inquiring: "On a scale of 1 to 10, where 1 is *not at all confident* and 10 is *very confident*, how confident are you right now that you could [for instance] use a headache trigger diary to identify and avoid headache triggers/possible causes of your headache?"[23] Reliability estimates derived from a small group of focus respondents (*n* = 10) indicated acceptable internal consistency (Chronbach's a = .92 and .95 for time 1 and 2, respectively) and temporal consistency (*r* = .84).

Table 1: Time Line of Data Collection

Dependent variable	Time 1	Time 2	Time 3	Time 4
Headache self-management self-efficacy beliefs	X	X	X	X
Performance of headache self-management behaviors		X		X
Headache-related disability	X	X		X
Headache activity (intensity, frequency, and number of headache days)		X		X
Frequency of use of headache pain medication		X		X

Note. The length of time between Time 1 (baseline) and Time 2 (immediate pretest) and between Time 3 (immediate posttest) and Time 4 (1-month follow-up) is 4 weeks. The length of time between Time 2 and Time 3 is approximately 2 hours.

Headache self-management behaviors were measured with a headache diary during two separate 4-week periods in a format consistent with valid and reliable measures of headache improvement. Frequency of performance of headache self-management behaviors was calculated by summing the reported times that each behavior was performed. In addition, the headache diaries yielded three *headache activity* variables: (a) average headache intensity (rated on a 0/no headache pain to 10/intense pain scale), (b) number of headache attacks/episodes, and (c) number of headache days.

Procedure and Self-Help Interventions
At baseline, all patients gathered at the headache clinic to sign a university institutional review board approved consent form, complete designated questionnaires, and pick up headache diaries. A table of random numbers was used to assign subjects to one of the three groups: (1) self-efficacy videotape treatment (SET), (2) information-only videotape treatment (IOT), and (3) no-treatment control (NTC).

One month later at immediate pretest, all patients returned to the clinic where they turned in baseline diaries, completed questionnaires and received their 4-week post-treatment period headache diaries. The treatment phase was then initiated and patients in the SET and IOT groups were taken to separate rooms to view their respective videotape programs, while NTC group patients were asked to return 4 weeks later for 1-month follow-up procedures. Videotape treatment consisted of a single viewing of either the SET videotape program or the IOT videotape program. Videotape programs were shown in the clinic as it was hoped that the SET videotape program or a reasonable facsimile would be integrated as part of future patients' regularly scheduled clinic visits. Furthermore, conducting the intervention in the clinic ensured that patients in the two groups viewed the respective videotape programs. No therapist or provider assistance was provided to patients during the trial.

SET patients watched a 48-minute videotaped program that was split into four 12-minute components: (i) headache education, (ii) effective use of headache medications, (iii) cognitive-behavioral stress management, and (iv) relaxation through muscle stretching. Each component focused on one of the four aforementioned headache self-management behaviors. Selection of particular components and related behaviors was based on recommended behavioral treatment foci for headache derived from the literature.[6,24] Local experts in the areas of behavior change and headache (i.e., psychologist, neurologist, and health

educator) reviewed the videotape program content for accuracy both during its development and at the final editing stage. Furthermore, each program component was presented live to a group of focus respondents (n = 10) prior to videotape filming to ensure patient comprehension.

Each videotape program component consisted of brief educational points, suggestions for behavioral change, and instruction in how to perform the given headache self-management behavior. Each segment was designed to increase self-efficacy through the two strongest sources of efficacy information: (a) modeling/vicarious experience (modeling of behavior) and (b) enactive mastery experience/performance accomplishment (performance of behavior).[15] All segments afforded patients time to complete designated behaviors/tasks. Furthermore, each segment ended with a review of main educational points and recommended guidelines for performance of each behavior.

The first component *headache education*, presented by a neurologist from the university headache clinic, was designed to help patients identify and avoid triggers or "precipitators" of headache so as to help them prevent and manage their headaches. Participants were shown how to keep a diary to identify headache triggers (*modeling*) and then asked to reflect on the last headache that they experienced and write down suspected triggers using the provided diary format (*performance accomplishment*).

The second component *effective use of medications*, presented by a doctor of pharmacy, was designed to: (i) help patients differentiate between prophylactic and abortive headache medications, (ii) provide guidelines for appropriate frequency of use so as to prevent onset of frequent drug-induced headaches, and (iii) enhance overall headache management. Guidelines for appropriate headache medication use were reinforced through completion of a headache medication worksheet involving a fictitious patient scenario. Patients were first told the medications that the patient was taking and then asked to indicate on the worksheet the correct frequency of use for each medication. After having the task modeled to them, patients completed the worksheet, and were then provided with the correct answers.

The third component *cognitive-behavioral stress management*, presented by a certified health educator, consisted of education on the relationship between stress and headache, basic stress management principles, benefits of practicing relaxation techniques, and the modeling of a brief deep breathing and imagery relaxation exercise. Both deep breathing and imagery have been shown to be effective in the treatment of headache as well as other chronic pain conditions.[26] Modeling of the brief relaxation exercise involved performance of the exercise and a simultaneous explanation of the purpose of each action involved. Patients were then asked to perform the technique along with the presenter before being given time to practice their technique on their own.

The fourth and final component *relaxation through muscle stretching*, presented by a family nurse practitioner from the university headache clinic, involved education on the importance of physical health for headache management, exercise mode prescription and modeling of several neck and upper extremity stretches that could be performed in a sitting position. For each stretch, the presenter first performed the stretch and gave verbal instructions simultaneously. Patients were then asked to perform the stretch with the presenter as she performed the stretch a second time.

Patients in the IOT group watched a videotaped program identical to that observed by the SET group with the exception that it was half the length and did not include provider modeling of behaviors nor require subjects to perform any behaviors. Thus, the IOT treatment was intended to simply inform and offer suggestions for behavior change.

At the immediate posttest period, patients in the SET and IOT groups completed questionnaires. Finally, at 1-month follow-up, all patients returned to the clinic to turn in their second 4-week headache diaries and complete questionnaires.

Data Analysis
Descriptive statistics were used to analyze demographic characteristics and potential differences between study completers (completed all assessments) and study dropouts (completed only baseline assessment). Repeated measures ANOVA was employed to detect a difference among group means for performance of each of the four headache self-management behaviors and the summed self-efficacy scores. ANOVA results were interpreted using the multivariate Wilks' criterion due to large number of variables and potential violation of sphericity. Following a significant interaction result, separate one-way ANOVAs were used to assess group differences at specific points in time. Finally, pairwise comparisons were conducted among the three groups

when a significant one-way ANOVA result was achieved. The Holm's sequential Bonferroni procedure was used to control for familywise error rate across the three comparisons at the 5% level of significance.

RESULTS
Thirty-eight of 51 patients completed all assessment procedures. No differences with respect to age, ethnicity, headache diagnosis, headache self-management self-efficacy, and headache disability emerged between study completers and non-completers. A gender difference was observed with men making up 38% and 11% of the study non-completers and completers, respectively. No significant differences with respect to any of the variables of interest were found between male study completers and male study non-completers.

Demographic and Headache Diagnostic Characteristics
Demographic analyses indicated that the sample consisted predominantly of younger to middle-aged adult women (*M* age = 35.3, *SD* = 9.1*; n* = 34 females) who were White (100%), married (74%) and had at least one child (66%). Subjects tended to be college educated (89%), employed (63%), and have household incomes that ranged between $25,000 and $74,999 (77%). Selected demographic and headache characteristics of the sample within each group are provided in Table 2. No significant group differences were found with respect to age, gender, or the various clinical headache parameters.

Table 2: Demographic and Headache Characteristics of Sample by Group

Characteristic	Group		
	SET	IOT	NTC
	(*n* = 14)	(*n* = 13)	(*n* = 11)
Gender			
Female	13	10	11
Male	1	3	0
Age, *M (SD)*	33.6 (6.1)	38.6 (9.7)	33.5 (11.2)
Headache diagnosis			
Migraine with or without aura	10	13	10
Tension-type headache	4	0	1
Duration of headache disorder, *M (SD)*	11.3 (8.3)	20.2(12.7)	14.8 (11.2)

Note. SET = self-efficacy videotape treatment, IOT = information-only videotape treatment, and NTC = waiting-list control condition. For duration of headache disorder, the mean values are representative of years.

Performance of Headache Self-Management Behaviors
No group differences with respect to performance of headache self-management behaviors were observed at baseline. Significant results were observed for three of the four headache self-management behaviors at 1-month follow-up. Group means and standard deviations for all headache self-management behaviors across the two 4-week time periods from baseline to 1-month follow-up are presented in Table 3.

Table 3: Means and Standard Deviations for Performance of Headache Self-Management Behaviors: Comparisons Between Groups Across Two Four-week Time Periods from Baseline to One-month Follow-up

Group	Headache Self-Management Behavior	Time			
		Baseline		1-month follow-up	
		M	*SD*	*M*	*SD*
SET (*n* = 14)	Use of headache trigger diary	2.86	7.50	10.71	9.44
	Avoiding overuse of headache medication	6.10	9.13	8.93	9.75
	Deep breathing/imagery relaxation	2.14	3.55	33.36	22.73
	Stretches for neck and upper extremities	2.93	6.50	44.50	34.55
IOT (*n* = 13)	Use of headache trigger diary	1.15	3.60	4.00	4.90
	Avoiding overuse of headache medication	2.50	4.22	5.31	8.14
	Deep breathing/imagery relaxation	1.15	2.20	33.36	22.73
	Stretches for neck and upper extremities	5.00	7.78	25.70	28.77
NTC (*n* = 11)	Use of headache trigger diary	3.28	8.10	3.20	8.12
	Avoiding overuse of headache medication	3.82	7.10	3.50	8.17
	Deep breathing/imagery relaxation	1.82	5.40	.37	1.21
	Stretches for neck and upper extremities	1.91	5.38	.27	.65

Note. SET = self-efficacy treatment, IOT = information-only treatment, and NTC = waiting-list control condition.

Use of a headache diary to identify and avoid headache triggers. Results revealed a significant group x time interaction effect [Wilks'L = .74, $F_{(2,35)}$ = 6.20, *p* = .005]. Follow-up one-way ANOVAs indicated that there was a significant group difference at 1-month follow-up [$F_{(2,37)}$ = 3.73, *p* = .034]. Pairwise comparisons showed that SET group patients reported more use of the headache diary to identify and avoid headache triggers than patients in both the IOT and NTC groups (*p* = .015 for SET vs. IOT and .010 for SET vs. NTC, respectively)

 Avoiding overuse of headache pain medications. Results did not yield a significant effect. Group means, however, indicated a trend in favor of the SET videotape treatment over the IOT videotape treatment and NTC condition with patients in the SET

group (*M* = 8.93, *SD* = 9.75) reporting more instances of attempting, over the 1-month follow-up period, to avoid overuse of their headache pain medication than patients in both the IOT (*M* = 5.31, *SD* = 8.14) and NTC (*M* = 3.46, *SD* = 8.12) groups.

Performance of a deep breathing/imagery relaxation technique. Results revealed a significant group x time interaction effect [Wilks'L = .74, *F* (2,35) = 6.13, *p* = .005]. Follow-up one-way ANOVAs indicated a significant group difference at 1-month follow-up [*F* (2,37) = 5.72, *p* = .007]. Pairwise comparisons showed that patients in both the SET and IOT groups reported a significantly greater frequency of performance of the deep breathing/imagery relaxation technique than patients in the NTC group (*p* = .000 and .007 for SET vs. NTC and IOT vs. NTC, respectively).

Performance of stretches for the neck and upper extremities. Results revealed a significant group x time interaction effect [Wilks'L = .68, *F* (2,35) = 8.27, *p* = .001]. Follow-up one-way ANOVAs showed a significant group difference at 1-month follow-up [*F* (2,37) = 8.28, *p* = .001]. Pairwise comparisons showed that patients in both the SET and IOT groups reported a significantly greater frequency of performance of the deep breathing/imagery relaxation technique than patients in the NTC group (*p* = .000 and .004 for SET vs. NTC and IOT vs. NTC, respectively). The difference between the treatment groups also approached significance (*p* = .07 for SET vs. IOT).

Headache Self-Management Self-Efficacy
Mean headache self-management self-efficacy scores between groups across four time periods from baseline to 1-month follow-up are presented in Table 4. Results yielded a significant group x time interaction effect [Wilks'L = .58, *F* (2,66) = 3.43, *p* = .005]. Follow-up one-way ANOVAs revealed a significant group difference at time 3 or immediate posttest [*F* (2,37) = 5.62, *p* = .008]. Pairwise comparisons revealed that patients in the SET group reported significantly higher headache self-management self-efficacy scores than NTC patients at immediate posttest (*p* = .001). A similar trend, although not significant, was shown at 1-month follow-up with SET patients reporting higher headache self-management self-efficacy scores than the NTC patients (*p* = .03).

Table 4: Mean Scores and Standard Deviations for Headache Self-Management Self-Efficacy (HMSE): Comparisons Between Groups Across Four Time Periods from Baseline to One-month Follow-up

Group	Dependent variable	Time							
		Baseline		Pretest		Posttest		Follow-up	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
SE (*n* = 14)	HMSE	29.0	8.4	28.3	7.2	30.8	7.7	28.9	7.1
IO (*n* = 13)	HMSE	30.5	4.5	27.0	8.0	28.3	5.2	27.2	6.7
WC (*n* = 11)	HMSE	26.2	7.1	21.7	7.4	21.7	7.4	23.3	7.9

Note. **SET = self-efficacy treatment, IOT = information-only treatment, and NTC = waiting-list control condition. Highest possible score is 40.**

Headache Activity
Results failed to produce significant results with respect to headache frequency, headache intensity, and number of headache days. This study, however, was not powered to detect changes in headache activity. Group means for headache intensity and headache frequency (i.e. number of both headache attacks and headache days) are shown in figure 1 and figure 2, respectively.

Figure 1. Group Means for Headache Intensity Across Baseline (Time 1) and One-month Follow-up Periods (Time 2)
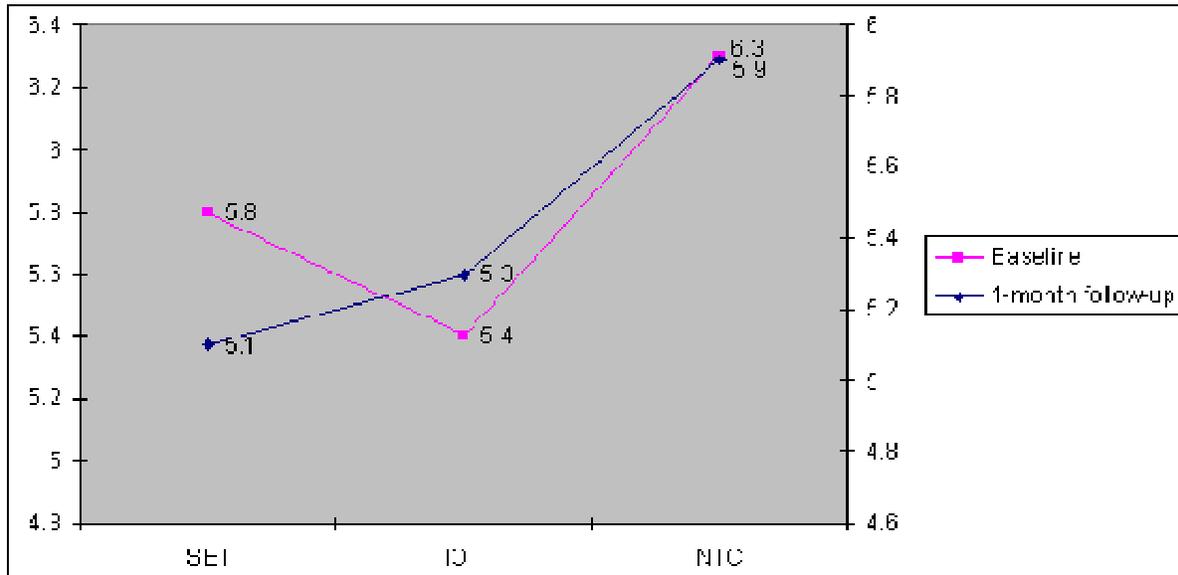
Note. SET = Self-efficacy treatment, IOT = information-only treatment, and NTC = no-treatment control. Headache intensity is scored on an ascending 0 to 10 scale.

Figure 2. Group Means and Standard Deviations for Headache Frequency Variables Across Baseline (Time 1) and One-month Follow-up Periods (Time 2)
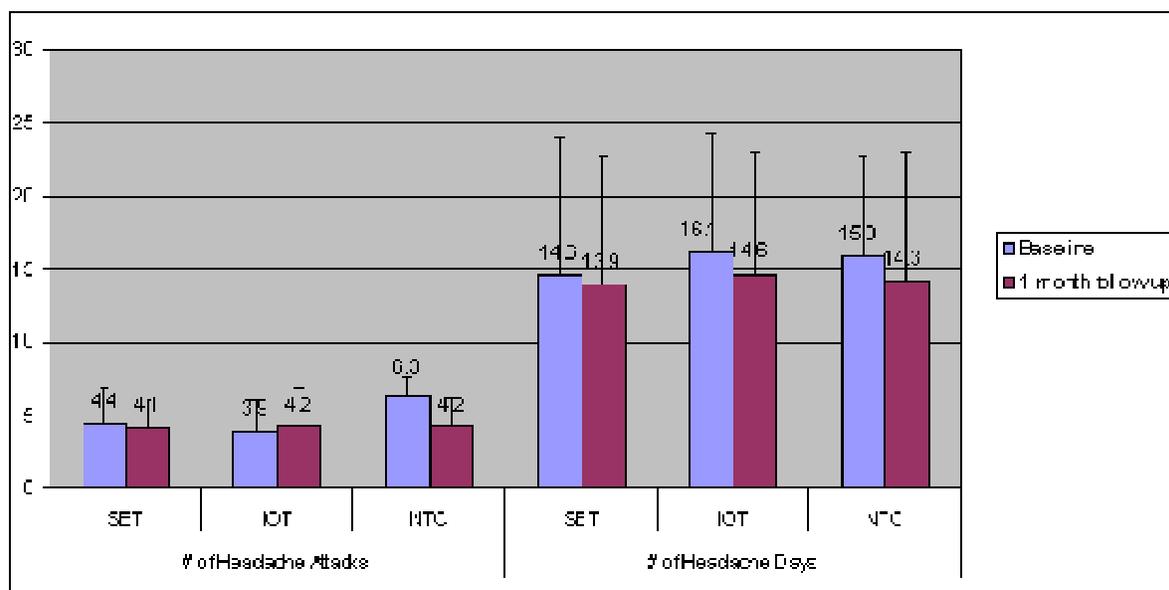
Note. SET = Self-efficacy treatment, IOT = information-only treatment, and NTC = no-treatment control. Headache intensity is

scored on an ascending 0 to 10 scale. Time interval between baseline and 1-month follow-up periods is 8 weeks.

DISCUSSION

Results yielded changes regarding performance of headache management behaviors in favor of the SET and IOT treatments versus a no-treatment control (NTC). In addition, participants in the SET group reported more frequent use of the headache diary to identify and avoid triggers as compared to both the IOT and NTC groups. Furthermore, a significant increase, albeit small, in self-efficacy beliefs immediately following treatment was observed among the SET participants. Theoretical explanations are offered below in relation to specific results.

Headache Self-Management Behaviors

SET patients reported more frequent use of the headache trigger diary than patients in both the IOT and NTC groups, whereas the SET and IOT videotape treatments proved similarly effective in increasing performance of both the deep-breathing/imagery relaxation exercise and stretching exercise as compared to a control condition at 1-month follow-up. These findings have important implications for providers and patients. Indeed, if information alone is sufficient to increase the frequency of behavioral performance, production of more elaborate theory-driven self-help behavioral treatments may be unnecessary. This line of reasoning, however, goes against health behavior researchers and practitioners who demonstrate that theory-driven interventions possess a better likelihood of effecting persistent change than interventions not grounded in theory.[10] Hence, the short follow-up period may serve as a more plausible explanation for the failure of the SET videotape program to emerge as the superior treatment format. Based on self-efficacy theory,[15] the SET patients who received self-efficacy skills training should develop stronger self-efficacy beliefs over time and persevere longer in their performance of the behaviors than the IOT subjects who received merely information. Thus, a longer follow-up period may have produced a different result in favor of the SET treatment.

Headache Management Self-Efficacy

Results showed that patients in the SET group reported higher self-efficacy scores at immediate posttest than patients in the NTC group. This difference, however, did not persist through the 1-month follow-up period. Consequently, the issue of a brief follow-up period likely applies here as well. In addition, because higher self-efficacy scores were reported immediately after showing of the videotape programs, predicted mean group differences may have persisted at the 1-month follow-up period if patients were subjected to repeated exposures to the videotape treatment over the course of the follow-up period.

Headache activity

Although not the primary focus of this study, participants were asked to monitor their headache activity over the course of the study. Post-hoc analyses failed to detect a significant group difference with respect to headache intensity or headache days in favor of the SET intervention at the 1-month follow-up period. Another reason for the lack of clinical findings may have been due to the fact that many of the patients in this sample suffered from severe headache problems. Indeed, based upon reported number of headache days, many of the patients had experienced "disease progression" in which their headaches had transformed from an episodic disorder into a chronic form.[27] Self-help treatments may best serve those patients who are highly motivated and have less complex headache problems.[5]

Limitations and Recommendations

This exploratory investigation generated findings that prompt the need for further study. However, to enhance generalizability and establish the clinical effectiveness of this or other self-help treatments, the limitations and strengths of the present study warrant attention in future study development.

Concerning limitations, future studies should incorporate a larger sample and longer follow-up period to increase the chances of detecting a larger effect. More homogeneous patient samples should be recruited so that patients vary less on the clinical parameters being assessed and thereby enhance the sensitivity of the design. In addition, because of limitations inherent to use of self-help interventions such as absence of corrective feedback and lack of motivation assistance following exposure to videotape treatment, highly motivated patients with less severe headache problems are the best candidates for self-help treatments.[5] Finally, self-help interventions should be made regularly available to patients in the clinic setting, as repeated exposure to treatment may prove more beneficial than a single exposure.

The strengths of the present study that should be replicated in future studies include the utilization of a prospective experimental design and comparison of behavioral self-help treatments with information-only treatments so as to control for the effects of information alone. Finally, self-help interventions should be grounded in health behavior theory to pinpoint theoretical variables of interest and effect longer lasting change.

<u>Implications for Practice</u>
Self-help treatments, through monitoring and practice of headache self-management behaviors, could enhance confidence in patients' ability to manage their headaches. Over time, such confidence could lead to greater behavioral proficiency and result in a number of positive clinical outcomes including reduction in headache activity, diminished reliance on medication, and less disability. On a clinical level, a SET videotape program, integrated as part of a clinic visit or to be used for home viewing, could enhance the effectiveness of an already existent pharmacological plan and serve as a valuable education and skills-training accompaniment for providers. In addition, allied health care providers can further enhance patient's headache self-management self-efficacy directly through the employment of different techniques based on the major sources of self-efficacy expectations (see Table 5). Finally, from a public health standpoint, behavioral self-help treatments could lessen the burden on the health care system via less medical visits, reduced workplace absenteeism, and increased productivity levels. Finally, self-help treatments could aid the many headache sufferers with limited or no access to clinic-based care.

Table 5: Major Sources of Self-Efficacy Expectations and Application Examples in Clinical Headache Management Practice

Source	Definition	Application Examples
Enactive experience/ Performance accomplishment	Patients perform or rehearse target behaviors.	· Patients role-play challenging situations in the presence of health care providers to enhance their confidence in taking correct medication appropriately · Patients and health care providers perform relaxation and/or flexibility exercises simultaneously
Vicarious experience/modeling	Patients watch others perform target behaviors without adverse consequences	· Patients observe patient models perform headache self-management behaviors (either directly in person or indirectly via showing of videotape segment) · Headache patients are provided with contact information for headache support group (by interacting with similar others, patients will experience increased confidence in their ability to perform target headache management behaviors)
Verbal persuasion	Patients are convinced through suggestion that they are able to perform the behavior	· Health care provider provides encouragement and praise (reinforcement) both during patients' performance of headache management behaviors and upon correct performance completion · Health care providers remind patients of their past successes regarding headache management when they dwell on perceived failures or deficiencies · Health care providers help patients set specific and realistic goals in trying new headache management behaviors · Health care providers help patients choose appropriate reinforcers/rewards for achieving goals.

Physiological/affective states	Patients perform relaxation methods to counter physical or emotional reactions that may negatively impact self-efficacy expectations concerning target behaviors	·	Health care providers teach patients, through brief examples, various strategies that help them to retain a positive problem orientation and avoid negative thoughts and subsequent emotional arousal during a headache attack (e.g., positive self-talk, relaxation, imagery, thought-stopping, positive relabeling, etc.)

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