

# Impact of Migraine and Tension-Type Headache on Life-Style, Consulting Behaviour, and Medication Use: A Canadian Population Survey

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**ABSTRACT:** A large sample of Canadian adults was surveyed by telephone to determine the prevalence and characterization of headache, and the effects of headache on life-style, consulting behaviours and medication use. We reported prevalence and characterization in a previous issue; here, we detail the effects of headaches on sufferers. Sixteen and one-half percent of adult Canadians experience migraine and 29% tension-type headaches. In over 70% of headache sufferers interpersonal relationships are impaired. Regular activities are limited in 78% of migraine attacks and 38% of tension-type headaches. Despite this, only 64% of migraine and 45% of tension-type headache sufferers had ever sought medical attention, and of these only 32% returned for ongoing care. Fourteen percent of migraine and 8% of tension-type headache sufferers had used emergency departments. Most headache sufferers take medication, primarily over-the-counter varieties. Measures to reach the headache population are needed, as are safe effective treatment options that will encourage them to participate in their medical care.

**RÉSUMÉ:** Impact de la migraine et de la céphalée de tension sur le mode de vie, les habitudes de consultation et l'utilisation de médicaments: une étude canadienne de population. Nous avons effectué une enquête téléphonique auprès d'un échantillon important d'adultes canadiens pour déterminer la prévalence et le type de céphalée, ainsi que les effets de ces céphalées sur le mode de vie, les habitudes de consultation et la médication utilisée. Nous avons rapporté la première partie de cette étude dans une publication antérieure; nous rapportons ici les effets des céphalées chez ceux qui en souffrent. Seize et demi pourcent des adultes canadiens souffrent de migraine et 29% de céphalée de tension. Chez plus de 70% des individus qui souffrent de céphalée, les relations interpersonnelles en sont affectées. Les activités courantes sont limitées lors de 78% des accès de migraine et de 38% des accès de céphalée de tension. Malgré cela, seulement 64% des individus qui souffrent de migraine et 45% de ceux qui souffrent de céphalée de tension ont déjà consulté un médecin à ce sujet et parmi ceux-ci, seulement 32% ont maintenu le suivi. Quatorze pourcent de ceux qui souffrent de migraine et 8% de ceux qui souffrent de céphalée de tension ont consulté un département d'urgence. La plupart de ceux qui souffrent de céphalée utilisent une médication, surtout une médication sans ordonnance. Il est nécessaire de mettre en place des mesures visant à informer la population qui souffre de céphalée et de lui fournir des options thérapeutiques sécuritaires pour l'encourager à participer à ses propres soins médicaux.

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An extensive survey was done to characterize certain aspects of headache among adult Canadians. It comprised three components: a prevalence study, an interview study and a diary study.

The findings of the prevalence study have been previously reported.<sup>1</sup> Among the findings in this study were a migraine headache prevalence of 14% and a tension-type headache prevalence of 36%, based on International Headache Society (IHS) diagnostic criteria. An additional 14% reported suffering from both migraine and tension-type headaches at different times.

After adjustment for methodological bias, the estimated prevalence of migraine was 16.5% and of tension-type headache, 29.5%. The frequency of headache occurrence was approximately 21 episodes per subject per year for both migraine and tension-type headaches. As expected, migraine headaches were more common among females and among adults between 25 and 44 years of age. No correlation between migraine or tension-type headache prevalence and income group was found. Disability extensive enough to cause cancellation of normal

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activities during an attack was recorded for 50% of migraine headache sufferers and 18% of tension-type headache sufferers.

This article reports additional findings from the prevalence study as well as the findings from the interview and the diary studies. Among the issues addressed are: effect of headaches on relationships and life-style, consulting behaviour of headache sufferers and medication use by headache sufferers (both prescription and over-the-counter medications).

## METHODOLOGY

### Sample

#### Prevalence Study

The population-based survey of headache prevalence included only adults 15 years of age or older and was conducted between August 1989 and April 1990. The survey sample was derived from 24,159 households called using a modified random-digit-dial telephone sampling procedure; existing prefix codes for the first three digits of a telephone number were selected and the last four digits were randomly selected by computer. In households with more than one headache sufferer, the interview was limited to the sufferer with the most recent birthday.

Of the 24,159 numbers telephoned, no contact was made with 16,674 despite four callbacks. An additional 983 households contacted were not eligible because parents of 15- to 17-year-old headache sufferers did not permit their children to participate, a language or other communication barrier (e.g., deafness) existed or the number belonged to a business or facsimile machine. Another 3,597 households contacted elected not to participate (Figure 1).

In the remaining 2,905 households, a responder was eligible and willing to participate in the survey. Among these 2,905 households, there were no headache sufferers in 1,164, and in 168 households the only headache sufferers were younger than 15 years. This left 1,573 households with a headache sufferer available for the interview and diary studies (Figure 2).

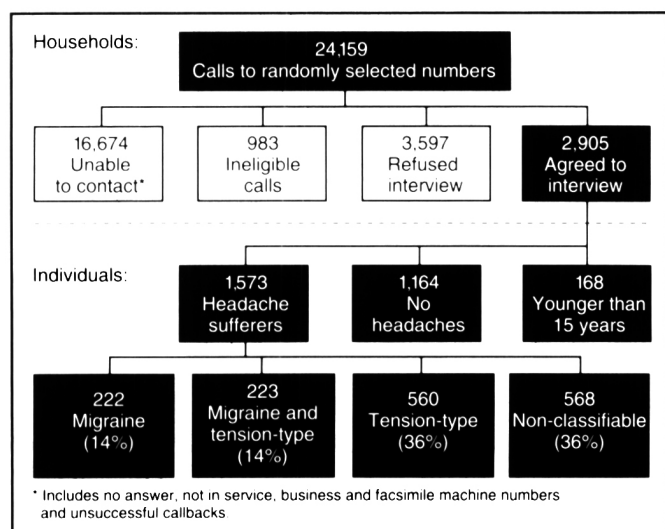


Figure 1 — Headache prevalence among adult Canadians from telephone survey. Non-classifiable subjects were those not meeting criteria for either migraine or tension-type headache (see text for explanation).

#### Interview and Diary Studies

A sample comprising 138 migraine sufferers and 83 tension-type sufferers was randomly selected for the interview study from the 445 migraine and 783 tension-type headache sufferers identified within the 1,573 households eligible to participate. In the remaining 345 subjects, the headache type determined did not completely fulfill the criteria for migraine nor for tension-type headache. By random selection, 95 migraine headache sufferers and 55 tension-type headache sufferers were recruited to take part in an additional diary study (Figure 2).

#### Demographics

Data on sex, age, education, income, employment status and language were compared to standard Canadian national figures. The national figures were derived from the most recent Statistics Canada Census.<sup>2</sup>

#### Data Collection

##### Prevalence Study

Classification of headache as migraine or tension-type was determined using IHS criteria (Table 1). Specifically, IHS criteria 1.1 and 1.2 were used to classify migraine headache, excluding the sections requiring neurological examination to rule out underlying pathology, and excluding migraine variants, such as retinal migraine. IHS categories 2.1 and 2.2 were used to classify headaches as tension-type; sections requiring neurological examination to rule out underlying pathology were again excluded as was tension-type headache associated with disorders of the cranial muscles. For a definite classification of IHS migraine or IHS tension-type headache, it was necessary for respondents to score at least three "points" as listed in Table 1. Migraine or tension-type headaches of less than three points were not classified as IHS headaches and are not considered in this report.

Descriptions of symptoms corresponding to the IHS criteria used were presented in random order. The responders were asked to characterize the symptom as having occurred "ever", "within the last year", or "within the last month". Responders whose headaches matched one of those described were asked for the additional information as listed in Table 2 in separate, detailed interviews. Additionally, information concerning consulting behavior, medication use and family history was gathered.

##### Interview Study

The 221 headache sufferers randomly selected for the interview study were contacted again 3 months after completion of the prevalence study. The interview focused on their attitudes toward their condition, treatment options, medications used, the effect of headache on their lives and their incentive to seek medical attention. Those interviewed were asked whether they agreed to specific statements made about their headaches, physicians and headache remedies. Standardized questions addressed headache history, consulting behaviour and current medication usage.

##### Diary Study

The 150 headache sufferers recruited to participate in the diary study recorded answers to specific questions daily for the 3-month period of January through March 1990. If the answer to the first daily question, "Did you have a headache today?" was

yes, additional information about the headache was requested concerning its impact on activities and medication use.

### Data Analysis

Data analysis is largely descriptive. The prevalences of migraine and tension-type headache, as defined by the IHS criteria listed in Table 1, were calculated and adjusted to national census averages by weighing age, sex and geographic location accordingly.<sup>3</sup> Cluster analysis was used on some of the subjective data obtained from the interview study in an attempt to derive meaningful categories. Differences between proportions of groups were tested for statistical significance with a chi-square test. Differences between measures of central tendency

(e.g., means) were tested for statistical significance with Student's *t*-test.

## RESULTS

### Effect on Relationships and Life-Style

Headaches affected relationships with family, friends and colleagues in a high proportion of the headache sufferers interviewed. The proportion of headache sufferers reporting that physical relationships with their partners were impaired by headache was similarly high. As shown in Figure 3, at least three-quarters of both migraine and tension-type headache sufferers interviewed reported that headaches affected those

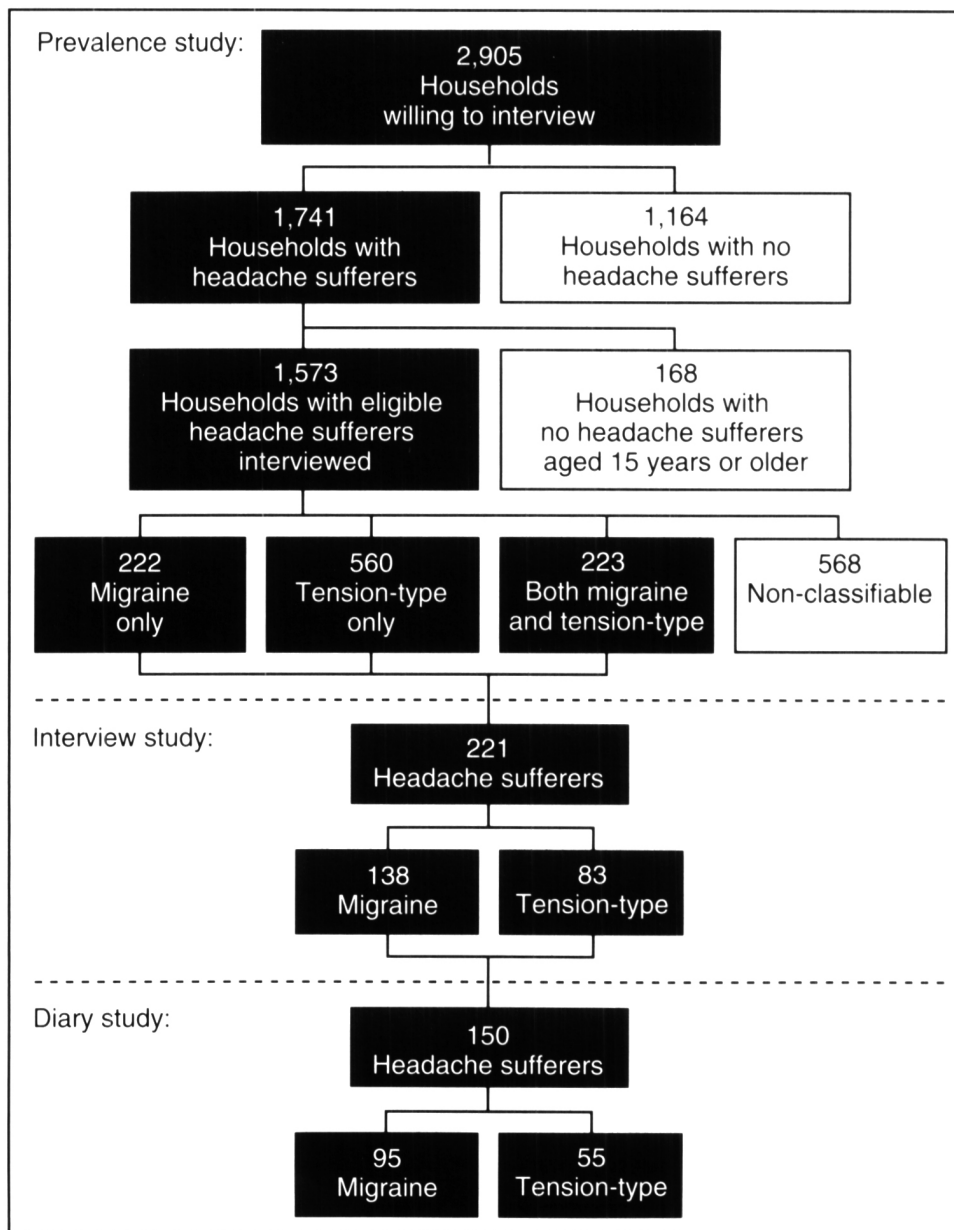


Figure 2 — Study samples for prevalence, interview and diary study components of survey.

**Table 1: Headache Descriptions and Classification**

Descriptions	4-point diagnostic classification (1 point each)
<p><b>Migraine: Pain symptoms</b></p> <p>Painful on only one side of head (left or right) Pulsating or throbbing type of pain</p> <p>Pain worsens upon normal movements (e.g., bending down or climbing stairs)</p> <p>Moderate to severe pain which makes it more difficult or impossible to get through your normal day</p>	<p><b>Classify as migraine if score is &gt; 3</b></p> <p>Two or more migraine pain symptoms experienced Two of these symptoms occurring more than five times with this headache type Any of the following symptoms always or often experienced with this headache type: nausea, vomiting or photophobia and phonophobia This headache type lasting 4 to 72 hours if untreated or treated unsuccessfully</p>
<p><b>Tension-type: Pain symptoms</b></p> <p>Painful on both sides of, or right across front or back of head Pressing or tightening type of pain, like a band around head Pain which remains practically unchanged whether standing, climbing stairs or moving Mildly or slightly painful, but does not prevent normal daily work</p>	<p><b>Classify as tension-type if score is &gt; 3</b></p> <p>Two or more tension-type pain symptoms experienced Two symptoms occurring 10 or more times previously This headache type lasting 30 minutes to 7 days</p> <p>Neither nausea nor vomiting ever experienced with this headache type Photophobia and phonophobia not experienced concurrently</p>

**Table 2: Information Sought from Responders Matching One or More IHS\* Symptoms for Migraine or Tension-Type Headache.**

<b>Headache characteristics</b>
Presence or absence of each IHS pain symptom
Presence or absence of nausea, vomiting, photophobia and phonophobia
Headache duration
Headache frequency
Degree of disability
Presence or absence of warning symptoms
Duration and frequency of occurrence
Headache type
<b>Degree of disability</b>
None
Somewhat limited: able to continue daily activities
Moderately limited: unable to continue daily activities, but not requiring bed rest
Severely limited: requiring bed rest

\* International Headache Society

relationships. Approximately 35% of headache sufferers interviewed indicated that headache influenced social plans, approximately 40% admitted to being worried about the possible occurrence of headache at a future event, and approximately 45% worried about driving because of headache. About 50% of subjects believed their headaches had an effect on their families.

Diary data indicated that headaches often limited the degree to which headache sufferers could engage in regular activities; migraine headaches appeared to be more limiting than tension-type headaches. Overall, limitations on regular activities occurred with 78% of the migraine headaches, but only with 38% of tension-type headaches occurring during the diary study (Table 3). Forty-seven percent of the migraine headaches and 26% of the tension-type headaches reported were associated with some limitation, yet allowed the headache sufferer to continue daily activities. Limitation, to the degree that either daily

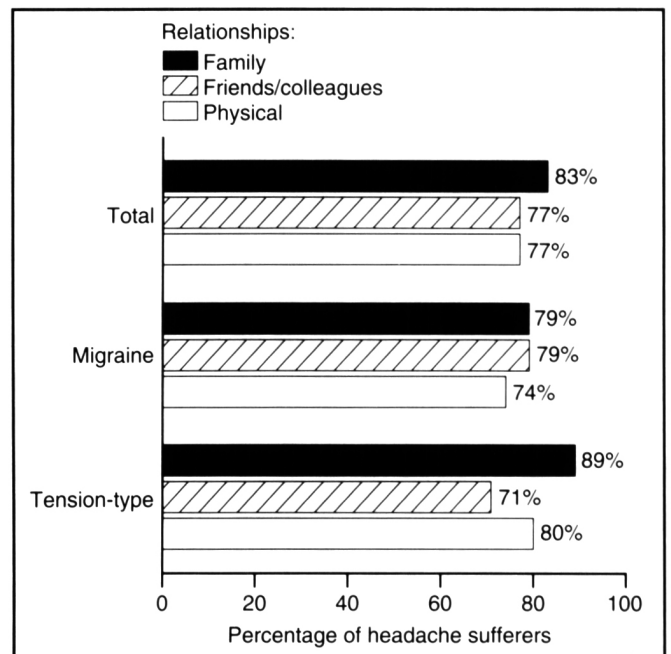


Figure 3 — Percentage of headache sufferers reporting adverse effect on relationships.

activities were halted or bed rest was required, occurred with 31% of the migraine headaches and 11% of the tension-type headaches reported.

Diary data also indicated that headaches impinged on lifestyle, again more commonly with migraine headaches (Table 4). Cancellations of social activities and family activities were necessary with 17% of the migraine headaches recorded. Tension-type headaches led to the cancellation of social and family activities less frequently (5%). Eleven percent of the reported migraine occurrences caused the headache sufferer to leave or not report to work, while 4% of the reported tension-type headaches had an effect on work attendance. The headache sufferer sought the help of family or friends for 13% of the



**Table 3: Impact of Headache on Regular Activities\***

Activity Level†	Percentage of Headaches	
	Migraine (n = 417)	Tension-Type (n = 1,340)
Severely limited	14	5
Moderately limited	17	6
Somewhat limited	47	26
Not affected	22	62

\* From diary study

† Severely limited: requiring bed rest; moderately limited: unable to continue daily activities, but not requiring bed rest; somewhat limited: able to continue daily activities

**Table 4: Impact of Headache on Life-Style\***

Life-Style Element	Percentage of Headaches	
	Migraine (n = 417)	Tension Type (n = 1,340)
Cancelled social activity	17	5
Cancelled family activity	17	5
Cancelled work activity	11	4
Asked for help from family/friend	13	3

\* From diary study

migraine headaches reported and for 3% of the tension-type headaches reported.

Interview data indicated that headache sufferers modify their behaviour because of the effects their headaches have on relationships and the limitations imposed on activities and life-style. More than 75% sought to avoid certain headache-triggering factors, such as smoke, noise and emotional pressure. Many headache sufferers also sought to avoid certain activities and said that being a headache sufferer affected job decisions.

### Consulting Behaviour

Not all Canadian headache sufferers seek help from medical professionals. Sixty-four percent of the participants in the prevalence study with migraine headache and 45% of those with tension-type headache claimed they had sought care from a physician as a result of headache at some time. Forty-one percent of the migraine headache sufferers and 32% of the tension-type headache sufferers who had been among those seeking medical attention were further referred to a specialist. The majority of headache sufferers referred to specialists were referred specifically to neurologists (64% and 57% for migraine and tension-type headaches, respectively). Among the variety of other types of medical specialists to whom patients were referred were internists, ophthalmologists, psychiatrists, otolaryngologists, dentists and allergists. In addition, many headache sufferers have consulted nonmedical personnel, including chiropractors, acupuncturists, masseuses, homeopaths and nutritionists. The prevalence study showed that emergency services had been used by 14% of the migraine headache sufferers and 8% of the tension-type headache sufferers.

While many headache sufferers seek medical attention at

some time, many do not return for follow-up medical supervision. Among the 76% of headache sufferers participating in the interview study who had at one time sought medical attention, only 32% had returned for ongoing medical care (Figure 4). Among the 81% of migraine headache sufferers interviewed who had sought medical attention at one time, only 36% were under ongoing medical supervision at the time of the interview. Seventy-one percent of the tension-type headache sufferers interviewed had sought medical attention at some time, but only 28% were under ongoing medical supervision.

Reasons for the different consulting behaviours among headache sufferers were sought in the interview study. Reasons cited for seeking attention included hope that something could be prescribed that would provide relief, weariness of living with headaches and concern that headaches were indicative of a serious problem. Among the reasons cited for no longer seeking medical attention were the availability of over-the-counter medications as effective or more effective than prescribed medications and the experience of headaches of insufficient intensity or frequency to warrant ongoing medical supervision. Slightly more than one-half of the patients who did not return for further treatment were unhappy with their physicians or were experiencing problems with medications. The remainder indicated that their headaches were not severe enough to continue physician care. Reasons cited for *never* seeking medical attention included low frequency of headaches, insufficient severity of headaches and the availability of medications of equal or greater effectiveness than those obtainable only by prescription.

### Medication Use

Nearly all headache sufferers participating in the prevalence study had at one time taken some form of drug therapy for headache relief. Over-the-counter medications had been used more than prescription medications by both migraine and

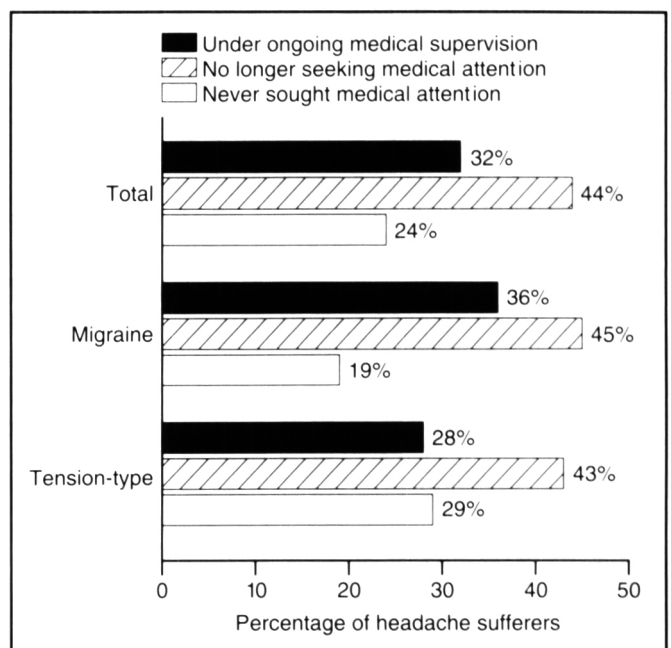


Figure 4 — Consulting behaviour of headache sufferers overall and by headache type as reported in interview study.

tension-type headache sufferers. While 44% of migraine headache sufferers had used prescription medication, 91% had used over-the-counter medications. Similarly, among tension-type headache sufferers, only 24% had used prescription medication, while 90% had used over-the-counter medication (Figure 5). The diary study revealed that approximately 90% of migraine headaches and approximately two-thirds of tension-type headaches are treated with medication.

A prescription medication was prescribed for 62% of the headache sufferers participating in the interview study who had seen a physician for treatment. At the time of the interview, however, only 34% of these individuals continued to use the prescribed medication. The reasons given by 76 of the responders for no longer taking prescribed medications clustered into three categories. The largest cluster (53%) was designated as "self-medicators". These individuals no longer used prescribed medication because they felt they could obtain effective medication without a prescription. Another cluster (26%) was designated as having discontinued due to "bad experiences". These individuals no longer used prescribed medication for reasons that included side effects, inefficacy, lack of trust, expense and hearsay concerning possible dangers. The remaining 21% of respondents were designated as "no trouble". These patients no longer used prescribed medication because headaches had disappeared, were infrequent or were of insufficient intensity.

Over-the-counter medications were recommended by a physician for 50% of the headache sufferers participating in the interview study who had sought physician treatment. In contrast to the high percentage of individuals who discontinued use of prescribed medications, recommended over-the-counter medication use was discontinued by only 25% of the respondents.

The interview study revealed that those headache sufferers who did not seek physician treatment also used medications for

headache relief. Among those interviewed who had never sought help from a physician, 63% indicated that they used medication.

The migraine and tension-type headache sufferers participating in the prevalence study reported using medication for relief of headache a median of three times per week. Twenty percent of migraine headache sufferers used medication more than once weekly as did 17% of tension-type headache sufferers. The drugs most commonly taken for relief of either migraine or tension-type headaches included aspirin alone or in combination with codeine and acetaminophen alone or in combination with codeine. Less commonly used were aspirin in combination with butalbital and caffeine, ergotamine, ergotamine in combination with caffeine, nonsteroidal anti-inflammatory agents and meperidine. The diary study indicated that codeine-containing medication was used more often for migraine headaches than for tension-type headaches. As many as 7% of the headache sufferers who had never sought physician treatment used a combination of acetaminophen and codeine, and 4% used a combination of aspirin, butalbital and caffeine (i.e., they were using prescription analgesics).

Very few migraine or tension-type headache sufferers (5% and 2%, respectively) participating in the prevalence study reported taking medication on a regular basis to prevent headache occurrence. Of the medications taken by migraine sufferers to prevent headaches, the most common included beta-adrenergic receptor antagonists, pizotyline, ergot preparations, tricyclic drugs, antihistamines and a combination of aspirin, butalbital and caffeine. The most common medications used by tension-type headache sufferers to prevent headache included beta-adrenergic receptor antagonists, pizotyline and antihistamines.

From the diary study, it was learned that only about 19% of migraine headaches were completely relieved by the medications used, but another 62% were partially relieved.

Forty-three percent of the tension-type headaches were completely relieved by medication and another 47% were partially relieved.

## DISCUSSION

This report is the second of two detailing with the findings of a survey of the Canadian adult population concerning certain aspects of headache. The first report focused on prevalence of migraine and tension-type headaches and on certain headache characteristics, such as frequency, duration, warning signs, concomitant symptoms and associated disability.<sup>1</sup> This second report focused on the effects of headaches on relationships and life-style, the consulting behaviour of headache sufferers and medication use.

From the prevalence data in the first report,<sup>1</sup> it was estimated that 3.2 million Canadians suffer migraine headaches, and another 5.8 million suffer tension-type headaches. It is apparent from the findings presented in this report that the lives of headache sufferers are significantly affected by their headaches. Three-quarters or more of the headache sufferers interviewed indicated that relationships with family, friends and colleagues were impaired. Furthermore, findings in both the diary study and the prevalence study revealed that headaches, particularly migraine headaches, frequently lead to significant limitations on

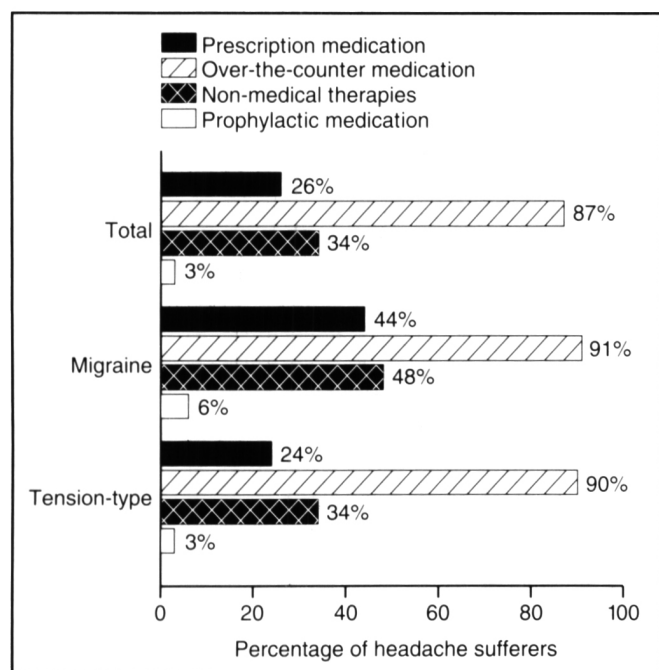


Figure 5 — Therapeutic measures taken by headache sufferers as reported in prevalence study.

regular activities. As many as 78% of the migraine headaches recorded in the diary study led to some degree of limitation. Activities were disrupted or bed rest was required for 31% of these migraine headaches. The diary study also indicated that headaches often resulted in the cancellation of family or social activities, and that they affected work attendance as well. Headache sufferers' lives are also affected between headaches, as evidenced by the avoidance of certain activities or triggering factors to prevent headaches and by the burden of worrying about the occurrence of headache at an upcoming event or while driving.

Despite indications that headache adversely affects the lives of many headache sufferers, many do not seek medical attention. Eighty-one percent of migraine headache sufferers and 71% of the tension-type headache sufferers participating in the interview study had at one time sought a physician's help. Insufficient frequency and intensity of headaches and the availability of effective medications not requiring physician prescription militated against seeking medical attention for some headache sufferers.

More than one-half of those who had sought medical attention were referred to specialists; most often, neurologists. Headache sufferers themselves have admitted to soliciting the aid of nonmedical professionals, such as chiropractors, acupuncturists, masseuses, homeopaths and nutritionists. The prevalence study also indicated that 14% of migraine headache sufferers and 8% of tension-type sufferers have sought relief in emergency departments.

Among the headache sufferers who had at one time sought medical attention, many did not submit to ongoing medical supervision. While 81% of migraine sufferers interviewed had sought medical attention at one time, only 36% were under ongoing medical management. Similarly, only 28% of the tension-type headache sufferers interviewed continued to obtain medical help on an ongoing basis. Reasons cited for no longer pursuing medical treatment included lack of support from the physician, bad experiences with drugs, availability of effective over-the-counter medications, an insufficient frequency or intensity of headaches to require ongoing management and satisfaction with prescribed remedies.

While not all headache sufferers sought medical attention, nearly all headache sufferers have used drugs at some time as a means of achieving relief. Indeed, 63% of the headache sufferers interviewed who had never sought medical attention had used medication for headache relief; at times, they used prescription medication (obtained from family and friends). Both migraine and tension-type headache sufferers seemed to prefer over-the-counter medications to prescription medications. Very few headache sufferers (no more than 5%) were using any medication on a regular basis to prevent headaches. Furthermore, some tension-type headache sufferers were receiving pizotiline or beta-adrenergic receptor antagonists to prevent headache, neither of which is indicated for this use. This could be considered inefficient or inappropriate use of available therapeutic options.

Fewer than 20% of the migraine headaches recorded during the diary study were completely relieved by medication, although another 62% were partially relieved.

Tension-type headaches were more successfully treated, with complete relief achieved in 43% and partial relief achieved in another 47% of cases.

Population studies of headache in other nations have not addressed such a broad range of variables, but certain aspects of these other studies suggest that the findings in this survey are likely not unique to Canadians. For example, a recent self-administered questionnaire survey<sup>4</sup> in the USA shows that 18% of adult American females and 6% of males have migraine — a prevalence quite close to the Canadian one. A study in the United Kingdom<sup>5</sup> revealed that only about one-quarter of headache sufferers were seeing their doctors, but that over one-half of the headache sufferers surveyed were taking medication for their headaches, usually one "obtained through lay channels".

### CONCLUSIONS

This survey has shown that among the millions of Canadians suffering from headaches adverse effects on relationships with family, friends and colleagues are common. Headaches also result in significant limitations in activity and lead to avoidance behaviours. Some headache sufferers never seek medical treatment, and many of those who have, do not return for ongoing management. Most headache sufferers, whether under medical supervision or not, use drugs to obtain relief. Without proper education and supervision, however, they are at risk for analgesic abuse and rebound headache.<sup>6</sup> Hence, measures to reach Canadian headache sufferers are needed as are safe and effective treatments that will gain patient acceptance.

### ACKNOWLEDGEMENT

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