In-office Discussions of Migraine: Results from the American Migraine Communication Study

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BACKGROUND: Research indicates that successful migraine assessment and treatment depends on information obtained during patient and healthcare professional (HCP) discussions. However, no studies outline how migraine is actually discussed during clinical encounters.

OBJECTIVE: Record naturally occurring HCP-migraineur interactions, analyzing frequency and impairment assessment, and preventive treatment discussions.

DESIGN: HCPs seeing high volumes of migraineurs were recruited for a communication study. Patients likely to discuss migraine were recruited immediately before their normally scheduled appointment and, once consented, were audio- and video-recorded without a researcher present. Separate post-visit interviews were conducted with patients and HCPs. All interactions were transcribed.

PARTICIPANTS: Sixty patients (83% female; mean age 41.7) were analyzed. Patients were diagnosed with migraine 14 years and experienced 5 per month, on average.

APPROACH: Transcripts were analyzed using sociolinguistic techniques such as number and type of questions asked and post-visit alignment on migraine frequency and impairment. American Migraine Prevalence and Prevention Study guidelines were utilized.

RESULTS: Ninety-one percent of HCP-initiated, migraine-specific questions were closed-ended/short answer; assessments focused on frequency and did not focus on attention on impairment. Open-ended questions in patient post-visit interviews yielded robust impairment-related information. Post-visit, 55% of HCP-patient pairs were misaligned regarding frequency; 51% on impairment. Of the 20 (33%) patients who were preventive medication candidates, 80% did not receive it and 50% of their visits lacked discussion of prevention.

CONCLUSIONS: Sociolinguistic analysis revealed that HCPs often used narrowly focused, closed-ended questions and were often unaware of how migraine affected patients' lives as a result. It is recommended that HCPs assess impairment using open-ended questions in combination with the ask-tell-ask technique.

KEY WORDS: migraine; communication; prevention; sociolinguistics.

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INTRODUCTION

Migraine headache is a chronic, often disabling, condition which affects about 21 million females and 7 million males over the age of 12 in the USA¹. Although pharmacologic and behavioral interventions can substantially decrease migraine headache frequency, duration, and associated impairment, epidemiological studies have demonstrated that many migraineurs remain undiagnosed, while those with an official diagnosis may not receive appropriate treatment. The majority of migraineurs are less than completely satisfied with the care they receive² and many of those who have received some medical attention fail to continue treatment³. Identifying barriers to care is an important first step towards improving it. Better understanding of healthcare professional (HCP)-patient communication represents an important potential avenue to achieve optimal care of patients with migraine as well as other disorders^{4,5}.

In many respects, migraine is an ideal condition for studying clinician-patient communication, since identification and treatment largely depend on information obtained in conversation between patient and HCP. The diagnosis of the migraine patient is based solely on the medical history; neuroimaging and laboratory studies serve to exclude other causes but do not provide positive evidence in support of a migraine diagnosis⁶. Assessment of headache frequency, severity, and associated impairment are major determinants of optimal treatment and can be assessed only through dialogue^{7–11}. The American Migraine Prevalence and Prevention Study (AMPPS) demonstrated that 39% of patients suffering from migraine in the community are prevention candidates based on an algorithm using two headache history-derived parameters: headache days per month and headache-related

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impairment. This study also demonstrated that only 13% of candidates for prevention had such medication prescribed¹².

Communication is a key determinant of treatment outcomes in a range of therapeutic areas¹³, and many features of effective HCP–patient communication have been identified and studied. Although HCP–patient communication has been identified as an essential aspect of migraine care^{14–18} and self-report instruments such as MIDAS and HIT-6 have been developed to improve communication^{19–24}, empirical studies of in-office communication between migraineurs and HCPs have not been conducted. Prior studies show that despite the fact that clinicians ask about headache-related impairment infrequently²⁵, this information influences HCPs' assessment of headache severity and alters prescribing behavior.

To assess current in-office communication patterns and to identify opportunities for improved communication in migraine, an in-office linguistic study was conducted using accepted sociolinguistic methods^{26–28}. The goal of this study was to record and analyze HCP–patient interactions during office visits and evaluate the relationship between communication characteristics and visit outcomes, including choice of treatment and patient–HCP concurrence on treatment plan. The study was designed to provide an evidence base for developing techniques to improve communication and enhance outcomes of care for migraine, and by extension, for other conditions with similar clinical communication challenges. The study employed a unique strategy based on video-recording of actual in-office encounters, followed by separate semi-structured post-visit interviews of both patient and HCP(s), which were also video-recorded.

METHODS

The methods outlined below have been published elsewhere^{29–32}. Prior to study initiation, a steering committee consisting of migraine experts with an interest in communication was convened to discuss study objectives, methodology, and linguistic analyses, with the goal of studying language surrounding migraine in real-world office visits.

The study received Institutional Review Board approval in January 2004 and fieldwork was conducted from January through March 2004. Invitation letters were mailed to community-based primary care physicians (PCPs; $n=1,008$) and neurologists ($n=765$). Of the 148 practices that responded (86 neurologists; 62 PCPs), 22 met screening criteria (Text Box 1),

Text Box 1: Physician Screening Criteria

- Medical specialty: internal medicine, family practice, or neurology
- Years in practice > 2 and < 30
- Age: ≤ 60 years old
- ≥ 80% of time spent in direct patient care
- In private (vs. hospital-based or academic) practice
- ≥ 70% of patient base age 18 years or older
- ≥ 50 (neurologist) or ≥ 100 (PCP) patients treated in office per week
- ≥ 20 patients per week treated in-office for migraine

were available during the data collection phase and agreed to participate. Nurse practitioners (NPs) and physician assistants (PAs) in participating offices were invited to participate if they interacted with migraine patients through assessment, counseling, and/or prescribing medication separately from the physician. These interactions were included because prior research has suggested that NPs and PAs often play a major role in migraine care³³. A total of 14 PCPs, 8 neurologists, and 6 NP/PAs participated; physician demographics can be found in Text Box 2.

Text Box 2: Physician Demographics

- In practice an average of 15.5 years
- One PCP and three neurologists defined themselves as “headache specialists,” while the remainder of participating physicians were general practitioners
- Practices in California, Florida, Georgia, Illinois, Michigan, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Texas
- On average, write 11.4 beta blocker, 28.1 antidepressant and 26.6 antiepileptic prescriptions per week specifically for the treatment of migraine
- Received an honorarium of \$1,000–\$1,500

Field researchers spent 1–2 days in offices to collect data. Healthcare professionals or their office staff reviewed patient charts to determine which patients with regularly scheduled visits would be likely to discuss migraine during the visit. These patients were approached to participate in the study upon arrival. To increase the likelihood of discussions about preventive treatments, patients with more severe or more frequent migraines were recruited over those with less severe or less frequent migraines.

To minimize any minimal change in behavior that video- and audio-taping might produce³⁴ participants were informed that the study was about communication in migraine but were not informed about the specific focus on assessment of frequency and impairment, its relationship to discussions of migraine prevention, or the study sponsor.

Figure 1. Study design.

After obtaining written consent from all participants, the office visit was audio- and video-recorded without the researcher present in the exam room (see Fig. 1 for complete study methodology). A total of 78 patients were recorded and the 60 HCP–patient interactions containing a substantial discussion of migraine formed the study sample. Forty patients saw a PCP and 20 saw a neurologist (see Text Box 3 for patient demographics).

Text Box 3: Patient Demographics

- 10 males, 50 females
- Average age of 41.7
- 95% have insurance coverage
- 73% have prescription drug coverage
- Average of 3.4 comorbid conditions, most frequently:
 - Anxiety (47%), allergies (43%) and depression (43%)
- Patients have been diagnosed an average of 14 years
- Patients average 5 migraine episodes per month
- Patients average 20 “days” of headache over 3 months
- Patients experience 5.7 symptoms with severe headaches on average, most frequently:
 - Vomiting (87%), unilateral pain (82%), blurred vision (78%), and sensitivity to light (77%)
- Received an honorarium of \$75

Patients participated in individual semi-structured video- and audio-recorded post-visit interviews with the researcher immediately following office visits. To keep disruption to practice patterns at a minimum, HCPs participated in recorded post-visit interviews at the end of office hours. They answered general questions about migraine treatment and, utilizing patient charts as a reference, responded to specific questions about each patient who participated that day. These interviews, which did not include a review of the recorded office visit, addressed the participants’ perceptions of what was discussed during the visit and identified potential sources of HCP–patient miscommunication.

Recordings of the 60 doctor–HCP interactions and post-visit patient and HCP interviews were transcribed and analyzed using validated sociolinguistic techniques as described by Gumperz^{26,27} and elaborated upon by Hamilton²⁸. Sociolinguistic analysis is based upon identifying and classifying utterances using a variety of parameters. The unit of analysis can range from the frequency of specific individual words to paired statements to the overall architecture of a conversation. The sample size obtained in this study is comparable to other, widely accepted qualitative, social science research^{35–37}. In this study, transcripts were the principal source for analyses, as they allowed for a careful word-by-word examination of each conversation. Specific linguistic analyses included quantification of topics discussed and time spent on each; questions asked and answered; word-level analyses of key lexical items; and “open door/close door” of topics put forth or blocked in conversation. Descriptive statistics, principally frequencies and proportions, were applied to communication parameters of interest.

The relationships between preventive treatment initiated and/or discussed in visits and HCP–patient alignment on impairment and severity were examined in detail. Prevention candidacy was determined by applying the AMPPS guidelines³⁸. These guidelines rely upon two parameters:

1. headache frequency, expressed as headache days per month (30 days), based on an average of headache days over the last 3 months; and
2. headache-related impairment, rated using the three-category classification of “none”, “some”, or “severe or requiring bed rest”.

Patients were classified into one of three categories (prevention not indicated; consider prevention; and offer prevention) using these parameters (see Table 1 for AMPPS criteria).

RESULTS

The average visit was 12 min long ($n=60$; standard deviation 5.6 min; median 11.2 min). An average of 13 headache-related questions was asked by HCPs in each visit. As seen in other studies of HCP–patient communication³⁹ and in the following examples, the vast majority (91%) of questions during the migraine evaluation process were *closed-ended* (yes/no, short answer).

Example 1: Yes/No question; 31-year-old female and PCP

DOCTOR: Still at least a couple of times a month?
 PATIENT: Yeah.
 DOCTOR: Okay. Any more frequent than that?
 PATIENT: No.

Example 2: Short answer question; 48-year-old female and PCP

DOCTOR: And did you have nausea and/or vomiting whenever you had migraines?
 PATIENT: Sometimes I’ll have nausea. I’ve had vomiting maybe every 5 or 6 times, not always.

These HCP-initiated questions focused most often on attack frequency, which was asked about in 63% of visits (Table 2). Migraine prevention candidacy was most commonly assessed on the basis of attack frequency alone. By contrast, only 10% of visits addressed the issue of impairment—and those questions were also almost always closed-ended. For example,

Example 3: Question addressing impairment; 40-year-old female and neurologist

DOCTOR: Can you work through it, or you really have to stop?
 PATIENT: I have to stop. Yeah.

In contrast, when researchers used *open-ended* questions during the post-visit interviews, patients often revealed information focused on impairment that was not disclosed during the visit^{25,40–44}. These detailed, emotional responses provided a more complete and compelling picture of how disabling migraines really are for the patient. In the clinical context, such information would allow for a more complete assessment of the patient’s condition. Without the benefit of this additional information and despite having patient chart information as reference, HCPs often underestimated the impairment of migraine on the patient²⁵, as in the following examples:

Example 4a: Post-visit interview with 23-year-old female patient

INT: In your own words how do your migraines affect your daily life?
 PATIENT: [laughs] A lot. I can’t do anything and I miss work or I’d miss school and I’m a vegetable. I can’t do anything. I have to stay in bed and then I don’t want anyone to bother me.

Example 4b: Post-visit interview with PCP regarding 23-year-old female

INT: Okay. On a scale of 1 to 10 how would you rate this patient’s migraines where 1 is least severe and 10 is most severe?

Table 1. American Migraine Prevalence and Prevention Study (AMPPS) criteria

		Migraine Frequency (days/month [30 days])					
		0 – 1	2	3	4 – 5	6 – 10	11+
Degree of Impairment	Function normally						
	Some impairment						
	Severe impairment

Offer prevention
Consider prevention
Not required

DOCTOR: It sounded like it didn't really affect her. I guess she didn't go into a dark room and that, so it sounded like maybe like a 3 or 4.

Comparison of HCP and patient assessment of headache frequency (as determined by both parties in post-visit interviews) revealed significant disagreement in 55% of HCP–patient pairs, as illustrated in the following example:

Example 5a: Post-visit interview with 52-year-old female patient

INT: How many times would you say in the last year have you had a migraines? Not even necessarily have you come in here for it, just—

PATIENT: I probably have six to eight a month.

INT: At least eight a month?

PATIENT: At least. At least.

Example 5b: Post-visit interview with PCP (regarding 52-year-old female patient)

INT: Okay, how many migraines on average does she have a month?

DOCTOR: She has four a month.

HCPs also misjudged patients' level of impairment in 51% of cases. Taking into consideration information about frequency and impairment provided by patients in post-visit interviews makes it clear that many patients not on prevention when their visit was recorded were, in fact, prevention candidates. Specifically, 35 of the 60 patients were not on preventive therapy at the initiation of their visits. Of these 35 patients, 20 (57%) met AMPPS criteria for preventive treatment (Table 3). In half of these visits (10 of 20), migraine preventive therapy was not discussed. Prevention was discussed but not prescribed in 6 of 20 (30%) visits. However, these 6 discussions were minimal and did not include an offer of a new prescription for migraine preventive therapy. In most cases, HCPs confirmed past treatment regimens (*"what preventative things*

have you tried?") or briefly mentioned preventive therapy without describing it in detail. Only 4 (20%) of the 20 candidates for migraine prevention actually received it.

Since the discrepancy between patients' candidacy for preventive therapy and the prescriptions they actually received was not known until after the research had been conducted, post-visit interviews did not include questions addressing the issue of why prevention was or was not prescribed.

DISCUSSION

This study, the first to date using techniques of in-office recording and sociolinguistic analysis to study HCP–patient communication about migraine, reveals that HCPs primarily evaluate migraine and migraine prevention candidacy using closed-ended questions focusing on frequency. Relying almost exclusively on closed-ended questions limits patients' answers to primarily "yes/no" or short answer and does not give them the ability to convey their full experience. In addition, a focus on migraine *attacks* versus migraine *days* could cause HCPs to underestimate the number of days per month that a patient suffers from migraine.

Focusing heavily on frequency, with only 10% of questions dedicated to migraine impairment, leaves a crucial aspect of migraine assessment out of the conversation. It is perhaps not surprising then that over half of patients and HCPs were misaligned in post-visit interviews. Previous studies²⁵ have demonstrated that when HCPs received information about headache-related impairment in addition to symptoms, frequency, and pain intensity, their appreciation of the severity of the patient's migraines increased, as did the likelihood that they would prescribe migraine-specific medication with more aggressive follow-up.

While the degree of misalignment found in this study may seem high, similar findings have been seen in other therapeutic areas^{45–47} suggesting that narrowly focused questions

Table 2. American Migraine Communication Study (AMCS) Total Questions Asked by Topic

Question topic	Example	Number of visits in which asked	Percentage of visits in which asked
Headache frequency	About how often do you get the headaches?	38	63
Opening/background	So, how are the headaches?	38	63
Triggers	Do you know of anything that maybe causes your migraines?	32	53
Symptoms and associated features	Any nausea, vomiting?	29	48
Headache severity	Were they disabling or were you still able to function?	27	45
Location of pain	Do you normally have them localized to one side or the other?	25	42
Nature of pain	A pounding sensation or just pain?	24	40
Duration of migraine	How long do they last when you get these headaches?	22	37
Aura	Do you always have visual stuff before the headache?	21	35
History of migraine	You used to get them as a kid?	19	32
Family history	Do you have any history of people in your family having headaches like that?	13	22
Sinus headaches	Have you been getting a stuffy nose or a runny nose with it?	7	12
Migraine-related impairment	Do you ever miss work?	6	10
Total		57	95

about frequency may be a poor communication strategy for understanding the impact of symptoms on a patient's day-to-day experience and functioning.

Similar findings about preventive medication candidacy and discussion suggest that important opportunities for discussion are being missed as a function of HCPs' communication styles that limit discussion of symptoms to frequency of occurrence. Prior research in headache suggests that physicians' interpersonal style influences patient outcomes. For example, researchers at the University of Western Ontario found that patients' belief that they had discussed headache fully with an informed physician at the beginning of the relationship was a strong predictor of resolution at 1 year⁴⁸. It is clear from this and other studies that communication style and full exploration of headache symptoms positively influence outcomes of care including prevention and medication prescribing.

To improve in-office communication with migraine patients, it is recommended that HCPs integrate two patient-centered

communication techniques. First, HCPs should ask migraine patients one open-ended question to assess the level of disability and the impact of migraine on patients' daily lives, both during and between attacks⁴⁹. One example is to ask, "How do your migraines affect your daily life?" Other suggested questions can be found in Text Box 4.

There is evidence that the use of open-ended questions does not require significant additional time with patients⁵⁰. In addition, patient-centered interviewing, which includes the use of open-ended questions, has also been linked to higher levels of both patient and HCP satisfaction⁵¹⁻⁵³.

Second, HCPs should also utilize a technique sometimes called "ask-tell-ask"^{49,54,55} during clinical encounters to assess frequency as migraine *days* versus migraine *attacks*. A description of this technique can be found in Text Box 5.

Confirming migraine frequency in days rather than attacks can highlight HCP-patient misunderstandings and provide an opportunity to rectify them. These types of communication

Text Box 4: Suggested Open-Ended Questions

- How do migraines make you feel—even when you aren't having one?
- How does migraine impact your daily life?
- Can you describe the impact migraines have on your work, family, and social life?
- How does having migraine make you feel?
- Describe how your migraines affect you between attacks.

techniques have been shown to be efficient⁴⁷ and have been linked to higher levels of both patient and HCP satisfaction⁵⁰⁻⁵³.

A phase II study undertaken by our research team to measure the impact of these two communication strategies on outcomes such as visit length, prevention discussions and new prescriptions with appropriate candidates, and HCP/patient satisfaction has shown promising results that have been reported in poster form (unpublished data).

This study has several limitations. The proportion of migraineurs in primary care and neurology settings who are candidates for preventive medication has not been studied directly elsewhere. Patients in this clinical sample suffered

Text Box 5: Example of How to Use "Ask-Tell-Ask" to Assess Migraine Frequency

- **ASK:**
 - "How many migraines do you get each month?" and
 - "How long does each attack typically last?"
- **TELL: Re-phrase what you've heard and ask for confirmation from the patient**
 - "So, you get 3 attacks that last 2 days each—meaning that you are disabled 6 days a month."
- **ASK:**
 - "Is that right?"

Table 3. AMCS Patients Not on Prevention Who Should be Offered per AMPPS Criteria.

Outcome	Number of visits	Percentage of visits
No discussion, no Rx	10	50
Discussion, but no Rx	6	30
Discussion and new Rx	4	20
Total	20	100

n=20 patients who were not on prevention at the outset of the visit who would be deemed "offer preventive treatment" according to AMPPS criteria

from more severe and/or more frequent migraines than migraineurs in the general population. The AMPPS demonstrated that 25.7% of migraineurs in the community are candidates for migraine preventive therapy and an additional 13.1% warranted consideration of prevention¹². By contrast, in this sample, 41.7% of subjects were already on preventives, another 33.3% were candidates, and another 11.7% warranted consideration of prevention. The overall proportion of migraineurs in a mix of neurology and primary care settings who are candidates for prescription or consideration of prevention is likely to lie somewhere between the community prevalence documented in AMPPS and that observed in this study because previous studies demonstrate that both headache disability and frequency, the two parameters that determine prevention candidacy, are positively related to seeking care for migraine⁵⁶.

In addition, future studies could also shed light on how, and if, primary and subspecialty care practitioners differ in their communication patterns or the expectations patients have of their interactions with each type. Additional research should also delve more deeply into differences in communication based on the type of HCP (i.e., physician versus NP or PA). Finally, further research should examine the role of physician and patient age and ethnicity in migraine communication conversations.

CONCLUSION

Current in-office communication about migraine is characterized by closed-ended, HCP-initiated questions and a lack of both open-ended questions and discussion of migraine-related impairment. These characteristics likely contribute to an under-appreciation of the need for preventive medication for more than half of those patients who would likely have benefited from it. This study adds to a growing number of others that link specific elements of communication in the HCP-patient encounter with clinical outcomes⁵⁷. In particular, the communication deficits observed in the interactions studied can be easily rectified by adopting two patient-centered interviewing techniques:

1. an open-ended question to assess migraine impairment during and between attacks
2. the use of ask-tell-ask sequences to assess migraine frequency as days versus attacks

Use of these efficient and effective strategies in migraine visits should result in more appropriate appreciation of both migraine frequency and impairment as well as more successful identification of prevention candidacy. These techniques, while particularly useful in migraine visits, are equally applicable in many other chronic disease states, helping HCPs become more efficient communicators with all patient types.

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