Chronic pain in Canada – Prevalence, treatment, impact and the role of opioid analgesia

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OBJECTIVE: To assess the prevalence, treatment and impact of chronic pain in Canada.
METHODS: A stratified random sample of 2012 adult Canadians (weighted by sex, age and region according to 1996 census data) was surveyed by telephone in 2001 to determine the prevalence of chronic pain, defined as continuous or intermittent pain for at least six months. A second sample of 340 chronic pain sufferers who were taking prescription medication for their pain was studied in detail to determine current therapeutic approaches and to assess the social and economic impact of chronic pain.
RESULTS: Chronic noncancer pain was reported by 29% of the respondents, with increased frequency in women and older age groups. The average duration of pain was 10.7 years and the average intensity was 6.3 (on a scale from 1 to 10), with 80% reporting moderate or severe pain. Anti-inflammatory agents were prescribed for 49% of respondents and opioid analgesics were prescribed for 22% (two-thirds of these were codeine). Almost 70% were worried about addiction potential, and one-third felt that strong analgesics should be reserved for terminal illnesses. Almost one-half were unable to attend social and family events, and the mean number of days absent from work in the past year due to chronic pain was 9.3.
INTERPRETATION: Chronic noncancer pain is common in Canadian adults and has a major social and economic impact. Despite growing evidence supporting the efficacy and safety of major opioid analgesics for chronic noncancer pain, less than 10% of chronic pain patients taking prescription medication were treated with a major opioid. Chronic pain is undertreated in Canada, and major opioid analgesics are probably underutilized in the management of moderate to severe pain as part of a multidisciplinary treatment program.

Key Words: *Analgesics; Chronic pain; Opioid; Treatment*

Douleur chronique au Canada : prévalence, traitement, répercussions et rôle des opioïdes

OBJECTIF : Évaluer la prévalence, le traitement et les répercussions de la douleur chronique au Canada.
MÉTHODE : Un sondage téléphonique a été mené en 2001 auprès d'un échantillon aléatoire stratifié, composé de 2012 adultes canadiens (pondérés selon l'âge, le sexe et la région d'après les données du recensement de 1996) pour déterminer la prévalence de la douleur chronique,

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définie comme une douleur présente de façon continue ou intermittente depuis au moins six mois. Un deuxième échantillon composé cette fois de 340 patients souffrant de douleur chronique et prenant des médicaments sur ordonnance a été constitué et étudié en détail pour déterminer les différents traitements actuels et pour évaluer les répercussions sociales et économiques de la douleur chronique.

RÉSULTATS : Vingt-neuf pour cent des répondants ont fait état de douleur chronique non cancéreuse, et la fréquence augmentait chez les femmes et avec l'âge. La durée moyenne de la douleur était de 10,7 ans et l'intensité moyenne, de 6,3 (sur une échelle de 1 à 10); 80 % l'ont qualifiée de modérée ou de forte. Des anti-inflammatoires ont été prescrits à 49 % des répondants et des opioïdes, à 22 % (deux tiers à la codéine). Presque 70 % se sont dits inquiets des risques de dépendance et un tiers estimait que les analgésiques puissants devaient être réservés aux maladies terminales. À peu près la moitié des répondants ont déclaré ne pas pouvoir assister à des activités sociales ou familiales, et le nombre moyen de jours d'absence du travail pour cause de douleur chronique au cours de la dernière année s'élevait à 9,3.

INTERPRÉTATION : La douleur chronique non cancéreuse touche beaucoup d'adultes au Canada et a de fortes répercussions sur les activités sociales ou familiales. Malgré le nombre croissant de données qui étayent l'efficacité et l'innocuité des opioïdes puissants pour le soulagement de la douleur chronique non cancéreuse, moins de 10 % des patients prenant des médicaments sur ordonnance étaient traités à un opioïde puissant. La douleur chronique est sous-traitée au Canada, et les opioïdes puissants sont probablement sous-utilisés dans le traitement des douleurs chroniques modérées ou intenses dans le cadre de programmes de traitement pluridisciplinaire.

Chronic pain, usually defined as pain of at least six months' duration, is a common cause of major disability and economic loss. A conservative estimate of the annual cost of chronic pain in the United States was in excess of US $40 billion (1). A recent review of chronic pain prevalence studies among adults yielded a range of 2% to 40% (median value 15%), with much of the variability attributable to the survey methods and the definition of chronic pain (2). Middle age, female sex and lower socioeconomic status were demographic characteristics associated with chronic pain. A subsequent prevalence study of chronic pain in Australia found a prevalence of 17.1% for men and 20.0% for women (3). In this study, chronic pain affected more respondents than did other surveyed chronic conditions, including diabetes, hypertension and asthma. There have been two previous epidemiological studies focusing on chronic pain in Canada. Crook et al (4) administered a telephone survey to 827 individuals who were asked if they were "often troubled with pain", and 11% answered affirmatively. Statistics Canada's National Population Health Survey (NPHS), carried out in 1994 to 1995, determined a chronic pain prevalence rate of 15% in men and 20% in women (5). However, both the Australian and the NPHS studies (3,5) were part of general health surveys, and so the prevalence estimates may underestimate the true prevalence of chronic pain (3). The present study is the first to directly assess the prevalence, treatment and impact of chronic pain in Canada.

METHODS

Prevalence survey

The prevalence of chronic pain, defined as continuous or intermittent pain present for at least six months, was assessed among adult Canadians aged 18 to 75 years using the Canadian Ipsos-Reid Express omnibus survey. Data were obtained via a computer-assisted telephone interviewing system using random digital dialling. A stratified random national sample weighted by sex, age and region according to 1996 census data was generated using this technique. The first wave of interviews was carried out from February 14 to 16, 2001 on 1012 individuals. A second wave was administered from July 31 to August 2, 2001 to another 1000 subjects to assess the reliability of the data. The respondents provided standard demographic data and were asked about the presence of chronic pain, whether they thought it was cancer related and whether they were taking prescription medication for their pain. Because the variance in the data among all parameters was less than 1% between the two waves, data were analyzed according to the summed sample size of 2012. The margin of error with a sample size of 2000 in this survey is estimated to be 2.2% at a 95% confidence level.

Impact survey

A more detailed survey was carried out in 340 known chronic pain sufferers who were also taking prescription medications for their pain. The sample for this study was the Ipsos-Reid Consumer Panel that is drawn from 70,000 households and more than 150,000 adults who had previously agreed to participate in surveys. This was also a stratified random national sample using computer-assisted telephone interviewing, with field dates of February 19 to March 4, 2001. Subjects were asked about the clinical characteristics of their pain, including intensity, duration and location. Pain intensity was graded on a numerical rating scale from 0 to 10 as mild (1 to 4), moderate (5 to 7) or severe (8 to 10). The subjects were also asked about pharmacological and nonpharmacological treatments for their pain, their attitudes about the use of strong analgesics, and the social and economic impact of chronic pain on their daily lives. The margin of error with a sample size of 340 in this survey is estimated to be 5.3% at a 95% CI.

Interview data were analyzed using SPSS (Version 10.2, SPSS Inc, USA). Differences in proportions were calculated using a normally distributed Z statistic. Means and 95% CI were calculated using SPSS, which allowed for sample weighting. The χ^2 test was used to compare the frequency of pain between subgroups.

RESULTS

Prevalence survey

Two thousand twelve respondents completed interviews for the prevalence survey, which represents an overall response rate of 19.1%. The demographic characteristics of the sam-

TABLE 1
Demographic characteristics of respondents in the prevalence survey

	Total (n=2012)	No pain (n=1427)	Chronic pain (n=585)
Mean age (years)	43.9	42.4	47.7
95% CI	43.2 to 44.6	42.0 to 42.8	47.0 to 48.4
Sex (%)			
Male	49	51	45
Female	51	49	55
Preferred language (%)			
English	77	73	86
French	23	27	14
Income (%)			
<$60,000/year	58	56	62
>$60,000/year	33	35	29
Not stated	9	9	9

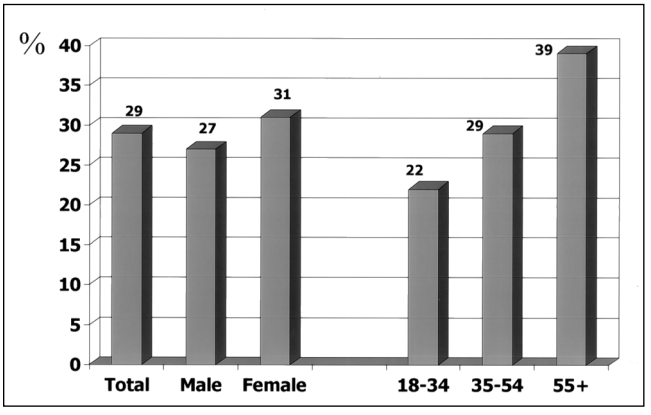

Figure 1) *Prevalence of chronic pain in Canada by sex and age group (n=2012). Numbers above columns are totals in that category*

TABLE 2
Clinical characteristics of respondents with chronic pain who were taking prescription analgesic medications (n=340)

	% (n)
Sex	
Male	34.7 (118)
Female	65.3 (222)
Age range	
18 to 34	6.2 (21)
35 to 54	44.7 (152)
≥55	49.1 (167)
Pain severity*	
Mild	20.3 (69)
Moderate	47.9 (163)
Severe	31.7 (108)

**Numerical rating scale (0-10) – mild (1-4), moderate (5-7), severe (8-10)*

ple are summarized in Table 1 and Figure 1. Overall, 29% of the respondents reported experiencing chronic pain (27% of men and 31% of women). The mean age of respondents with pain was significantly higher than the age of the respondents without pain (47.7 versus 42.4 years) and the prevalence of pain increased in older age groups. The prevalence of chronic pain peaked at 39% in respondents over age 55 years. The income of respondents with chronic pain was significantly less than the income of those without. Only 20 respondents (1%) felt that their chronic pain was related to cancer.

Two hundred thirty individuals (11.4%) were also taking prescription analgesic medications (9% of men and 14% of women). The use of prescription analgesics in respondents with chronic pain increased significantly with age – 5% for ages 18 to 34 years, 12% for ages 35 to 54 years and 19% for ages over 54 years.

Impact survey

Pain characteristics: Three hundred forty respondents with chronic pain who were also taking prescription analgesic medications completed interviews for the impact survey. These respondents did not differ significantly from the chronic pain subpopulation who was taking prescription analgesic medications in the prevalence survey (11.4% of 2012 or 230 individuals) in terms of mean age, sex or income. The clinical characteristics of this sample are described in Table 2. Men represented 34.7% and women represented 65.3% of the sample. Reports of mild, moderate and severe pain were 20.3%, 47.9% and 31.7%, respectively. Pain intensity is detailed in Table 3. Although the average pain intensity was 6.3, younger patients experienced significantly more pain than did older patients and reported more flareups of pain or breakthrough pain. Opioid users had significantly more pain than did nonusers. The mean duration of pain was 10.7 years (95% CI 9.7 to 11.9) without any age range predominance. However, patients with severe pain reported a longer duration of pain (13.2 years) than patients with mild pain (9.5 years) or moderate (9.4 years) pain. The most common location of pain was the back (35%), followed by pain in the legs (21%), headache (15%) and neck pain (14%). Forty-four per cent had received a diagnosis of some form of 'arthritis'.

Treatment modalities

Forty-nine per cent of respondents (n=167) were prescribed one or more anti-inflammatory agents and 22% were taking an opioid analgesic (Table 4). However, 15% were taking a codeine preparation, resulting in only 7% being treated with a major opioid such as morphine. Eighteen per cent were taking adjuvant analgesics such as antidepressants or anticonvulsants alone or in combination with the above medications. Eight per cent could not name their prescribed analgesics. Thirty per cent of respondents reported taking

TABLE 3
Mean pain intensity (numerical rating scale 0 to 10) of respondents in the impact survey

	n	Pain intensity	95% CI
Total	340	6.3	(6.2, 6.4)
Sex			
Male	118	6.0	(5.8 to 6.2)
Female	222	6.4	(6.3 to 6.5)
Age range			
18–34	22	6.7	(6.3 to 7.1)
35–54	151	6.6	(6.4 to 6.8)
≥55	167	5.9	(5.7 to 6.1)
Opioid			
Users	77	7.1	(6.9 to 7.3)
Nonusers	263	6.0	(5.9 to 6.1)

TABLE 4
Prescription analgesic medications being taken by respondents in the impact survey (n=340)

	% (n)
Anti-inflammatory agents	
Conventional NSAIDs	40.2 (137)
COX-2 inhibitors	25.9 (88)
Corticosteroids	8.8 (30)
Opioid analgesics	
Codeine	15.2 (52)
Major opioids	7.0 (24)
Adjuvant analgesics	
Antidepressants	6.2 (21)
Anticonvulsants	5.0 (17)
Other*	7.1 (24)
Unknown	8.2 (28)

NSAIDs Nonsteroidal anti-inflammatory drugs; COX-2 Cyclo-oxygenase
**Includes muscle relaxants and antimigraine drugs*

over-the-counter medications (including acetaminophen, ibuprofen and acetylsalicylic acid) as well as prescription medications. Fifty-five per cent of the respondents had received a previous analgesic prescription. The most common reasons for switching to their current medication were lack of efficacy and side effects. Sixteen per cent of the respondents reported that certain analgesic medications were unaffordable. At the time of the survey, almost all patients were receiving some kind of nonpharmacological treatment, including an exercise program (74%), relaxation therapy (43%), physiotherapy (28%), massage therapy (22%), transcutaneous electrical nerve stimulation (12%) or acupuncture (9%).

Thirty-six per cent of the respondents reported that their pain treatment was very effective and 77% expressed satisfaction with their doctor's care, even though the mean pain intensity was 6.3. Almost two-thirds of the patients (60%) felt that their doctors fully appreciated their pain and the remainder felt that their doctors were somewhat appreciative. When asked about their attitudes toward strong analgesics such as morphine, about two-thirds (69%) felt strongly that these drugs were habit forming or addictive, one-half (52%) felt that they were too strong for their pain and almost one-third (29%) said that they should be reserved for terminal illness like advanced cancer.

Economic and social considerations

The employment status of the respondents was as follows: working full time or part-time 38%; self employed or a homemaker 22%; retired 25%; unemployed 7%; and other 8%. The mean number of days that the respondents were unable to work in the past year due to chronic pain was 9.3 (95% CI 4.7 to 13.7), but for those with severe pain this rose to 16 days (95% CI 5.1 to 26.9).

Forty-nine per cent of the respondents reported experiencing great difficulty attending social and family events. Sixty-one per cent were unable to participate in their usual recreational activities and 58% were unable to carry out their usual daily activities at home.

DISCUSSION

The present study found an overall pain prevalence of 27% for men and 31% for women, showing that chronic pain is common in adult Canadians and supporting previously recognized associations between chronic pain and both women and older age (3,5). One of the strengths of the present study is the use of random digital dialling that includes households with unlisted phone numbers. However, there are inherent limitations in telephone surveys. Nonrespondents may create a selection bias in favour of reports of chronic pain by those who respond to the survey. On the other hand, telephone surveys rarely capture institutions such as nursing homes and chronic care facilities where chronic pain is likely to be much more prevalent.

In both the prevalence survey and the impact survey, women with chronic pain were much more likely to be taking prescription analgesic medications. This probably reflects the well-known observation that women are more likely to seek medical attention for their complaints (6,7). Younger patients had higher pain intensities, even though pain was more common in older patients. This apparent paradox can be explained by the fact that younger patients are more active and more likely to be working and, therefore, more prone to flareups of pain associated with activity – an observation made in the impact survey.

There are two striking observations from the present study related to treatment and the patients' attitudes toward treatment. Even though the mean pain intensity of 6.3 was in the moderate range, 77% of patients expressed

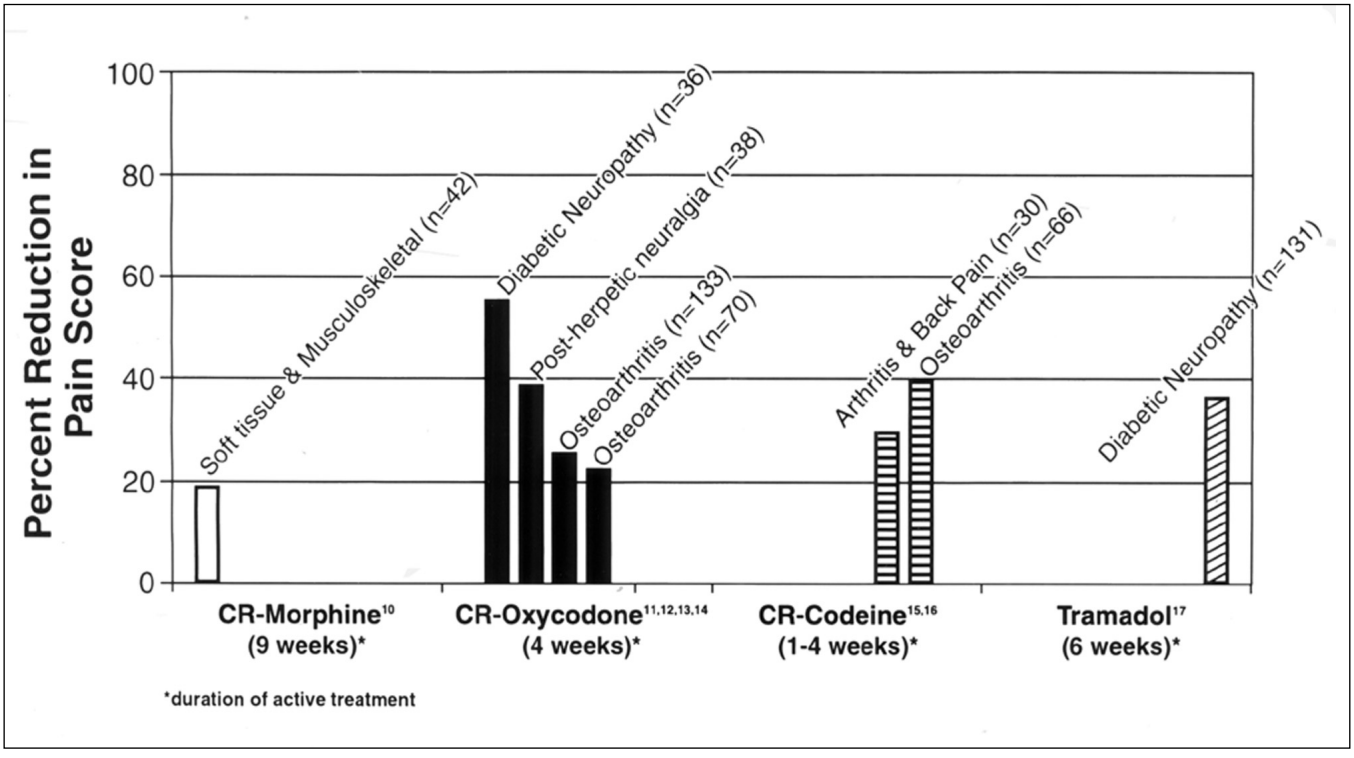

Figure 2) *Longitudinal placebo controlled trials of opioids in chronic noncancer pain. CR Controlled release*

satisfaction with their doctors' care and the majority felt that their doctors appreciated their pain. Validation of pain by caregivers correlates much better with patient satisfaction than does response to treatment (8). Older patients may also have the attitude that pain is part of the aging process and their expectations for effective treatment may be relatively low.

The other striking feature is that, despite the 80% prevalence of moderate to severe pain in the impact survey (patients with chronic pain taking prescription analgesics), only 22% of the patients were being treated with an opioid analgesic, and only 7% were on a major opioid. Patients with pain that was more severe were probably targeted for opioid therapy, but it was ineffective because opioid users actually had higher mean pain intensities than nonusers (Table 3).

The reluctance to prescribe a major opioid for chronic pain is reflected in a survey of prescriptions for oral opioid formulations in Canada in 1998 – 78.5% of the prescriptions were for codeine and codeine combinations (9). Despite this pattern of practice, there is growing recognition that opioid analgesics are safe and effective in the management of moderate to severe chronic noncancer pain. Figure 2 summarizes the results of eight placebo controlled, randomized, controlled trials of repetitive dose opioids in the management of a variety of chronic noncancer pain syndromes (10-17). Five of these trials involved major opioids, with reductions in pain intensity in the range of 20% to 50%. There were also variable improvements in function and quality of life in most of these studies. Two recent studies support the efficacy and safety of long term opioid use for chronic noncancer pain. A randomized open comparison of two opioid regimens and naproxen in 36 patients with chronic low back pain demonstrated less pain and improved mood experienced among opioid-treated patients over one year (18). Another open trial involving transdermal fentanyl was carried out in 532 patients with chronic noncancer pain. Treatment with transdermal fentanyl over a period of one year provided a stable degree of pain control in the majority of patients, with a very low incidence of substance abuse and respiratory depression (19).

Long term outcome studies and extensive survey data indicate that the risk of psychological dependence or addiction is very low in the absence of a history of substance abuse. There are reliable screening questionnaires to assess for the propensity to addiction (20). Side effects such as drowsiness and dizziness can usually be managed by careful dose titration, and respiratory depression is exceedingly uncommon when opioid dose is titrated against pain (21). A controlled trial of driving skills in cancer patients taking oral morphine titrated to a mean dose of 209 mg daily did not show any significant psychomotor dysfunction (22). Furthermore, extensive clinical experience in the cancer population and in methadone programs to treat opioid addiction indicates that the risk of major organ toxicity is exceedingly low (23). Despite the relative safety of opioid use for chronic pain, nonsteroidal anti-inflammatory drugs

(NSAIDs) continue to be prescribed much more commonly, even though NSAIDs account for about 4000 hospitalizations and 400 deaths per year in Canada (24). The more recent introduction of NSAIDs with selective cyclooxygease inhibition should decrease the morbidity and mortality of this class of analgesics (25,26).

In recognition of the therapeutic index of opioids for chronic noncancer pain, consensus statements have been published by the American Pain Society, American Academy of Pain Medicine and Canadian Pain Society to indicate that the use of opioids for the relief of chronic noncancer pain is a legitimate medical practice (20,27). This consensus has also been recognized by most provincial medical colleges in Canada (20). Regulatory agencies, therefore, should not be a barrier to the use of opioid analgesics for selected patients with chronic pain being carefully monitored and, in fact, should support the legitimate use of opioids when the primary goal is pain relief. However, the present study shows that other barriers still exist. More physician and patient education is required to dispel myths that addiction is common and that opioid analgesics should be reserved for terminal illnesses.

Chronic noncancer pain is common in adult Canadians and has a major social and economic impact. Major opioid analgesics should be used more frequently in the management of moderate to severe chronic noncancer pain as part of a comprehensive treatment program that includes physical therapy and psychological and behavioural approaches to pain management.

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