

# Impact of physician empathy on migraine disability and migraineur compliance

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## Abstract

**Aims:** We aim to establish the role that perceived physician empathy plays in determining migraineurs' outcomes and compliance with migraine management plans. We checked for associations between perceived physician empathy and clinical outcomes as well as compliance with management plans. **Materials and Methods:** 63 migraineurs were enrolled between July and September 2011. Questionnaire administered at the time of inclusion into the study included self-assessment of disability due to migraine (Migraine Disability Assessment Test) followed by migraineurs' assessment of physician empathy (Consultation and Relational Empathy Measure). Three months later, a telephonic questionnaire ascertained changes in disability due to migraine and compliance with migraine treatment. **Statistical Analysis:** Data was entered in Microsoft Excel 2010 and analyzed using SPSS 17. Pearson's correlation was employed to analyze the significance of relationship between variables. *P*-value of less than 0.05 has been considered statistically significant. **Results:** Statistically significant positive Pearson's correlations are seen between perceived empathy and decrease in migraine disability and symptoms over three months ( $P < 0.05$ ). Significant positive relationships are also seen between perceived empathy and compliance with diet/meal timings, exercising, de-stressing/sleep pattern modification and medications ( $P < 0.05$ ). Self-reported compliance is significantly correlated with improved patient outcomes ( $P < 0.05$ ). **Conclusions:** Substantial positive associations are found between perceived physician empathy and migraineurs' outcomes and compliance with management plans. This emphasizes the importance of empathy in migraineur-physician communication.

## Key Words

Empathy, headache, migraine disorders, patient compliance

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## Introduction

Migraine is a common, but under-diagnosed and under-treated disorder.<sup>[1]</sup> The unpredictable attacks can make it difficult to plan or participate in social events or fulfill work responsibilities. Besides effective pain relief, migraineurs also need an explanation of the cause of the migraine and reassurance that their headache pain does not have a more sinister cause. By spending time with patients and taking a full history of their migraine condition, the physician can propose a management strategy that is appropriate to each individual patient, thus providing a tailored-care approach. Thorough exploration of possible trigger factors for migraine and advice on avoidance may help to reduce attack frequency.

It is important for the physician to establish that the patient understands any instructions given.<sup>[2]</sup>

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 physician.<sup>[3]</sup> Diagnosis of the migraine patient is based solely on the medical history; neuro-imaging and laboratory studies serve only to exclude other causes.<sup>[4]</sup> Assessment of headache frequency, severity, and associated impairment are major determinants of optimal treatment and can be assessed only through dialogue.<sup>[5,6]</sup>

Physician-patient communication has been identified as an essential aspect of migraine care.<sup>[7,8]</sup> Empathy is a powerful tool that health professionals can use to deliver care that is adapted to an individual's emotional, cognitive, and biological needs.<sup>[9]</sup> Mercer<sup>[10]</sup> interprets clinical empathy as an ability to: (a) understand the patient's situation, perspective and feelings (and their attached meanings); (b) to communicate that understanding and check its accuracy; and, (c) to act on that understanding with the patient in a helpful (therapeutic) way.

We can surmise that if a patient perceives their physician to be

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empathic, it would help them to begin the therapeutic process. Yet there is a lack of empirical data supporting the association between physicians' empathy and tangible clinical outcomes as well as compliance with treatment. Commonly, compliance is said to be achieved when patient's behaviors (in terms of taking medication, following diets, or executing life style changes) coincide with healthcare providers' recommendations for health and medical advice.<sup>[11]</sup>

Our study aims to establish the role that perceived physician empathy plays in determining migraineurs' outcomes and compliance with migraine management plans. We will check for associations between perceived physician empathy and clinical outcomes as well as compliance with management plans.

## Materials and Methods

### Study type

This is a prospective co-relational study.

### Study population

The study sample comprised 63 migraineurs referred to us by physicians from different medical centers in urban Mumbai, India. Patients were enrolled for the study between July and September 2011.

### Selection criteria

(1) Female patients who wished to participate/be co-operative and facing no communication barrier. (2) Female patients over 18 years of age only. (3) Patients referred by a physician immediately after the referring physician reached a diagnosis of migraine and within one month of consulting the referring physician for the first time. (4) Only patients diagnosed with common migraine without aura were included. At the time of inclusion in study, the diagnosed trigger factors had to be stress or menses or be unknown. (5) Patients with any complicating illness which could manifest with psychiatric, neurological and/or ophthalmic signs and/or symptoms were excluded.

### Ethical consent

Institutional Review Board (IRB)/Ethics Committee approval was obtained before proceeding with this study. The study was carried out as per the tenets of the 1964 Declaration of Helsinki. Participation was voluntary and no incentives were provided. Informed consent was taken from the patients before their inclusion in the study and they were assured of the confidentiality of their answers. Referring physicians were also expressly assured of confidentiality.

### Methods

Participating physicians were blinded. They requested adult female migraineurs with no complicating illnesses only to participate in a study on migraine. Physicians supplied no further information. Agreeable patients were referred to a primary investigator to learn further detail. The primary investigator ensured the patient met all inclusion criteria and obtained an informed consent before proceeding with the study. Initial interviews were conducted between July-September 2011. A questionnaire administered at the time of inclusion into the study included self-assessment of disability due to migraine followed by migraineurs' assessment of

physician empathy. Participants were then contacted after three months. Patients that had changed their primary physician, that is visited another physician to treat migraine were excluded from the sample. The respondents eligible for continued inclusion in the study then answered a telephonic questionnaire. This second questionnaire ascertained changes in disability due to migraine and compliance with migraine treatment.

The questionnaire included the following measures. For a copy of the complete questionnaire, please contact the corresponding author.

### Migraine disability assessment test

The Migraine disability assessment (MIDAS) Questionnaire<sup>[12]</sup> was developed to assess headache-related disability with the aim of improving migraine care. Headache sufferers answer five questions, scoring the number of days, in the past three months, of activity limitations due to migraine. MIDAS captured information on missed days of work, household chores, non-work activity and days with substantially reduced productivity over a three-month period. A total score is calculated by adding the five headache-related disability items together. Higher scores indicate increased disability due to headache. Two further questions reveal the number of days of headache over the same three month period and the severity of the pain. Studies<sup>[12]</sup> show the MIDAS Questionnaire to be highly reliable and correlate with physicians' clinical judgment. Its use may improve physician-patient communication about headache-related disability and may favorably influence health-care delivery for migraine patients.

### Consultation and relational empathy measure

The Consultation and relational empathy (CARE) measure<sup>[13]</sup> is a consultation process measure developed by Dr. Stewart Mercer and his colleagues at Glasgow University and Edinburgh University. It was based on a broad definition of empathy in context of a therapeutic relationship within the consultation. The scoring system for each item is 'poor' = 1, 'fair' = 2, 'good' = 3, 'very good' = 4 and 'excellent' = 5. All ten items are then added, giving a maximum possible score of 50, and a minimum of 10. Up to two "Not Applicable" responses or missing values are allowable, and are replaced with the average scores for the missing items. Questionnaires with more than two missing values or "Not applicable" responses are removed from the analysis.

### Calculation of total compliance score

Participants were asked if they were compliant with their doctors' instructions regarding four items based on a broad definition of compliance.<sup>[11]</sup> These four items were (1) diet/ meal timings, (2) exercises/ exercising, (3) de-stressing/ sleep pattern modification, (4) consumption of medications/ vitamins. The scoring system for each item is 'yes, always' = 1, 'often' = 2, 'sometimes' = 3, 'rarely' = 4, 'no, never' = 5 and 'no instructions were given in this regard' = 6. Up to one "Not Applicable" response is allowable, and is replaced with the average score for the missing item. Questionnaires with more than one "Not Applicable" response are removed from the analysis. All four items are then added to give the Total Compliance Score.

### Statistical analysis

Categorical variables are presented as percentages, and continuous variables are presented as mean values. The data was entered in Microsoft Excel 2010 and analyzed using SPSS 17. Pearson's correlation co-efficient 'r' reflecting the degree of linear relationship between two continuous variables has been employed to analyze the significance of relationship between variables. A p-value of less than 0.05 has been considered statistically significant.

### Results

Of the 63 migraineurs invited to participate, we excluded four subjects for having visited another physician for migraine treatment since the first interview. Of the remaining 59 migraineurs, we were able to contact 53 by telephone for the second interview.

Respondents' ages ranged from 20 to 55 years with a mean of  $37 \pm 8$  (SD) years.

At the time of inclusion into the study, menses were a trigger for 45% of our respondents, stress was a trigger for 32% of our respondents and 23% respondents had unknown triggers for their migraine.

Participants' responses to the MIDAS test (MIDAS Score I) and CARE measure in the initial interview are documented in Table 1. Respondents were then interviewed on the telephone at a mean of  $97 \pm 5.5$  (SD) days after initial contact. MIDAS Score II was obtained. [Table 1] During this telephonic interview, questions were also asked to determine Total Compliance Score [Figure 1].

A positive Pearson's correlation was seen between age and improvement in MIDAS score ( $r = 0.061$ ,  $P = 0.332$ ). On the other

hand, a negative Pearson's correlation was seen between age and total compliance ( $r = 0.033$ ,  $P = 0.408$ ). Similarly, a negative Pearson's correlation was seen between age and CARE score ( $r = -0.056$ ,  $P = 0.345$ ), but none of these correlations were statistically significant ( $P < 0.05$ ).

We correlated CARE Scores with overall improvement in MIDAS scores, decrease in days of headache and decrease in pain. The results, tabulated in Table 2, show statistically significant Pearson's correlations between perceived empathy and improved patient outcomes. Significant positive Pearson's correlations between overall compliance and CARE scores are shown in Table 3. Table 4 shows significant positive Pearson's correlations between all components of compliance and overall improvement in migraineurs' symptoms.

### Discussion

Researchers report several differences in clinical communication

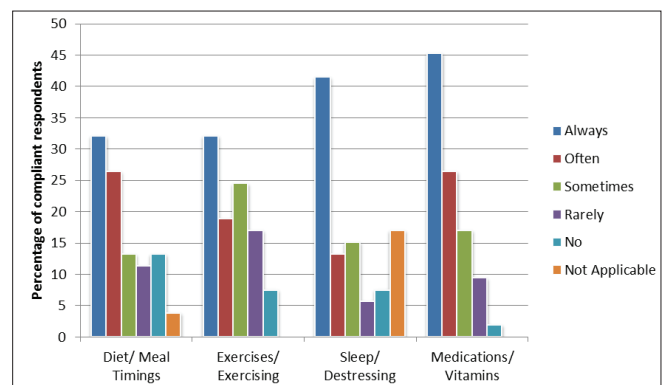


Figure 1: Self-assessment of compliance with physicians' instructions regarding migraine management

Table 1: Data obtained at initial interview

|  | Minimum | Maximum | Mean  | Standard deviation |
|--|---------|---------|-------|--------------------|
| Initial Interview  |         |         |       |                    |
| MIDAS Score I  | 12      | 41      | 24.72 | 8.35               |
| On how many days in the last 3 months did you have a headache?     | 8       | 19      | 11.94 | 2.98               |
| On a scale of 0 - 10, on average how painful were these headaches? | 8       | 10      | 9.19  | 0.68               |
| CARE Score   | 10      | 45      | 29.49 | 10.88              |
| Interview after 3 months   |         |         |       |                    |
| MIDAS Score II   | 4       | 38      | 14.91 | 9.01               |
| On how many days in the last 3 months did you have a headache?     | 2       | 16      | 7.08  | 3.79               |
| On a scale of 0 - 10, on average how painful were these headaches? | 2       | 9       | 5.38  | 2.68               |

$n = 53$ , MIDAS = Migraine disability assessment test, CARE = Consultation and relational empathy measure

Table 2: Pearson's correlations between CARE score and overall improvement in migraine

|  | CARE score            |        |
|--|-----------------------|--------|
| Decrease in MIDAS Score                  | Pearson's Correlation | 0.855* |
|  | Sig.                  | 0      |
| Decrease in number of days with headache | Pearson's Correlation | 0.9*   |
|  | Sig.                  | 0      |
| Decrease in pain intensity of headache   | Pearson's Correlation | 0.967* |
|  | Sig.                  | 0      |

$n = 53$ , MIDAS = Migraine disability assessment test, CARE = Consultation and relational empathy measure, \*correlation is significant at the 0.05 level, 1-tailed

**Table 3: Pearson's correlations between CARE score and compliance**

|   |                       | CARE score |
|---|-----------------------|------------|
| Compliance with instructions regarding changes in diet/ meal timings                  | Pearson's Correlation | 0.89*      |
|   | Sig.                  | 0          |
| Compliance with instructions regarding exercises/exercising                           | Pearson's Correlation | 0.927*     |
|   | Sig.                  | 0          |
| Compliance with instructions regarding ways to de-stress / sleep pattern modification | Pearson's Correlation | 0.856*     |
|   | Sig.                  | 0          |
| Compliance with instructions regarding consumption of medications/ vitamins etc       | Pearson's Correlation | 0.894*     |
|   | Sig.                  | 0          |
| Total Compliance Score  | Pearson's Correlation | 0.963*     |
|   | Sig.                  | 0          |

*n* = 53, MIDAS = Migraine disability assessment test, CARE = Consultation and relational empathy measure, \*correlation is significant at the 0.05 level, 1-tailed

**Table 4: Pearson's correlations between compliance and overall improvement in migraine**

|   |                       | Decrease in MIDAS Score | Decrease in number of days with headache | Decrease in pain intensity of headache |
|---|-----------------------|-------------------------|--|--|
| Compliance with instructions regarding changes in diet/ meal timings                  | Pearson's Correlation | 0.815*                  | 0.801*                                   | 0.857*                                 |
|   | Sig.                  | 0                       | 0  | 0                                      |
| Compliance with instructions regarding exercises/exercising                           | Pearson's Correlation | 0.849*                  | 0.861*                                   | 0.884*                                 |
|   | Sig.                  | 0                       | 0  | 0                                      |
| Compliance with instructions regarding ways to de-stress / sleep pattern modification | Pearson's Correlation | 0.755*                  | 0.766*                                   | 0.817*                                 |
|   | Sig.                  | 0                       | 0  | 0                                      |
| Compliance with instructions regarding consumption of medications/ vitamins etc       | Pearson's Correlation | 0.808*                  | 0.811*                                   | 0.853*                                 |
|   | Sig.                  | 0                       | 0  | 0                                      |
| Total Compliance Score  | Pearson's Correlation | 0.872*                  | 0.875*                                   | 0.921*                                 |
|   | Sig.                  | 0                       | 0  | 0                                      |

*n* = 53, MIDAS = Migraine disability assessment test, CARE = Consultation and relational empathy measure, \*correlation is significant at the 0.05 level, 1-tailed

by gender and there are controversial findings regarding gender bias in diagnosis and treatment.<sup>[14]</sup> Physicians are more interpersonally engaged with patients who are more affectively expressive, and patients who ask questions elicit more information.<sup>[15,16]</sup> These patient characteristics slightly favor the likelihood of female patients receiving more information and developing warm, friendly relationships with their clinicians.<sup>[14]</sup> To avoid gender bias in our study sample and as migraine has higher prevalence in women worldwide; we chose to include only female migraineurs. Co-incidentally every referring physician was male, eliminating gender bias in patient-physician relationships in our study. Only migraineurs with certain triggers and common migraine without aura were included to give the sample uniformity. This led to comparable management plans and total compliance scores.

In our study, migraineurs' ages did not have any significant correlation with perceived physician empathy, their subsequent improvement or compliance with management plan. Jin, Sklar, *et al.*<sup>[17]</sup> reviewed more than thirty articles related to the influence of age on therapeutic compliance. The majority of these articles showed that age was related to therapeutic compliance, although a few researchers found age not to be a factor causing non-compliance. Age was not found to affect compliance with prescribed medication in another survey.<sup>[18]</sup> An investigation of medication compliance<sup>[19]</sup> in headache patients found that age was not predictive for either compliance or non-compliance.

Statistically significant positive Pearson's correlations are seen between CARE Scores and decrease in migraine disability and symptoms over three months ( $P < 0.05$ ). [Table 2] Thus, a significant positive relationship exists between perceived physician empathy and improved patient outcome in our study. Stewart<sup>[20]</sup> reviewed several articles to ascertain whether physician-patient communication makes a significant difference to patient health outcomes. Most of the studies reviewed demonstrated a correlation between effective physician-patient communication and improved patient health outcomes. Raker *et al.*<sup>[21]</sup> discovered that when patients perceive clinicians as empathetic, the severity, duration and objective measures (IL-8 and neutrophils) of the common cold significantly change. A study<sup>[22]</sup> involving diabetic patients confirmed the hypothesis of a positive relationship between physicians' empathy and patients' clinical outcomes, suggesting that physicians' empathy is an important factor associated with clinical competence (physician competence) and patient outcomes.

Significant positive relationships are seen between perceived empathy and compliance with diet/meal timings, exercising, de-stressing/sleep pattern modification and medications [Table 3]. A statistically significant positive correlation is present between perceived empathy and self-reported total compliance with the management plan. [Table 3] The rate of adherence among headache patients has generally been found to be poor. Misuse or overuse of symptomatic medication has been

demonstrated to contribute to treatment failure, and one-fourth to one-half of patients are noncompliant with prophylactic headache medications and at least 40% non-adherent with appointment-keeping.<sup>[23]</sup> Physician communication or the lack of it is probably one of the most important factors for patient non-compliance.<sup>[24-26]</sup> In Spierings and Miree's telephone survey<sup>[27]</sup> of headache patients, amongst those who had not complied with the recommended follow-up visit, 60.3% claimed dislike of the clinician seen and seeking care elsewhere as a reason. Patient-perceived physician empathy significantly influenced patient satisfaction and compliance via the mediating factors of information exchange, perceived expertise, inter-personal trust, and partnership in a Korean hospital out-patient department.<sup>[28]</sup>

From Table 4, we infer that self-reported compliance is significantly correlated with decrease in migraine disability and symptoms. Significant positive relationships are seen between improved patient outcome and compliance with diet/meal timings, exercising, de-stressing/sleep pattern modification and medications. In Gaul, van Doorn, Webering, *et al.*'s headache study<sup>[29]</sup> in Germany, adherence to more than five of eight lifestyle change recommendations was associated with a significant reduction in headache frequency and  $\geq 50\%$  reduction of headache days per month. A group of Albanian clinic-based migraine patients was given a standardized course of didactic instruction regarding migraine biogenesis and management. In comparison to a control group, they were more compliant with prophylactic therapy prescribed and experienced a reduction in mean headache days per month and a greater reduction in functionally incapacitating headache days per month.<sup>[30]</sup>

Study limitations include relying solely on patient reports which may have led to confounding. With self-reported compliance, we cannot predict the extent to which reported levels of compliance reflect actual patient behavior or a tendency to give desirable responses. We examined only a few patients per physician and were unable to establish a control group. Respondents varied in their social, economic and educational backgrounds and this has not been related with their perception of empathy or treatment compliance.

Our study found substantial positive associations between perceived physician empathy and migraineurs' outcomes and compliance with management plans. This emphasizes the importance of empathy in migraineur-physician communication. We believe ours is the first study to discover strong associations between perceived physician empathy and migraineur outcome and compliance. Similar studies in multiple centers would help establish physician empathy as a core component of migraine management. In a broader context, our results provide a foundation for future research to establish the role of empathy in improving compliance and treatment outcomes across specialties.

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