Knowledge, attitudes and beliefs about chronic noncancer pain in primary care: A Canadian survey of physicians and pharmacists

Lyne Lalonde PhD1,2,3,4, Vincent Leroux-Lapointe BSc4,5, Manon Choinière PhD3,6, Elisabeth Martin MSc3,4, David Lussier MD7,8, Djamil Berbiche PhD9,4, Diane Lamarre MSc1,9, Robert Thiffault MSc10, Ghaya Jouini MSc3,4, Sylvie Perreault PhD5,11

BACKGROUND: Primary care providers’ knowledge, attitudes and beliefs (KAB) regarding chronic noncancer pain (CNCP) are a barrier to optimal management.

OBJECTIVES: To evaluate and identify the determinants of the KAB of primary care physicians and pharmacists, and to document clinician preferences regarding the content and format of a continuing education program (CEP).

METHOD: Physicians and pharmacists of 486 CNCP patients participated. Physicians completed the original version of the KnowPain-50 questionnaire. Pharmacists completed a modified version. A multivariate linear regression model was developed to identify the determinants of their KAB.

RESULTS: A total of 137 of 387 (35.4%) physicians and 110 of 278 (39.5%) pharmacists completed the survey. Compared with the physicians, the pharmacists surveyed included more women (64% versus 38%) and had less clinical experience (15 years versus 26 years). The mean KnowPain-50 score was 69.3% (95% CI 68.0% to 70.5%) for physicians and 63.8% (95% CI 62.5% to 65.1%) for pharmacists. Low scores were observed on all aspects of pain management: initial assessment (physicians, 66.5%; pharmacists, 65.4%); definition of treatment goals and expectations (76.1%; 61.6%); development of a treatment plan (66.4%; 59.0%); and reassessment and management of longitudinal care (64.3%; 53.1%). Ten hours of reported CEP sessions increased the KAB score by 0.3 points. All clinicians considered a CEP for CNCP to be essential. Physicians preferred an interactive format, while pharmacists had no clear preferences.

CONCLUSION: A CEP to improve primary care providers’ knowledge and competency in managing CNCP, and to reduce false beliefs and inappropriate attitudes regarding CNCP is relevant and perceived as necessary by clinicians.

Key Words: Beliefs; Chronic noncancer pain; Knowledge; Physicians and pharmacists; Primary care

Chronic noncancer pain (CNCP) is defined as pain that persists for >6 months (1). In Canada, as in other industrialized countries, approximately 20% of the population experiences CNCP (2-5). Its prevalence is constantly increasing as the population ages (2,3,6). CNCP is associated with major psychosocial distress for affected individuals and their relatives, and with a heavy economic burden for society as a whole (6-9).

Current management of CNCP is often associated with suboptimal clinical outcomes in terms of pain relief and health-related quality of life (7,10), particularly in primary care, where most of these patients undergo treatment.
are followed (5,10-15). In the United States, it has been estimated that >40% of patients with chronic pain experience uncontrolled pain (16). In a Canadian survey (7), a large proportion of patients taking prescribed analgesics reported high levels of pain interference with day-to-day activities (57% of all patients with pain and 59% of those reporting severe pain). In this population, the prevalence of depression and anxiety (4,6) as well as sleep problems (5) is high. In fact, primary care clinicians themselves believe that more than one-half of their patients are not receiving optimal treatment (15,17). Moreover, the therapeutic gaps between recommended and actual pain treatment may be contributing to the increase of incidence of chronic pain (7).

Several studies have suggested that suboptimal clinical care may be due, in part, to deficient knowledge, false beliefs and inappropriate attitudes among clinicians regarding pain and its treatment (10-15). The main barriers to optimal treatment reported by clinicians were side effects (cited by 74% of respondents), patient compliance (58%), and concerns about the efficacy of available therapies (60%) (15). With respect to opioid treatment, the barriers to optimal pain management most frequently mentioned by primary care physicians were fear of opioid dependency and of significant side effects, and the potential for misuse and abuse (7,13,17-19). These considerations may explain why 52% of physicians said they systematically have their patients evaluated by a specialist before prescribing opioids (20). Pharmacists are also reluctant to dispense opioids; 58% believe that CNCP patients are liable to develop addiction (14). A continuing education program (CEP) may be an important factor in improving treatment outcomes. However, to develop programs that target the needs and preferences of clinicians, a better understanding of their knowledge, attitudes and beliefs (KAB) about pain and its treatment is essential.

As part of the ACCORD Program (Application Concertée des Connaissances et Ressources en Douleur), a knowledge-translation research program on CNCP, a cohort study was conducted to describe the management of CNCP patients in primary care (21). A total of 486 patients with moderate to severe CNCP were recruited in community pharmacies located in urban and semiurban areas (22,23). Considerable proportions of the patients had probable depression (23.9%) and anxiety (39.9%). The prevalence of analgesic side effects was as high as 95.3%, and these were often left untreated. Patient satisfaction with treatment was low, particularly with regard to information about pain and its treatment. For patients, the greatest barriers to optimal management included fatalistic beliefs and fear of the harmful effects of pain medicine in general.

The current report presents the results of a cross-sectional survey of primary care physicians and pharmacists involved in following the ACCORD cohort patients. It was conducted to evaluate their KAB about pain and its treatment, identify the determinants of better KAB and document their preferences regarding the content and format of a CEP.

METHODS

The ACCORD Program is funded by the Canadian Institutes of Health Research through the Community Alliances for Health Research and Knowledge Exchange on Pain. It comprises five axes of research: geoepidemiology, primary care, nursing home, patient self-management and pain awareness/education program (21). Within the primary care axis, a cohort of 486 CNCP patients was formed. The primary care physicians and pharmacists of these patients were asked to complete a self-administered questionnaire to assess KAB regarding pain and its treatment. Ethical approval was obtained from the Scientific and Ethics Research Committee of the Centre de santé et de services sociaux de Laval, Laval, Quebec. All participants signed a consent form and received financial compensation ($25).

Participants

Consultation of the provincial health ministry atlas (24) yielded a total of 513 pharmacies in the territory of the Integrated University Health Network of the Université de Montréal in six health and social services regions: Mauricie and Centre du Québec, Laval, Montréal, Laurentides, Lanaudière and Montérégie. Based on this sampling frame, a random sampling, stratified according to region and weighted according to the number of pharmacies within each region, was performed to recruit a total of 60 pharmacies. The owners were contacted and invited to participate. Pharmacies in each region were approached until the target was reached. To recruit 600 patients, every participating pharmacy was asked to identify between 10 and 15 consecutive, potentially eligible patients. The criteria for patient eligibility were: age ≥18 years; experiencing CNCP, defined as pain lasting for 26 months and not related to cancer; reporting an average pain intensity in the past seven days of at least 4 on a 0 to 10 scale, where 0 represents 'no pain' and 10 represents 'the worst possible pain'; experiencing pain at least two days per week; having an active analgesic prescription from a primary care physician; and able to speak and read French or English. Patients who had migraine as the sole cause of pain were excluded, as were those with any health problem that might prevent them from providing informed consent. To compensate for pharmacies that did not recruit the expected number of patients, additional pharmacies were invited to participate during the course of the study.

From May to October 2009, 296 community pharmacies were randomly selected and invited to participate; of these, 84 (28.4%) were recruited, representing 278 pharmacists. At the time of recruitment, all participating pharmacists were asked to complete the survey, and the questionnaire was sent to those who agreed. To increase the response rate, they received a telephone call every two weeks for two months or until the questionnaire was returned. Participating pharmacists recruited a total of 486 CNCP cohort patients.

Using their pharmacy dispensing chart for each cohort patient, pharmacists identified a primary care physician prescriber of an active analgesic prescription including acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), anticonvulsants, antidepressants, muscle relaxants and opioids. Each of these physicians was asked to complete a self-administered questionnaire. A modified version of Dillman’s Tailored Design Method (25) was used from January to March 2010. The physicians first received a personalized letter of invitation describing the study. One week later, they received a self-administered questionnaire, an informed consent form and a postage-paid return envelope. Two weeks later, they received a postcard to remind them to complete and return the questionnaire. Three weeks later, nonrespondents were sent the questionnaire again. Two weeks after that, nonrespondents were mailed the questionnaire a third time.

Survey

The questionnaire was written in French. It comprised 15 pages for pharmacists and 16 pages for physicians, including a cover page and an instruction page. It was divided into three sections addressing KAB regarding pain and its treatment, sociodemographic information and previous training, and needs and preferences for a CEP.

The KnowPain-50 questionnaire was developed by pain physicians to measure the KAB of physicians regarding chronic pain and its treatment (12). It comprises 50 items divided into six subscales: initial pain assessment (13 items); defining goals and expectations (10 items); development of a treatment plan (16 items); implementation of a treatment plan (three items); reassessment and management of longitudinal care (one item); and management of environmental issues (seven items). The questionnaire includes 45 Likert-scale questions and five multiple-choice questions. For each Likert-scale question, respondents can be awarded a score ranging from 0 (incorrect answer/strongly agree) to 5 (correct answer/strongly disagree) depending on their level of agreement with each statement. The response scales for 20 items (questions 6, 8, 16-18, 21, 23, 26-34, 37, 43, 44 and 46) are inverted (scores of 5, 4, 3, 2, 1 and 0 transformed into a score of 0, 1, 2, 3, 4 and 5, respectively). For multiple-choice questions, correct answers receive five points. Overall and subscale scores are expressed as the sum of the individual scores (absolute score) and as a percentage score (absolute score/maximum possible score × 100%). The range for total overall absolute scores is 0 to 250 (a higher score indicating better knowledge). In one study (12), the Cronbach alpha reliability index was high in three different populations of physicians (0.77 to 0.85);
the overall score correlated with clinical behaviour and appeared to distinguish between physicians who had participated in different pain management education programs. In another study (26), Knowpain-50 was responsive to education interventions. The original English version was translated into French using a forward-backward translation process (27). The French version is available on request.

A panel of experts, including three pharmacists, one primary care physician with expertise in chronic pain management and one geriatrician, assessed the relevance of the KnowPain-50 questionnaire for evaluating the KB of pharmacists. By consensus of the panel, seven items were considered to be inappropriate in the following subscales: initial pain assessment (questions 1, 15, 17, 18 and 38); defining goals and expectations (question 23); and development of a treatment plan (question 43). One panel member (a hospital pharmacist with expertise in chronic pain management) proposed an initial set of 10 multiple-choice questions on the pharmacotherapy of CNCP. By consensus of all members of the panel, seven of these questions were selected and modified when deemed appropriate: recommendations regarding initial treatment of CNCP; management of constipation in patients taking opioids; recommendation regarding use of NSAIDs; recommendation regarding use of acetaminophen versus NSAIDs; opioid dosage conversion; treatment of fibromyalgia; and adverse effects of tricyclic antidepressants in elderly patients. Each correct answer would receive a score of 5. Physicians completed the original 50-item questionnaire along with these seven additional items (total of 57 items). Pharmacists completed only the modified questionnaire including the 43 original items and the seven additional items (total of 50 items).

Three questions were used to evaluate the clinicians’ perceived learning needs and their preferences regarding the format and content for a CEP. Clinicians were asked: “From your standpoint, is there a need for a CEP in CNCP for primary care physicians (or pharmacists)?” (Yes/No). Preferences regarding the optimal format for such a program were elicited by asking respondents: “What would be the best educational vehicle(s) or method(s) for a CEP?” Participants could check off one or more of the listed items and add their own suggestions as well. To elicit their recommendations regarding the content of the program, they were asked: “In which area(s) would you like to have more training with regard to CNCP?” Once again, they could check one or more listed items and add their own suggestions. Items were predefined by our panel of experts. They identified topics of interest for both physicians and pharmacists (treatment guidelines and pharmacotherapy) as well as topics specifically for physicians (eg, assessment, follow-up, diagnosis, methods of treatment) and others for pharmacists (eg, detection and management of drug-related problems and side effects, and collaborative practices with physicians).

Statistical analyses
The response rate was assessed for physicians and pharmacists. Their characteristics were described using proportions and means ± SD. For physicians, the overall original KnowPain-50 score (including the original 50 items) and the modified score (including the original 43 items plus the seven new items) were computed. For pharmacists, the overall original score (including the original 43 items) and the overall modified score (including the original 43 items plus the seven new items) were computed. Subscale and overall scores were calculated when at least 90% of the questions were answered. Missing data were replaced by the respondents’ mean score calculated using the available results. A sensitivity analysis was performed by replacing missing responses by a score of zero. The mean ± SD absolute overall and subscale scores and their 95% CIs were computed for pharmacists and physicians. The Cronbach alpha reliability coefficients (95% CI) for the original and modified versions were computed for each subscale and the overall scale.

A multivariate linear regression model was developed to identify the determinants of higher overall absolute KnowPain-50 scores based on the original scale for physicians (50 questions) and the modified scale for pharmacists (50 questions). The independent variables in the models included type of clinician (physician/pharmacist), sex, years since graduation and hours of reported CEP sessions in chronic pain in the past five years. A type 1 error of 0.05 was used as the threshold of statistical significance. Univariate logistic models were used to assess the likelihood of clinicians’ identifying a need for more training in a specific area (dependent variable) as a function of scores on the KnowPain-50 subscales and the new pharmacotherapy subscale (independent variables). Statistical analyses were performed using SPSS version 19.0 (IBM Corporation, USA) Windows (Microsoft Corporation, USA), and SAS version 9.1 (SAS Inc, USA).

RESULTS
A total of 278 community pharmacists were recruited in the ACCORD cohort study and asked to complete the survey; 129 agreed and 110 (39.6%) returned their completed questionnaire. The pharmacists identified a total of 486 eligible CNCP patients, who were followed by 387 primary care physicians. These physicians were asked to complete the survey; 137 (35.4%) returned their completed questionnaire. For two respondents, the overall KnowPain-50 score could not be calculated because they left >10% of the questions unanswered.

As reported in Table 1, the Cronbach alpha reliability coefficients for the original and modified versions of the KnowPain-50 questionnaire were similar for both pharmacists (original [based on 43 items]: 0.66; modified [50 items]: 0.64) and physicians (original [50 items]: 0.77; modified [50 items]: 0.77). The coefficients were lower for physicians (eg, 0.66 for pharmacists versus 0.77 for physicians on the original overall scale); however, given the overlapping of the 95% CI (physicists, 0.55 to 0.75; physicians, 0.71 to 0.83), the differences were not statistically significant. The subscale coefficients varied from −0.03 to 0.55 for pharmacists and 0.25 to 0.71 for physicians on the original overall scale); however, given the overlapping of the 95% CI (physicists, 0.55 to 0.75; physicians, 0.71 to 0.83), the differences were not statistically significant. The subscale coefficients varied from −0.03 to 0.55 for pharmacists and 0.25 to 0.71 for physicians on the original original overall scale; however, given the overlapping of the 95% CI (physicists, 0.55 to 0.75; physicians, 0.71 to 0.83), the differences were not statistically significant. The subscale coefficients varied from −0.03 to 0.55 for pharmacists and 0.25 to 0.71 for physicians on the overall overall scale; however, given the overlapping of the 95% CI (physicists, 0.55 to 0.75; physicians, 0.71 to 0.83), the differences were not statistically significant. The subscale coefficients varied from −0.03 to 0.55 for pharmacists and 0.25 to 0.71 for physicians on the overall overall scale; however, given the overlapping of the 95% CI (physicists, 0.55 to 0.75; physicians, 0.71 to 0.83), the differences were not statistically significant.
Table 2 shows that the pharmacists were mainly women (63.6%), having graduated a mean of 15 years previously. Forty-three percent of pharmacists had attended a CEP on chronic pain in the previous five years. Because all the surveyed pharmacists were participants in the ACCORD cohort study, it was possible to compare pharmacists who completed the survey with those who did not in terms of sex, type (owner or salaried) and pharmacy characteristics (type, size, number of business hours, availability of a private consultation area); no significant differences were found. Physicians were mainly men (61.8%) and had a mean of 26 years’ experience since graduation. Most (83.9%) had attended a CEP about chronic pain in the previous five years. No data were available regarding physicians who did not complete the survey.

As reported in Table 3, the original overall unadjusted mean scores on the KnowPain-50 questionnaire were 62.5% (95% CI 61.2% to 63.8%) for pharmacists and 69.4% (95% CI 68.2% to 70.7%) for physicians. Similar results were obtained with the modified version of the questionnaire (pharmacists, 63.8% [95% CI 62.5% to 65.1%]; physicians, 69.3% [95% CI 68.2% to 70.5%]). Replacing missing responses by a score of zero did not substantially change the results. The highest mean subscale scores for both pharmacists and physicians were on ‘Implementation of a treatment plan’ (pharmacists, 73.1%; physicians, 78.0%).
Physicians would like training on pain assessment and on physical and procedural treatment (40.4%). Approximately one-third of the physicians and pharmacists would appreciate a training session (46.8%) and scientific presentations by peers (41.3%). Nearly one-third of the physicians and pharmacists had no clear preferences; approximately equal proportions chose interactive activities (47.7%), self-learning modules (46.8%) and scientific presentations by peers (41.3%). A minority of clinicians correctly answered questions related to the use of anticonvulsants (questions 3 and 40), antidepressants (question 24), adjuvant therapy in general (question 42), and opioids (questions 41, 48 and 49). Some questions related to ‘Management of environmental issues’ were correctly answered by only a small proportion of pharmacists and physicians, including question 14, regarding methadone prescription for pain (pharmacists, 38.2%; physicians, 24.8%), and question 50, regarding the number of doses of opioids that can be prescribed at one time (pharmacists, 54.5%; physicians, 52.6%).

Controlling for type of clinic (physician versus pharmacist), hours of reported CEP training were positively associated with better performance on the KnowPain-50 questionnaire: 10 h of training raised the mean overall score by 0.3 points (95% CI 0.01 to 0.8). Sex and years of practice did not affect the overall score.

As presented in Table 3, all physicians and pharmacists acknowledged their need for additional CEP on CNCP. A majority of physicians (65.4%) preferred interactive activities, such as problem-based learning. Pharmacists had no clear preferences; approximately equal proportions chose interactive activities (47.7%), self-learning modules (46.8%) and scientific presentations by peers (41.3%). Nearly one-third of the physicians and pharmacists would appreciate a training day in a pain clinic. Most pharmacists would appreciate training about treatment-guideline recommendations (71.1%) and the use of anticonvulsants (64.2%), antidepressants (61.5%), opioids (60.6%) and anti-inflammatories (48.6%). Training to improve specific skills and knowledge for the follow-up of CNCP patients garnered less support: detection and management of drug-related problems, 36.0%; pharmacological treatment of elderly or those at risk of addiction, 54.1%; non-pharmacological treatment, 53.2%; and detection and management of analgesic side effects, 39.4%. For physicians, the most relevant topic was the differential diagnosis of chronic pain syndromes (71.3%). More than 40% reported that they would also like training in injection-type intervention techniques (44.9%) and the indications and referral procedures for pain clinics (40.4%). Approximately one-third of physicians would like training on pain assessment and on physical and psychological follow-up for CNCP patients.

Logistic regression was used to assess correlations between the subscale and overall scores on the KnowPain-50 questionnaire and the expressed need for additional training in specific areas. Physicians with a higher score on the ‘Defining goals and expectations’ subscale were more likely to express a need for additional training regarding ‘Indications and procedures for referring patients to multidisciplinary pain-management clinic’ (OR 1.04 [95% CI 1.00 to 1.08]) and ‘Psychological assessment of patient’ (OR 1.05 [95% CI 1.00 to 1.10]). Pharmacists scoring higher on the ‘Initial pain assessment’ subscale were more likely to express interest in additional training on ‘Detection and management of drug-related problems’ (OR 1.05 [95% CI 1.00 to 1.09]).

No other statistically significant correlations emerged.

DISCUSSION

A survey of primary care physicians and pharmacists actively involved in the follow-up of patients with moderate to severe CNCP revealed that CEPs on chronic pain management are relevant and perceived as necessary by all clinicians. Physicians’ and pharmacists’ knowledge of the general notions of chronic pain pharmacotherapy and the management of analgesic side effects was relatively good. However, deficiencies were observed in all aspects of CNCP management for specific patient populations (eg, the elderly and those at risk of addiction) and specific types of pain (eg, neuropathic pain). Based on the self-reported number of CEP sessions on chronic pain in the previous five years, KAB scores rose only slightly with more training. Pharmacists did not express clear preferences regarding the format of such a CEP, while physicians preferred an interactive format.

The KnowPain-50 questionnaire is one of the most thoroughly studied physician pain KAB survey tools available for general use. However, information on its psychometric properties is limited, and the questionnaire had to be adapted for community pharmacists. To our knowledge, there is no questionnaire available to measure pain KAB across professional groups (28-30). Based on our survey results, the internal consistency coefficients of the overall original scale (95% CI of the Cronbach’s alpha coefficients: pharmacists, 0.55 to 0.75; physicians, 0.71 to 0.83) and the overall modified scales (pharmacists, 0.53 to 0.74; physicians, 0.71 to 0.83) are similar to those presented by Harris et al (12) for physicians. The authors reported coefficients varying from 0.77 to 0.85 in various physician populations, including subscribers to continuing medical education website activities, pain experts and academics. In our study, the internal consistency of each subscale was quite low, ranging from −0.03 to 0.55 for pharmacists and from 0.03 to 0.64 for physicians. These results suggest that subscale scores should not be used to discriminate between groups of clinicians or detect changes over time (31). Indeed, Harris et al (12,26) used the overall score for these purposes and never reported subscale scores.

When we asked clinicians, “In which area(s) would you like to have more training with regard to CNCP?”, most of the topics of interest suggested to them were specific to either pharmacists or physicians. Ideally, we should have offered the same choices to all respondents. Despite this limitation, some interesting results emerge.

In our survey, both physicians and pharmacists exhibited deficient knowledge regarding legislative rules governing opioid prescription. Similar results have been reported in a few other surveys (32-34); in still others, the burden of regulatory oversight has not been found to be a barrier to prescribing, as noted with concerns regarding addiction (17-19,35). When asked about their needs and preferences for additional CEP sessions, no clinicians brought up the environmental issues surrounding opioid prescription as a possible topic. This may suggest that although information on these matters is needed, clinicians may not consider it crucial.

Primary care clinicians typically encounter patients with various pain disorders. Existing guidelines are not adapted to this reality and focus on specific disorders, such as neuropathic pain (36-38), low-back pain (39) and osteoarthritis (40), as well as on opioid use (41). Several
**TABLE 4**

Knowledge, attitudes and beliefs of primary care physicians and pharmacists as evaluated by individual KnowPain-50 questionnaire items

| Item | Pharmacists (n=110) | Physicians (n=137) |
|------|---------------------|--------------------|
|      | 0 to 1 | 2 to 3 | 4 to 5 | 0 to 1 | 2 to 3 | 4 to 5 |
| Q1   | –      | –      | –      | 35 (25.5) | –      | 100 (73.0) |
| Q2   | –      | –      | –      | 0 (0)    | 2 (1.8) | 105 (77.0) |
| Q3   | 66 (60) | 23 (20) | 21 (19.1) | 2 (1.8) | 33 (24.1) | 101 (73.7) |
| Q4   | 6 (6.4) | 24 (21.8) | 79 (71.8) | 4 (2.9) | 7 (5.1) | 126 (92) |
| Q5   | 13 (11.8) | 23 (20.9) | 72 (65.5) | 18 (13.1) | 24 (17.5) | 92 (67.2) |
| Q6   | 17 (15.5) | 57 (51.8) | 36 (32.7) | 14 (10.2) | 65 (47.4) | 56 (40.9) |
| Q7   | 7 (7.3) | 41 (37.3) | 61 (55.5) | 8 (5.8) | 67 (48.9) | 60 (43.8) |
| Q8   | 22 (20) | 86 (78.2) | 8 (5.8) | 42 (30.7) | 87 (63.5) | –      |
| Q9   | 12 (10) | 37 (33.6) | 61 (55.5) | 8 (5.8) | 42 (30.7) | 87 (63.5) |
| Q10  | 12 (10) | 37 (33.6) | 61 (55.5) | 8 (5.8) | 42 (30.7) | 87 (63.5) |
| Q11  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q12  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q13  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q14  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q15  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q16  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q17  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q18  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q19  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q20  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q21  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q22  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q23  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |
| Q24  | 4 (3.6) | 13 (11.8) | 92 (83.6) | 1 (0.7) | 26 (19) | 109 (79.6) |

Continued on next page
Canadian primary care survey regarding chronic pain

**TABLE 4 – CONTINUED**
Knowledge, attitudes and beliefs of primary care physicians and pharmacists as evaluated by individual KnowPain-50 questionnaire items

| Initial pain assessment | Item score* | Pharmacists (n=110) | Physicians (n=137) |
|------------------------|-------------|---------------------|-------------------|
|                        | 0 to 1      | 2 to 3              | 4 to 5            | 0 to 1      | 2 to 3              | 4 to 5            |
| Q25 I believe that chronic opioid analgesic therapy in a patient over age 40 without a past history of addiction is associated with a high risk of opioid addiction. Correct answer: Strongly disagree | 15 (13.6) | 34 (30.9) | 59 (53.6) | 9 (6.6) | 29 (21.2) | 99 (72.3) |
| Q30 I feel comfortable taking a pain history and writing orders for pain medications. Correct answer: Strongly agree | 26 (23.6) | 56 (50.9) | 27 (24.5) | 3 (2.2) | 29 (21.2) | 104 (75.9) |
| Q37 Long-term use of NSAIDs in the management of chronic pain has higher risk for tissue damage, morbidity and mortality than long-term use of opioids. Correct answer: Strongly agree | 19 (17.3) | 48 (43.6) | 43 (39.1) | 10 (7.3) | 46 (33.6) | 80 (58.4) |
| Q39 I believe that chronic pain for unknown cause should not be treated with opioids, even if this is the only way to obtain pain relief. Correct answer: Strongly disagree | 13 (11.8) | 28 (25.5) | 69 (62.7) | 8 (5.6) | 41 (29.9) | 67 (48.5) |
| Q40 Anticonvulsivants have established analgesic efficacy for musculoskeletal, nociceptive or idiopathic pain. Correct answer: Strongly disagree | 41 (37.3) | 43 (39.1) | 25 (22.7) | 53 (38.7) | 44 (32.1) | 39 (28.5) |
| Q41 The presence of a physiologic basis for pain should be the primary factor when deciding to prescribe opiates. Correct answer: Strongly disagree | 29 (26.4) | 54 (49.1) | 24 (21.8) | 37 (27) | 55 (40.1) | 44 (32.1) |
| Q42 The management of chronic pain with analgesics and adjuvant drugs only is effective in most patients. Correct answer: Strongly disagree | 43 (39.1) | 52 (47.3) | 15 (13.6) | 37 (27) | 63 (46) | 37 (27) |
| Q43 I understand how to diagnose and treat different types of pain. Correct answer: Strongly agree | – | – | – | 2 (1.5) | 51 (37.2) | 84 (61.3) |
| Q44 I feel comfortable calculating conversion doses of commonly used opioids. Correct answer: Strongly agree | 6 (5.5) | 39 (35.5) | 65 (59.1) | 5 (3.6) | 34 (24.8) | 98 (71.5) |
| Q46 Cognitive behavioural therapy is very effective in chronic pain management and should be applied as early as possible in the treatment plan for most chronic pain patients. Correct answer: Strongly agree | 3 (2.7) | 29 (26.4) | 78 (69.0) | 4 (2.9) | 38 (27.7) | 94 (68.6) |
| Q48 Persons who fit the profile of a likely drug abuser should never be treated with opioids. Correct answer: Strongly disagree | 15 (13.6) | 56 (50.9) | 39 (35.5) | 13 (9.5) | 64 (46.7) | 60 (43.8) |

**Implementation of a treatment plan**

| Q5 The most common adverse side effect of opioid therapy is:... Correct answer: Constipation | 22 (20) | – | 87 (79.1) | 4 (2.9) | – | 132 (96.4) |
| Q34 Morphine-induced sedation is only a transient problem and will usually clear with continued use. Correct answer: Strongly agree | 8 (7.3) | 28 (25.5) | 74 (67.3) | 14 (10.2) | 44 (32.1) | 78 (56.9) |
| Q47 There is a limit or ‘ceiling’ to the dosage of pure agonist opioids (eg, morphine) that can be used to control a patient’s pain. Correct answer: Strongly disagree | 22 (20) | 16 (14.5) | 72 (65.5) | 15 (10.9) | 30 (21.9) | 92 (67.2) |

**Reassessment and management of longitudinal care**

| Q49 I believe that analgesic tolerance to opioids usually limits long-term use. Correct answer: Strongly disagree | 27 (24.5) | 44 (40) | 39 (35.5) | 18 (13.1) | 49 (35.8) | 69 (50.4) |

**Management of environmental issues**

| Q6 If my opioid prescribing was investigated tomorrow, I am confident that I would pass. Correct answer: Strongly agree | 7 (6.4) | 38 (34.5) | 64 (58.2) | 3 (2.2) | 29 (21.2) | 105 (76.6) |
| Q10 Under federal regulations, it is not lawful to prescribe an opioid to treat pain in a patient with a diagnosed substance use disorder. Correct answer: Strongly disagree | 12 (10.9) | 23 (20.9) | 75 (68.2) | 10 (7.3) | 24 (17.5) | 103 (75.2) |
| Q11 It is illegal for a physician to prescribe methadone for pain, unless he/she is certified in addiction medicine. Correct answer: Strongly disagree | 58 (52.7) | 9 (8.2) | 42 (38.2) | 94 (68.6) | 8 (5.8) | 34 (24.8) |
| Q20 Under federal regulations, it is permitted to issue prescriptions that are postdated. Correct answer: Strongly disagree | 44 (40) | 13 (11.8) | 52 (47.3) | 13 (9.5) | 24 (17.5) | 100 (73) |
| Q29 I know how to obtain information about both state and federal requirements for prescribing opioids. Correct answer: Strongly agree | 7 (6.4) | 24 (21.8) | 79 (71.8) | 31 (22.6) | 46 (33.6) | 59 (43.1) |
| Q31 I am confident that I understand state and federal requirements for prescribing opioids analgesics for chronic pain. Correct answer: Strongly agree | 4 (3.6) | 29 (26.4) | 77 (70) | 8 (5.8) | 38 (27.7) | 90 (65.7) |
| Q50 Under federal regulations, there are limits on the number of dosages of opioids that can be prescribed at one time. Correct answer: Strongly disagree | 21 (19.1) | 29 (26.4) | 60 (54.5) | 24 (17.5) | 41 (29.9) | 72 (52.6) |

**Pharmacotherapy**

| P1 Amongst the following choices, which best represents the classes of first line medication recommended for the treatment of patients suffering from chronic neuropathic pain? Correct answer: The anticonvulsivants and the antidepressants. | 51 (46.4) | – | 57 (51.8) | 34 (24.8) | – | 103 (75.2) |
| P2 What is the recommended therapy for the treatment of constipation in patients receiving chronic opioid therapy? Correct answer: The combination of a stool softener and a stimulant laxative is ideal. | 8 (7.3) | – | 102 (92.7) | 35 (25.5) | – | 102 (74.5) |
| P3 Which of the following affirmations is true? Correct answer: Among patients on nonselective NSAIDs, only those at risk of gastric toxicity should receive gastroprotective agent. | 59 (53.6) | – | 51 (46.4) | 72 (52.6) | – | 64 (46.7) |
| P4 Amongst the following choices, in which cases would you prefer acetaminophen to an NSAID to control pain? Correct answer: Suffer from or have risk factor for chronic kidney disease and/or gastric pathology. | 24 (21.8) | – | 86 (78.2) | 46 (33.6) | – | 90 (65.7) |

Continued on next page
studies suggest that primary care physicians and pharmacists are not aware of—or do not follow—guideline recommendations (13,14,42,43). In our survey, 77.1% of pharmacists and 47.1% of physicians identified the review of guideline recommendations as an area of interest for additional training. The performance of clinicians on the different KnowPain-50 questions shows that they also need to learn better how to apply these recommendations in specific clinical situations. Such deficient pain KAB has also been reported by others (11,15).

### Table 4 – CONTINUED

Knowledge, attitudes and beliefs of primary care physicians and pharmacists as evaluated by individual KnowPain-50 questionnaire items

| Item score* | Pharmacist (n=110) | Physician (n=137) |
|-------------|--------------------|-------------------|
| 0 to 1      | 2 to 3             | 4 to 5            | 0 to 1 | 2 to 3 | 4 to 5 |
| P5 | Which of the following doses of hydromorphone per os is considered equivalent to 10 mg of morphine? Correct answer: 2 mg | 24 (21.8) | - | 84 (76.4) | 32 (23.4) | - | 104 (75.9) |
| P6 | Concerning fibromyalgia, which of the following affirmations is true? Correct answer: Clinical studies have demonstrated the effectiveness and safety of pregabalin. | 32 (29.1) | - | 74 (67.3) | 29 (21.2) | - | 105 (76.6) |
| P7 | Concerning the following tricyclic antidepressants, which should be avoided when treating senior patients, given the adverse side effects of anticholinergics and sedatives? Correct answer: Amitriptyline | 17 (15.5) | - | 90 (81.8) | 29 (21.2) | - | 102 (74.5) |

BP Blood pressure; CNS Central nervous system; COX-2 Cyclooxygenase-2; EMG Electromyography; MRI Magnetic resonance imaging; NSAID Nonsteroidal anti-inflammatory drug; P Pulse; R Respiration; SSRI Selective serotonin reuptake inhibitor; T Temperature. *Vary from 0 to 5 where a score of 0 is attributed to the worst answer and a score of 5 is attributed to the best possible answer; †Question with dichotomous answer, 5 points for a correct answer and 0 point for an incorrect answer; ‡Question answered by physicians only; §Results reported on an inverted response scale

### Table 5

Needs and preferences of physicians and pharmacists regarding the format and content of a continuing education program (CEP) for chronic noncancer pain (CNCP) and its treatment

| Pharmacists (n=109) | Physicians (n=136) |
|---------------------|-------------------|
| From your standpoint, is there a need for a CEP in CNCP for primary care physicians (or pharmacists)? | Yes 109 (100) | 136 (100) |
| What would be the best educational vehicle(s) or method(s) for a CEP? | Interactive activities or courses (PBL) 52 (47.7) | 89 (65.4) |
| | Self-learning modules (paper format) 51 (46.8) | 48 (35.5) |
| | Scientific presentations by peers 45 (41.3) | 55 (40.4) |
| | Self-learning modules (Internet based) 37 (33.9) | 58 (42.6) |
| | Formal lectures 34 (31.2) | 49 (36.0) |
| | Training days in a pain management clinic 31 (28.4) | 37 (27.2) |
| | Other 0 (0.0) | 10 (7.4) |
| In which area(s) would you like to have more training with regard to CNCP? | Review of Canadian and/or Quebec guideline recommendations 84 (77.1) | 64 (47.1) |
| | Indication and use of: | |
| | Anticonvulsants 70 (64.2) | 41 (30.1) |
| | Antidepressants 67 (61.5) | 38 (27.9) |
| | Opioids 66 (60.6) | 42 (30.9) |
| | NSAIDs and coxibs 53 (48.6) | 25 (18.4) |
| Pharmacists’ specific topics | Detection and management of drug-related problems 61 (56.0) | - |
| | Pharmaceutical care with analgesic dose adjustment 59 (54.1) | - |
| | Nonpharmacological methods to manage chronic pain 58 (53.2) | - |
| | Detection and management of side effects 43 (39.4) | - |
| | Physician-pharmacist workshop on collaborative practices 41 (37.6) | - |
| | Diagnosis update 30 (27.5) | - |
| Physicians’ specific topics | Differential diagnoses of chronic pain syndromes 97 (71.3) |
| | Trigger-point-injection intervention techniques; joint or muscle infiltration 61 (44.9) |
| | Psychological techniques for chronic pain 55 (40.4) |
| | Indication and referral procedure for patient to a multidisciplinary pain management clinic 55 (40.4) |
| | Physical assessment of patient 50 (36.8) |
| | Psychological assessment of patient 44 (32.4) |
| | Psychological follow-up of patient 41 (30.1) |
| | Physical follow-up of patient 36 (26.5) |
| | Physical treatment techniques for chronic pain 35 (25.7) |
| | Radiological assessment of patient 24 (17.6) |
| | Other 9 (6.6) |

Data presented as n (%). Coxib Selective cyclooxygenase-2 inhibitor; NSAID Nonsteroidal anti-inflammatory drug; PBL Problem-based learning
Surprisingly, we found no significant correlation between the perceived needs of clinicians regarding CEPs and their level of pain KAB. This result highlights the importance of basing the development of CEPs on objective questionnaires such as the KnowPain-50.

In our survey, more CEP training was positively associated with higher levels of pain KAB. However, the correlation was low; 10 h of training in the past five years were associated with an increase of 0.3 points in the overall KnowPain-50 score. It is important to note that previous attendance at CEP sessions was based on self-reported cross-sectional data and may have been overestimated by social desirability (tendency to give socially desirable answers) and memory biases. Furthermore, the recall period was very long (five years). These factors may explain why our results are not in line with those reported by others. For example, Harris et al (26) found that the KnowPain-50 questionnaire could detect an improvement in KAB three months after attending a speaker's presentation and a publicly available online continuing medical education program. Other investigators have also shown that CEPs are able to improve knowledge (44-46), clinical practices and patient outcomes (47).

In our survey, 65.4% of physicians and 47.7% of pharmacists selected interactive training as one of their preferred educational vehicles. This is an interesting finding, considering that a CEP based on a mix of interactive and didactic methods has been shown to be among the most effective approaches for improving professional practice (47). Also noteworthy is the fact that despite the rapid growth in online CEPs (48), only 42.6% of physicians and 33.9% of pharmacists indicated an interest in Internet-based self-learning modules. Internet-based technologies are evolving rapidly and may now include multifaceted interventions such as interactive cases, enabling tools, and didactic presentations. Asynchronous discussions with peers and a facilitator may also be added to allow participants to discuss the content of the program and ask questions (49,50). This appears to improve physician satisfaction (51). Primary care clinicians may not be fully aware of the potential benefits of Internet-based training. We have no information about the participants' previous exposure to different formats of CEPs.

In primary care, pharmacists can play an important role in the management of CNCP (10). In several studies, pharmacist interventions were associated with positive patient outcomes (52-55). However, lack of time and remuneration (56,57) may limit their involvement. Some may see potential benefits of Internet-based training. We have no information about the participants' previous exposure to different formats of CEPs.

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