



Benefits of an on-line migraine education video for patients with co-occurring migraine and depression

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ABSTRACT

Objective: To evaluate effects of an online, hour-long migraine education and management education program on health outcomes in people with migraine experiencing significant depressive symptoms.

Methods: Eligible individuals in the community with comorbid migraine and depressive symptoms ($n = 95$) participated in the 12-week study. Participants completed self-report questionnaires examining general functioning, headache-specific disability, migraine frequency, pain, and depressive symptoms, before, and at 2, 6, and 12 weeks following the migraine education and management program. Primary analyses evaluated change over time in each outcome, using individual linear growth curve models.

Results: After watching the migraine education and management video, there were significant effects of time (across all time points) for average pain level in the past 30 days ($b = -0.20, p < .001$), most intense pain level in the past 30 days ($b = -0.33, p < .001$) depression (Patient Health Questionnaire-8; $b = -0.28, p = .002$), and headache-specific disability (Headache Disability Inventory; $b = -1.32, p < .001$), such that each of these outcomes improved linearly over time.

Conclusions: A brief, online educational video is practical and effective and can lead to enhanced migraine knowledge and self-management skills and lessen the burden of migraine and concurrent depressive symptoms.

1. Introduction

Migraine is a chronic, debilitating pain disorder impacting approximately 38 million Americans [1]. Psychiatric disorders are highly prevalent among people with migraine [2–4], with depression occurring 3–5 times more often than in the general population [5–7]. Migraine-depression comorbidity poses a significant health concern, as it is associated with decreased quality of life, increased risk for suicidality, medication overuse, poorer response to headache treatment, and an overall worse prognosis [1, 3, 8–11]. Prospective studies suggest that the depression-migraine relationship is bidirectional, with each disorder increasing risk for the onset of the other [5] and undermanaged migraine contributing to increased depression severity.

Despite these findings, educational programs and treatments for *concurrent migraine and depression* are scarce; and patients with migraine often lack sufficient knowledge about their conditions to advocate for better care [12]. For example, epidemiologic studies suggest

approximately 38% of migraineurs need preventive pharmacotherapy; however, only 3–13% use such therapeutic agents [13]. Depression remains undertreated among people with migraine [13] and is often underrecognized as a health concern within this population. Studies examining the impact of psychotherapeutic or educational programs often exclude individuals with concurrent depressive symptoms, limiting generalizability and reach of these programs [14]. In addition, some psychotropics (e.g., antidepressants, anticonvulsants) have empirical support in treating migraine and comorbid depression; however, these have only modest efficacy and often cause intolerable side-effects [13].

Better management of migraine often requires understanding what migraine is, how it presents, what exacerbates it and how to treat it. For people with migraine, active participation in their care, including making significant changes to their lifestyle (e.g., healthy eating, regular exercise and monitoring of migraine triggers), and appropriate use of prophylactic and rescue medications can be imperative. It is, thus,

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not surprising that educational interventions improve health outcomes for people with migraine [15–18]. Several studies have examined traditional face-to-face educational programs. In one, adults with chronic tension-type, migraine, or mixed-etiology headaches, were randomized to a 1-session didactic headache management program or to treatment as usual. The headache management program consisted of: 1) a class developed to inform patients about headache types, triggers, and treatment options; 2) diagnosis and treatment by a professional with expertise in headache diagnosis and management (in accordance with US Headache Consortium guidelines); 3) proactive follow-up (over 6 months) by a case manager). At 6- and 12-month follow-ups, participants in the headache management program improved in disability, quality of life, depressive symptoms, measures of concern/worry about headache, and satisfaction with headache management, compared to controls [15]. In an open-label, prospective study, an educational and skills-based program for migraine patients (Mercy Migraine Management Program) led to 50% or greater reduction in headache frequency and improved quality of life over 12 months in nearly half of participants. Interestingly, improvements were greater among patients with more worry about their headaches at baseline. There were also significant improvements in worry about headaches, self-efficacy for managing headaches, and satisfaction with headache care [16]. Educational programs led by lay people with migraine have demonstrated similar improvements for migraine patients in headache frequency, severity and disability, as well as enhanced compliance with prophylactic therapy and decreased analgesic overuse, need for abortive therapy and healthcare utilization, compared to routine medical management [17].

Despite these positive findings, few studies have examined the value of illness education programs relying on advances in technology. Preliminary data suggest that computer-based training via a CD-ROM/DVD may have positive benefits. For example, patients who observed an animated migraine education video on CD-ROM/DVD in an office-based primary care setting (with nurses who introduced the educational material and were available for questions) significantly improved more than a no-education group in migraine-related knowledge ($\chi^2 = 13.85$, $P < .001$), confidence in their ability to manage migraine ($\chi^2 = 9.14$, $P < .05$), and satisfaction with their ability to treat migraine ($\chi^2 = 8.51$, $P < .05$) (18). *Online educational programs* may be a practical approach to reaching a greater number of people with migraine, as multiple locations allow their use and they are available to individuals where and whenever needed, as long as they have internet access. Moreover, they may be more cost effective and time-efficient than in-person trainings. To our knowledge, however, no studies of online educational videos for migraine management exist. Furthermore, there have been no studies of educational programs actively recruiting individuals from the community who have both migraine and significant depressive symptoms.

Thus, the aim of this study was to evaluate effects of an online migraine education program on general functioning, headache-specific disability, migraine frequency, pain, and depressive symptoms in people with migraine experiencing significant depressive symptoms. Given the bidirectional influence of migraine and depression, we hypothesized that an online migraine educational video would lead to improvements in both migraine-related and depressive symptoms, even though the video did not target depression management specifically.

2. Methods

This study was conducted entirely using email and online web links between 2013 and 2015. Study advertisements were placed on Researchmatch.org, the National Headache Foundation's clinical trials website, and in the National Headache Foundation magazine, *Head Wise*. The advertisement for the study read as follows:

Online Migraine Education Video Study: Adults ages 18 to 75 who have migraines and are experiencing distress are invited to participate

in a University of Iowa research study. The goal of the study is to assess whether a brief, 1-h video can lead to improvements in headache, mood, and quality of life. For more information, or to see if you are eligible, you may complete an online survey at [_](#) or you may call [_](#).

Participants were considered eligible if they 1) were between 18 and 75; 2) spoke English; 3) screened positive for migraine (i.e., a score ≥ 2) on the ID Migraine, a self-administered, highly sensitive, 3-item screen for migraine [19]; 4) reported 4–12 migraines over the previous month; 5) endorsed at least 5 of the 8 criteria on the Patient Health Questionnaire-8 (PHQ-8), a valid screening measure for depression in clinical studies [20, 21]; 6) had no history of brain injury or other serious medical illness; 7) had not started a psychotropic or headache medication in the previous 4 weeks; 8) had no history of schizophrenia, bipolar disorder, current substance abuse, or personality disorder; 9) had no expression of significant suicidal ideation; and 10) lived at least 90 miles from Iowa City (those *within* 90 miles were eligible for an ongoing in-person study for co-occurring migraine and depression).

Persons interested in the study either completed an online web-based survey (using a web-based survey tool called Qualtrics) or called a research coordinator to complete screening over the phone. Eligible participants were sent an email with a weblink to a consent document, a set of self-report measures detailed below, and a weblink to an hour-long educational video about migraine (provided as a supplement at the end of the article). This online educational video was an in-house production co-developed by our team and the audiovisual services provided by the University of Iowa. We used an interview format with a clinical health psychologist (senior author, LD) asking questions to a headache specialist (one of the senior authors, AR). The script of the video is based on educational material published in the official journal of the American Headache Society. This material is specifically tailored for patient education, using appropriate language and focusing on practical questions. The video covered a range of topics, including: 1) what is migraine?, 2) prevalence of migraine, 3) migraine symptoms, 4) stages of a migraine attack, 5) migraine triggers, 6) acute and prophylactic pharmacological and non-pharmacological treatment of migraine, 7) common mistakes with migraine treatment, 8) comorbid conditions common with migraine, 9) menstrual and menstrual-related migraine, 10) chronic migraine, and 11) keeping a headache diary. The video mentioned that comorbid depression can occur in migraine but did not address any other aspect of depression identification or management. Importantly, the key points discussed during the interview were transcribed at the bottom of the video every few seconds, summarizing the verbal information. The overall goal was to provide the participants with a better understanding of migraine and how it can be managed. The video was filmed in a professional office of one of the faculty members with bookshelves in the background and lasted 55 min. The video could be watched by participants at their leisure, but they were instructed to watch it within 1 week of receiving the weblink and to watch the entire video in 1 sitting. At the end of the video, participants were directed to provide feedback.

Participants who watched the video were also asked to complete online assessments 2, 6, and 12 weeks following the video. Participants were compensated with \$10 Amazon gift certificates after completing each assessment. This study was approved by the Institutional Review Board of the university.

2.1. Outcome measures

2.1.1. General functioning and headache-specific disability

General functioning was assessed with the World Health Organization Disability Assessment Schedule (WHODAS), a 36-item scale that assesses behavioral impairments as a separate domain from disease symptoms. It has demonstrated good reliability, validity and sensitivity to changes in functional status after treatment. Participants rank on a 5-point Likert scale, ranging from “mild” to “extreme/cannot

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