



Frequency and characteristics of healthcare visits associated with chronic pain: results from a population-based Canadian study

Fréquence et caractéristiques des visites aux services de soins de santé associées à la douleur chronique: résultats d'une étude canadienne fondée sur la population

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Abstract

Purpose This study was designed to investigate the role of chronic pain in healthcare visits. The specific objectives were to document the frequency of healthcare visits and to identify characteristics associated with frequent visits.

Methods This is a secondary analysis of data from a Canadian cross-sectional study on chronic pain. One thousand two hundred and ninety-four participants were screened for chronic pain, and 741 reported having “pain or discomfort that had been experienced either all the time or intermittently for at least three months”. Data regarding sociodemographics, general health, and healthcare visits were also collected. The frequency of healthcare visits was defined as at or above the 90th percentile for the group. Frequency was calculated for each setting, i.e., physicians' offices (≥ 9), emergency departments (≥ 1), and other (≥ 15). Binary logistic regression analyses were conducted to identify factors associated with frequent visits.

Results Chronic pain increased the frequency of visits to physicians (odds ratio [OR], 4.7; 95% confidence interval [CI], 2.8 to 7.9), emergency departments (OR, 1.4; 95% CI, 1.0 to 2.0), and “other” healthcare professionals (OR, 8.3; 95% CI, 4.5 to 15.5). Having ≥ 3 chronic conditions significantly increased the odds of frequent healthcare visits.

Conclusion Interventions aimed at reducing healthcare costs for chronic pain should target individuals living with multiple chronic conditions. Research is needed to develop and test interventions that focus on the needs of these groups. Identifying the risk factors for high healthcare use and improving self-management may reduce healthcare visits.

Résumé

Objectif Cette étude a été conçue afin d'examiner le rôle de la douleur chronique dans les visites aux services de soins de santé. Les objectifs spécifiques de l'étude étaient de documenter la fréquence des visites et de déterminer les caractéristiques associées à des visites fréquentes.

Méthode Cette étude est une analyse secondaire de données tirées d'une étude canadienne transversale sur la douleur chronique. Au total, 1094 patients ont été dépistés pour la douleur chronique, et 741 ont rapporté ressentir « des douleurs ou un inconfort perçus de façon continue ou intermittente pendant au moins trois mois ». Les données sociodémographiques ainsi que celles concernant la santé générale et les visites aux services de soins de santé ont également été colligées. La fréquence des visites aux services de soins de santé a été définie comme étant égale ou au-dessus du 90^e percentile pour le groupe et calculée pour chaque type de service, soit les docteurs et spécialistes (≥ 9), les départements d'urgence (≥ 1), et

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autres (≥ 15). Des analyses binaires de régression logistique ont été réalisées pour chacun des trois sites de visites fréquentes.

Résultats La douleur chronique a augmenté la probabilité de visites fréquentes chez le médecin (rapport de cotes [RC], 4,7; intervalle de confiance [IC] 95 %, 2,8 à 7,9), aux départements d'urgence (RC, 1,4; IC 95 %, 1,0 à 2,0) et aux « autres » professionnels de la santé (RC, 8,3; IC 95 %, 4,5 à 15,5). Indépendamment de la douleur chronique, le fait de souffrir d'au moins trois maladies chroniques augmentait la probabilité de visites fréquentes chez la plupart des professionnels de la santé.

Conclusion Les interventions visant à réduire les coûts de santé liés à la douleur chronique devraient cibler les personnes souffrant de maladies chroniques multiples. Des interventions sont nécessaires pour faire face aux défis liés à la prise en charge concomitante de plusieurs maladies (par ex., les médicaments multiples). Des recherches supplémentaires sont nécessaires pour mettre au point et tester des interventions qui ciblent les besoins de ces groupes. L'identification des facteurs de risque d'une utilisation élevée et l'amélioration de l'autogestion devraient aider à réduire les visites aux services de soins de santé.

Chronic pain affects approximately 30% of individuals internationally,¹ and treatment frequently involves multiple modalities provided by one or more health professionals.² Considerable costs accrue with healthcare visits (e.g., primary care physicians, specialists, and urgent care) as well as with hospitalization, medication, and other therapies.^{3,4} In Canada, hospitals, medications, and physicians represent the three largest sources of healthcare costs for chronic pain care, with total physician costs exceeding \$20 billion in 2010 and continuing to grow.⁵ When healthcare use and resulting costs are compared between individuals living with chronic pain and non-pain controls, those with chronic pain consistently report high use,⁶⁻⁹ resulting in an estimated doubling of direct medical costs.⁶⁻⁸ Hong *et al.* compared direct medical costs between individuals with chronic low back pain and matched controls and reported that 59% of the cost difference was due to visits to general physicians, 22% was due to specialist referrals, and 19% was due to medications.⁶

The increase in visits and costs related to the care of chronic pain are at least partially related to the characteristics of the pain, including pain intensity and resulting disability and interference.⁹⁻¹¹ Nevertheless, other characteristics of individuals with chronic pain have been identified as potential contributors to increased visits and resulting medical costs. These characteristics include

sociodemographic status,⁹ insurance,¹² and comorbid conditions,¹³ including depression^{7,9} and other mental illnesses,^{7,13} chronic obstructive pulmonary disorder,⁸ diabetes mellitus, hypertension, and cardiovascular disease.¹³

Thus, although there is a disparity in healthcare visits and costs between individuals with and without chronic pain, multiple health and sociodemographic variables may explain these differences. It would be useful to identify the key risk factors for high use of healthcare resources in order to target interventions towards high-risk groups. The purpose of this paper was to explore the role of chronic pain on healthcare visits. We selected the following research objectives to facilitate this task: (1) to identify the number of visits to primary care, specialists, walk-in clinics, emergency departments, and “other” healthcare providers by individuals with and without chronic pain; and (2) to identify characteristics associated with frequent healthcare use, including chronic pain.

Methods

Design and participants

The Queen's University and Affiliated Teaching Hospitals Research Ethics Board (REB) reviewed this study for ethical compliance in September 2010. Completion of the questionnaire implied consent. This cross-sectional study was part of a large national survey involving 8,000 randomly selected Canadians.¹⁴ The polling company, SM Research (www.smres.com), randomly selected the potential participant pool of adults aged 18 yr or older from telephone book listings from the ten provinces. Each survey package contained a cover letter, a questionnaire containing the potential participant's unique study identification number (see [Appendix](#)), and a stamped return envelope. The cover letter specified that the resident with the next calendar birthday was to complete the questionnaire. Prior to mailing, the questionnaire was reviewed by three health professionals and three lay persons who were not involved in the study. Furthermore, a pilot study was conducted to explore language preference and to identify questions that respondents may find difficult to understand or answer. The questionnaire was mailed in November 2011 with a follow-up to non-respondents in May 2012. It was available in both official languages (French and English), could be completed either via hard copy or online, and included multiple-choice, fill-in-the-blank, and open-ended items. Information collected on the presence and characteristics of pain, sociodemographic details, healthcare visits, general health, and self-management activities.

Hard copy responses were entered manually into the study database and pooled with the online responses. To ensure participant anonymity, the study database contained only study identification numbers.

Participants were considered to have chronic pain if they reported experiencing pain or discomfort either all the time or on and off for at least three months (Appendix, item 1). As pain may be deemed chronic after a duration of one, three, or six months,¹⁵ three months was used as the cut-off, which is consistent with the definition used in the main study.¹⁶

Data collection items

Pain frequency was captured with one item asking respondents how often they experienced pain.² Response options ranged from “daily” to “once per month or less”^{5,17,18} (Appendix, item 2). Responses of “once per week” and “once per month or less” were collapsed due to low cell counts. Pain intensity over the past week was captured on an 11-point numeric rating scale² (Appendix, item 35). A list of common pain diagnoses, with “other” as an option, was provided, and respondents were asked to identify all pain-related diagnoses made by a clinician (Appendix, item 4). The two most commonly selected pain diagnoses are reported.

Healthcare visits were captured by two items associated with the following two questions: (1) “In the past 12 months, how many times have you seen your doctor, a specialist, visited the emergency department or visited a walk-in clinic?”; and (2) “In the past 12 months, how many times have you seen other healthcare professionals (e.g., chiropractors, physiotherapists)?” (Appendix, items 19 and 22). Participants were asked to respond separately for each type of health professional listed in the first item. Visits to doctors, specialists, and walk-in clinics were collapsed to represent total visits to physician offices. Visits to emergency rooms and “other” health professionals were analyzed separately, as emergency room visits represent significantly greater societal costs, while visits to “other” health professionals represent costs potentially paid by the visiting individual. Ambiguous responses by chronic pain respondents, such as “a lot” or “too many to count”, were counted twice for visits to a primary care doctor, once for visits to a specialist, and thrice for visits to an “other” health professional; these responses were omitted from the analysis. Missing responses were counted as no visits to generate a conservative estimate of healthcare visits.

There is currently a lack of consensus in the literature as to what defines a frequent number of visits. From a review of the frequent number of visits to general practices, two main methods for defining “frequent visits” have been

used in the literature: (1) a select number of visits over a set period of time, ranging from two to 24 visits over two to 48 months, or (2) a percentage delineating the greatest number of visits ranging from the top 3–25% of visits, with the top 10% being the most commonly used definition. In studies defining a frequent number of visits as the top 10%, these visits accounted for up to 50% of total annual visits in general practices, representing a relatively small group requiring a significant quantity of healthcare resources.¹⁹ In the absence of consensus, and as the exact number of annual visits may vary by different healthcare systems (e.g., private vs publicly funded healthcare), frequent visits were defined as those reporting at or above the 90th percentile for each healthcare professional or setting (doctor, specialist, and walk-in clinic; emergency department; “other” healthcare professional). Each setting was considered separately; for example, a participant who reported one visit to a primary care doctor and 20 visits for physical therapy would have been considered in the 90th percentile for visits to an “other” healthcare professional but below the 90th percentile for visits to a primary care doctor, specialist, walk-in clinic, or emergency department.

Sociodemographic information was collected on sex, age, marital status, education, and annual household income (Appendix A, items 8–11, 16). Health information, in addition to chronic pain status, included smoking status and the number of chronic conditions (not including chronic pain) and was captured using items from the 2010 Canadian Community Health Survey (an annual cross-sectional survey administered by Statistics Canada that captures multiple health characteristics, including health status)²⁰ (Appendix, items 18 and 7). Responses for sociodemographic and general health items were categorized for comparison with previous Canadian research⁹ and collapsed as needed to create a minimum of five responses per cell to maintain participants’ anonymity.

Analysis

Age was normally distributed and thus described using mean [standard deviation (SD)]. Visits were described using median (interquartile range [IQR]). Sociodemographic, general health, and pain characteristics were described using frequency and percent. Sociodemographic and general health characteristics were compared between participants with and without chronic pain with odds ratios (OR) and 95% confidence intervals (95% CI). The relationship between each sociodemographic and general health characteristic and frequent healthcare visits was first examined using ORs and 95% CIs. Reference categories were selected to

represent what might be considered the low risk group (e.g., no chronic pain, youngest age, highest annual income). Sociodemographic and general health characteristics were tested for correlation using Kendall's tau before entering variables into the regression analysis. As no pair of sociodemographic or general health variables were correlated at $r \geq 0.4$, all variables were treated as independent variables rather than as confounders. Backwards manual logistic regression was used to determine the relationship between sociodemographic and general health characteristics and frequent visits to physicians (family doctors, specialists, and/or walk in clinics); emergency rooms; and "other" health professionals. Data analysis was conducted using IBM SPSS® version 21.0 (IBM Corp., Armonk, NY, USA).

Results

There were 1,509 completed questionnaires returned (response rate 1,509/8000 = 18.9%). There were 866 questionnaires returned due to address errors, 4,539 were not returned, and 1,086 were returned with refusals (response rate adjusted for address errors = 21.1%). Out of the 1509 respondents, 741 indicated that they experienced chronic pain, and 553 respondents indicated that they did not experience pain (215 respondents with pain of acute or missing duration were excluded). The provincial representation of the sample was consistent with the national population distribution, with the majority of participants from Ontario (38%), Quebec (24%), and British Columbia (13%).

Table 1 Sociodemographic and health characteristics of participants

Variable	Total Sample (<i>n</i> = 1,274)	No Chronic Pain (<i>n</i> = 553)	Chronic Pain (<i>n</i> = 741)	Odds Ratio (95% CI)	<i>P</i> value
Sex <i>n</i> (%)					
Male	694 (54.3)	322 (58.8)	372 (50.9)	1.0	
Female	585 (45.7)	226 (41.2)	359 (49.4)	1.4 (1.1 to 1.7)	0.005
Age, mean (SD)	57.5 (14.1)	55.9 (15.3)	58.8 (12.9)	1.0 (1.0 to 1.0)	<0.001
Marital status, <i>n</i> (%)					
Married or common-law	926 (72.5)	401 (73.3)	525 (71.8)	1.0	
Divorced, separated, or widowed	229 (17.9)	84 (15.4)	145 (19.8)	1.3 (1.0 to 1.8)	0.069
Single	123 (9.6)	62 (11.3)	61 (8.3)	0.8 (0.5 to 1.1)	0.137
Highest level of education, <i>n</i> (%)					
Post-secondary degree or certificate	755 (58.3)	344 (62.2)	411 (55.5)	1.0	
High school diploma, CEGEP, or less	386 (29.8)	145 (26.2)	241 (32.5)	1.4 (1.1 to 1.8)	0.010
Other	153 (11.8)	64 (11.6)	89 (12.0)	1.2 (0.8 to 1.7)	0.398
Total annual household income, <i>n</i> (%)					
\$100,000+	324 (27.3)	156 (30.7)	168 (24.5)	1.0	
\$50,000-\$99,999	451 (38.1)	203 (40.0)	248 (36.6)	1.1 (0.9 to 1.5)	0.388
< \$50,000	410 (34.6)	149 (29.3)	261 (38.6)	1.6 (1.2 to 2.2)	0.001
Smoking status, <i>n</i> (%)					
Never smoked	619 (48.7)	297 (54.7)	322 (44.3)	1.0	
Previously smoked	492 (38.7)	185 (34.1)	307 (42.2)	1.5 (1.2 to 1.9)	0.001
Currently smoking	159 (12.9)	61 (11.2)	98 (13.5)	1.5 (1.0 to 2.1)	0.031
Chronic conditions (not including pain diagnoses), <i>n</i> (%)					
0	637 (49.5)	324 (58.9)	313 (42.5)	1.0	
1	381 (29.6)	156 (28.4)	225 (30.6)	1.5 (1.2 to 1.9)	0.002
2	165 (12.8)	50 (9.1)	115 (15.6)	2.4 (1.7 to 3.4)	<0.001
≥ 3	103 (8.0)	20 (3.6)	83 (11.3)	4.3 (2.6 to 7.2)	<0.001

Sociodemographic and health characteristics of the participants are presented in Table 1. The most commonly reported chronic conditions were hypertension ($n = 265$; 20.5%), asthma or respiratory disorder ($n = 125$; 9.6%), mood or anxiety disorder ($n = 119$; 9.2%), diabetes ($n = 105$; 8.1%), and gastrointestinal ulcer or disorder ($n = 99$; 7.6%). Participants with chronic pain were more likely to report being diagnosed with other chronic conditions. Notably, they had 4.3 greater odds of having at least three chronic conditions when compared with participants without chronic pain (95% CI, 2.6 to 7.2).

Chronic pain was most commonly described as present many days or every day of the week ($n = 626$; 86.6%). On the 11-point numeric rating scale, 31% of participants rated the intensity of their pain as ≥ 7 ($n = 219$), and 38.7% of participants rated the intensity as 4-6 ($n = 278$). Eighty-seven percent of participants reporting chronic pain had been diagnosed with at least one pain condition ($n = 641$), with back problems ($n = 255$; 35.9%) and osteoarthritis ($n = 203$; 28.6%) as the most commonly identified pain diagnoses.

The median [IQR] number of visits to a physician's office was 3 [1-5], and the median number of visits to an emergency department (0 [0-0] visits) or "other" health professional (0 [0-5] visits) was zero in the past year (Table 2). Participants with chronic pain were more likely to be frequent visitors (≥ 90 th percentile) to all health settings compared with those without chronic pain. Categorizing visits at the 90th percentile resulted in the following definitions of frequent visitors: ≥ 9 annual visits to a physician's office, ≥ 1 annual visit to an emergency department, and ≥ 15 annual visits to an "other" health professional. The sociodemographic and general health characteristics of non-frequent visitors (bottom 90% of visits) and frequent visitors (top 10% of visits) are presented in Tables 3-5.

In the regression analyses, chronic pain was associated with frequent visits to a physician's office (OR, 4.7; 95%

CI, 2.8 to 7.9); emergency room (OR, 1.4; 95% CI, 1.0 to 2.0); and "other" healthcare professional (OR, 8.3; 95% CI, 4.5 to 15.5) (Tables 3-5).

The presence of multiple chronic conditions consistently increased the odds of participants being frequent visitors to all healthcare settings (Tables 3-5). In the regression analysis, having three or more chronic conditions had at least twice the odds of frequent visits to physicians' offices (OR, 8.5; 95% CI, 4.8 to 15.2), emergency departments (OR, 3.3; 95% CI, 1.9 to 5.6), and "other" health professionals (OR, 2.3; 95% CI, 1.2 to 4.5).

Sex, marital status, age, and annual household income were the only sociodemographic characteristics that were associated with frequent visits (Tables 3-5). The logistic regression models explained only a small proportion (7-20%) of the variation in frequency of visits for each setting.

Discussion

This novel Canadian study was designed to quantify the number of visits to healthcare settings by individuals with and without chronic pain (i.e., pain not limited to one location, e.g., back pain, or to one diagnosis) and to explore the role of chronic pain in the frequency of healthcare visits. Participants with chronic pain were more likely to be highly frequent visitors (≥ 90 th percentile) compared with those without chronic pain. The greatest disparity was seen in visits to family doctors, specialists, and/or walk-in clinics, and "other" healthcare professionals. Collectively, chronic pain status, general health, and sociodemographic characteristics explained only a small proportion of the variability in frequent visits; thus, the main drivers of frequent healthcare visits remain unknown.

Table 2 Frequency and percent of participants with ($n = 741$) and without ($n = 553$) chronic pain seeking healthcare stratified at ≥ 90 th percentile of visits in past year

Type of HCP* (90th percentile)	Median Number of Visits [IQR]**			< 90th Percentile of Visits n (%) ⁺		≥ 90 th Percentile of Visits n (%) ⁺⁺	
	Total	No pain	Chronic pain	No pain	Chronic pain	No pain	Chronic pain
Primary care, specialists, and walk-in clinic (≥ 9 visits)	3 [1-5]	2 [1-3]	4 [2-7]	532 (46.4)	615 (53.6)	21 (14.5)	124 (85.5)
Emergency (≥ 1 visit)	0 [0-0]	0 [0-0]	0 [0-0]	496 (44.4)	622 (55.6)	57 (32.4)	119 (67.6)
"Other" HCP* (≥ 15 visits)	0 [0-5]	0 [0-0]	1 [0-10]	541 (46.6)	620 (53.4)	12 (9.2)	118 (90.8)

Valid percentages presented; *HCP = Healthcare Provider; ** IQR = interquartile range; + = Percent below the 90th percentile of visits with/without chronic pain; ++ = Percent at and above the 90th percentile of visits with/without chronic pain

Table 3 Sociodemographic and general health characteristics stratified by visits to a physician's office (doctor, specialists, and/or a walk-in clinic) dichotomized at the 90th percentile of visits in past year (< 9 and ≥ 9)

Variable	< 9 Visits <i>n</i> (%) [*]	≥ 9 Visits <i>n</i> (%) [*]	Logistic Regression			
			Unadjusted OR (95% CI) [†]	<i>P</i> value	Adjusted OR (95% CI) [†]	<i>P</i> value
Sex						
Male	620 (54.7)	73 (50.7)	1.0			
Female	513 (45.3)	71 (49.3)	1.2 (0.8 to 1.7)	0.516		
Age (yr)	57.4 (13.8) [‡]	58.2 (16.1) [‡]	1.0 (1.0 to 1.0)	0.097		
Marital status						
Married or common-law	823 (72.7)	101 (70.1)	1.0		1.00	
Divorced, separated, or widowed	206 (18.2)	23 (16.0)	0.6 (0.3 to 1.1)	0.112	0.6 (0.4 to 1.1)	0.087
Single	103 (9.1)	20 (13.9)	1.5 (0.7 to 2.9)	0.266	1.8 (1.0 to 3.3)	0.060
Highest level of education						
Post-secondary degree or certificate	675 (58.8)	80 (55.2)	1.00			
High school diploma, CEGEP, or less	333 (29.0)	52 (35.9)	1.2 (0.8 to 1.9)	0.391		
Other	139 (12.1)	13 (9.0)	0.8 (0.4 to 1.6)	0.554		
Total annual household income						
\$100,000+	303 (28.9)	21 (15.3)	1.0			
\$50,000-\$99,999	397 (37.9)	53 (38.7)	1.6 (0.9 to 2.9)	0.087		
<\$50,000	347 (33.1)	63 (46.0)	1.7 (0.9 to 3.2)	0.085		
Smoking status						
Never smoked	561 (50.0)	57 (39.3)	1.0			
Previously smoked	418 (37.2)	73 (50.3)	1.4 (0.9 to 2.2)	0.123		
Currently smoking	144 (12.8)	15 (10.3)	0.8 (0.4 to 1.6)	0.576		
Chronic conditions (not including pain diagnoses)						
0	603 (52.9)	33 (22.8)	1.0		1.0	
1	337 (29.6)	44 (30.3)	2.0 (1.2 to 3.3)	0.010	2.1 (1.3 to 3.5)	0.004
2	134 (11.8)	31 (21.4)	3.8 (2.1 to 6.8)	0.000	3.9 (2.3 to 6.9)	<0.001
≥ 3	65 (5.7)	34 (25.5)	7.9 (4.3 to 14.8)	0.000	8.5 (4.8 to 15.2)	<0.001
Chronic Pain						
No	532 (46.4)	21 (14.5)	1.0		1.0	
Yes	615 (53.6)	124 (85.5)	4.6 (2.7 to 7.8)	0.000	4.7 (2.8 to 7.9)	<0.001

* = Valid percentages presented; † OR (95% CI) = odds ratio (95% confidence interval); ‡ = Mean (standard deviation) reported

1.0 denotes reference category

Unadjusted model Nagelkerke $r^2 = 0.22$

Adjusted model Nagelkerke $r^2 = 0.20$

The results of the regression analyses suggest that sociodemographic characteristics have a small influence and that the number of chronic diseases and the presence of chronic pain were the key health characteristics associated with frequent visits. These results are consistent with other studies comparing groups with and without chronic pain in which increased healthcare costs were associated with mental health conditions^{7,13} and other comorbidities.^{8,13} These results are also similar to those identified in the general population and chronic disease groups accessing care in both Canadian

and international healthcare systems, where multiple chronic conditions (including pain diagnoses)²¹⁻²⁸ was one of the most commonly identified characteristics associated with high use of healthcare resources or high healthcare costs. Older age has also been commonly associated with increasing healthcare use and costs,^{13,21,23} but in this study, it was only significant for visits to “other” health professionals. This result may have been due to the older average age of participants, as < 20% of the total sample was younger than 40 yr of age. Social issues (e.g., financial trouble,

Table 4 Sociodemographic and general health characteristics stratified by emergency room visits dichotomized at the 90th percentile of visits in past year (0 and ≥ 1)

Variable	0 Visits <i>n</i> (%) [*]	≥ 1 Visits <i>n</i> (%) [*]	Logistic Regression			
			Unadjusted OR (95% CI) [†]	<i>P</i> value	Adjusted OR (95% CI) [†]	<i>P</i> value
Sex						
Male	597 (54.1)	97 (55.4)	1.0			
Female	507 (45.9)	78 (44.6)	0.8 (0.5 to 1.1)	0.170		
Age (yr)	57.5 (13.7) [‡]	57.7 (16.0) [‡]	1.0 (1.0 to 1.0)	0.051		
Marital status						
Married or common-law	807 (73.2)	119 (67.6)	1.0			
Divorced, separated, or widowed	191 (17.3)	38 (21.6)	1.5 (0.9 to 2.3)	0.105		
Single	104 (9.4)	19 (10.8)	1.2 (0.6 to 2.2)	0.569		
Highest level of education						
Post-secondary degree or certificate	658 (58.9)	97 (55.1)	1.0			
High school diploma, CEGEP, or less	322 (28.8)	64 (36.4)	1.3 (0.9 to 1.9)	0.154		
Other	138 (12.3)	15 (8.5)	0.8 (0.4 to 1.4)	0.392		
Total annual household income						
\$100,000+	294 (28.9)	30 (17.8)	1.0		1.0	
\$50,000-\$99,999	377 (37.1)	74 (43.8)	1.7 (1.1 to 2.7)	0.028	1.7 (1.1 to 2.7)	0.028
<\$50,000	345 (34.0)	65 (38.5)	1.4 (0.8 to 2.4)	0.252	1.4 (0.9 to 2.2)	0.186
Smoking status						
Never smoked	534 (48.8)	85 (48.3)	1.0			
Previously smoked	419 (38.3)	73 (41.5)	0.9 (0.6 to 1.3)	0.495		
Currently smoking	141 (12.9)	18 (10.2)	0.6 (0.3 to 1.1)	0.081		
Chronic conditions (not including pain diagnoses)						
0	581 (52.3)	56 (31.6)	1.0		1.0	
1	327 (29.5)	54 (30.7)	1.6 (1.0 to 2.4)	0.038	1.5 (1.0 to 2.3)	0.033
2	127 (11.4)	38 (21.6)	3.1 (1.9 to 5.1)	0.000	2.8 (1.7 to 4.5)	<0.001
≥ 3	75 (6.8)	28 (15.9)	3.7 (2.1 to 6.4)	0.000	3.3 (1.9 to 5.6)	<0.001
Chronic Pain						
No	496 (44.4)	57 (32.4)	1.0		1.0	
Yes	622 (55.6)	119 (67.6)	1.5 (1.0 to 2.1)	0.037	1.4 (1.0 to 2.0)	0.054

* = Valid percentages presented; † = 95% CI = 95% confidence interval; ‡ = Mean (standard deviation) reported

1.0 denotes reference category

Unadjusted model Nagelkerke $r^2 = 0.08$

Adjusted model Nagelkerke $r^2 = 0.07$

uncertain housing) have also been identified as critical elements in explaining high healthcare use and costs.²³ This information was not collected, which may explain why the variables captured in this study were limited in predicting frequent visits.

The role of chronic pain in explaining the number of frequent visits, after controlling for number of chronic conditions, suggests that individuals with chronic pain may seek care because they have complicated health needs (e.g., multiple medications). The strong association between pain and chronic disease may only be partly

explained by pain being a symptom of the chronic disease.^{3,29-31} Altered physiological processes and the added physiological and psychological stress of various chronic diseases may also increase vulnerability to the development of chronic pain.³⁰

Participants from across Canada reported a wide range of chronic pain conditions. As a result, this study contributes to our knowledge about the relationship between chronic pain and healthcare utilization in Canada beyond what was previously limited to individual diagnoses^{9,32} or rural family practice settings.³³ Potential

Table 5 Sociodemographic and general health characteristics stratified by visits to “other” healthcare professionals dichotomized at the 90th percentile of visits in past year (<15 and ≥ 15)

Variable	<15 Visits n (%) [*]	≥15 Visits n (%) [*]	Logistic Regression			
			Unadjusted OR (95% CI) [†]	P value	Adjusted OR (95%CI) [†]	P value
Sex						
Male	641 (55.9)	51 (39.2)	1.0		1.0	
Female	505 (44.1)	79 (60.8)	1.9 (1.3 to 2.9)	0.003	1.9 (1.2 to 2.8)	0.003
Age (yr)	57.9 (14.1) [‡]	54.9 (13.3) [‡]	1.0 (1.0 to 1.0)	0.154	1.0 (1.0-1.0)	0.055
Marital status						
Married or common-law	822 (71.8)	102 (78.5)	1.0			
Divorced, separated, or widowed	213 (18.6)	16 (12.3)	0.7 (0.4 to 1.2)	0.178		
Single	110 (9.6)	12 (9.2)	1.2 (0.6 to 2.6)	0.590		
Highest level of education						
Post-secondary degree or certificate	675 (58.1)	79 (60.8)	1.0			
High school diploma, CEGEP, or less	346 (29.8)	38 (29.2)	1.0 (0.6 to 1.6)	0.951		
Other	140 (12.1)	13 (10.0)	0.8 (0.4 to 1.6)	0.539		
Total annual household income						
\$100,000+	280 (26.4)	43 (35.0)	1.0		1.0	
\$50,000-\$99,999	404 (38.1)	47 (38.2)	0.8 (0.5 to 1.3)	0.287	0.7 (0.5 to 1.2)	0.198
<\$50,000	280 (26.4)	43 (35.0)	0.5 (0.3 to 0.8)	0.011	0.4 (0.3 to 0.7)	0.003
Smoking status						
Never smoked	547 (58.1)	70 (53.8)	1.0			
Previously smoked	446 (39.2)	46 (35.4)	0.7 (0.5 to 1.1)	0.110		
Currently smoking	144 (12.7)	14 (10.8)	0.6 (0.3 to 1.2)	0.122		
Chronic conditions (not including pain diagnoses)						
0	587 (50.9)	47 (36.4)	1.0		1.0	
1	334 (28.9)	47 (36.4)	2.0 (1.3 to 3.3)	0.003	1.9 (1.2 to 3.1)	0.006
2	148 (12.8)	17 (13.2)	1.7 (0.9 to 3.2)	0.111	1.5 (0.8 to 2.9)	0.176
≥ 3	85 (7.4)	18 (14.0)	2.4 (1.2 to 4.8)	0.011	2.3 (1.2 to 4.5)	0.017
Chronic Pain						
No	541 (46.6)	12 (9.2)	1.0		1.0	
Yes	620 (53.4)	118 (90.8)	8.8 (4.7 to 16.5)	0.000	8.3 (4.5 to 15.5)	<0.001

* = Valid percentages presented; † = 95% CI = 95% confidence interval; ‡ = Mean (standard deviation) reported

1.0 denotes reference category

Unadjusted model Nagelkerke $r^2 = 0.19$

Adjusted model Nagelkerke $r^2 = 0.18$

participants were identified through telephone books; thus, the study sample may have included fewer younger individuals who are more likely to rely on mobile telephones.³⁴ The higher likelihood of including older individuals in the participant pool may explain why participants had more chronic conditions on average than national norms.³⁵ The older sample may have inflated the number of reported visits above the true average for Canadian adults as increasing age has been previously identified as a predictor of increased healthcare costs and use.^{7,13,21,23} As all the data were gathered using self-report, the number of visits may have been affected by recall bias; however, prior comparisons suggest that participant recall

is similar to actual number of visits in consecutive³⁶ and ill patient groups.³⁷ As recall bias has not been compared between healthy and ill individuals, it is unknown whether the results of this study may have been affected by pain-free individuals perhaps recalling fewer visits than those with chronic pain. Similarly, self-reported chronic conditions would not include undiagnosed conditions that may be associated with frequent visits, and the duration of each condition was not captured, although individuals with recently diagnosed vs stabilized conditions may differ in the amount of resources accessed.³⁸ A major limitation of this study is the low response rate. While within the range reported by other international population-level surveys of

chronic pain¹ and similar to other pain surveys of Canadians,^{39,40} a large proportion of questionnaires were never returned. Consequently, it is unknown whether these missing questionnaires were lost in the mailing process due to the concurrent postal strike or whether the recipients refused to participate. Assuming the latter, the results reported in this manuscript may not fully represent the diverse pain, health, and healthcare visit experiences of Canadians with varying health issues (e.g., those with vision impairment would be unlikely to participate). With no information collected on non-respondents, those individuals opting not to participate may have differed from respondents in some important characteristics, and thus, the results must be interpreted in light of this limitation. Visits to the various health settings were treated independently in the analysis, but they were likely linked as individuals with poor access to primary care may be more likely to visit an emergency department.⁴¹ The lack of consensus in definitions of “frequent visits” makes the results of this study difficult to compare with the literature; however, using the 90th percentile to define the frequent visits group likely identified a group with high need and associated costs.

Implications

The results of this study indicate that individuals living with chronic pain are more likely to have more frequent healthcare visits than individuals without chronic pain. Nevertheless, factors influencing highly frequent use among individuals with chronic pain were not clearly identified in this study. Therefore, the findings of this study require confirmation in larger prospective studies with additional risk factors that may impact healthcare use. If further study supports our finding that individuals with chronic pain and multiple chronic conditions represent a group with high needs and unique challenges, then research

will be needed to develop and test interventions that draw on multiple resources to target this group, including medical, social, financial, and community services.

Conclusion

The combination of chronic pain and multiple chronic conditions may increase the odds of making frequent visits to family doctors, specialists, and urgent care settings, adding to the growing utilization and costs of healthcare. Further studies are needed to elucidate potentially modifiable risk factors in order to address the challenges of living with chronic pain and multimorbidity. Interventions can then be developed to support these individuals in achieving optimal function and independence in managing their health.

Author contributions: *Elizabeth Mann* and *Elizabeth VanDenKerkhof* made substantial contributions to the acquisition of data and drafted the article. *Elizabeth Mann*, *Elizabeth VanDenKerkhof*, and *Ana Johnson* made substantial contributions to the analysis and interpretation of data and critically revised the article for important intellectual content. *Ana Johnson* and *Elizabeth VanDenKerkhof* made substantial contributions to the conception and design of the study.

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Conflicts of interest None declared.

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Appendix



Epidemiology and Self-Management of Neuropathic Pain in Canada

This survey can also be completed online at:
<http://ca.studentvoice.com/queens/neuropathicpain>
(Your ID number is: _____)

If you do not wish to participate in this study, would you please help us by indicating a reason below:

- I have severe pain and am thus unable to participate.
- I have a health condition that prevents me from participating.

Other (please specify): _____

We may wish to contact you again to learn more about your health. If you are willing to be contacted about future research opportunities, please tick the box.

1. Are you currently troubled by pain or discomfort, either all of the time or on and off?

Yes

If yes, have you had this pain or discomfort for more than 3 months? Yes No

No

If no, please answer questions 7 – 34.

2. How often are you bothered by this pain or discomfort?

All the time or daily Many days of the week Once per week Once per month

3. Are you experiencing pain at the time of completing this questionnaire?

Yes

No (*If no, please answer any pain-related questions thinking of a painful episode you have had in the past three weeks*)

4. Have you been diagnosed with any of the following common causes of pain?

Pain from past surgery

If yes, did you have surgery more than 3 months ago? Yes No

Back problems (such as a slipped disc, back surgery, or sciatica)

Diabetes

An accident that damaged a nerve

Amputation of a limb

Fibromyalgia

Leg ulcers

Shingles

Cancer

Chronic widespread pain

Migraine

Osteoarthritis (OA)

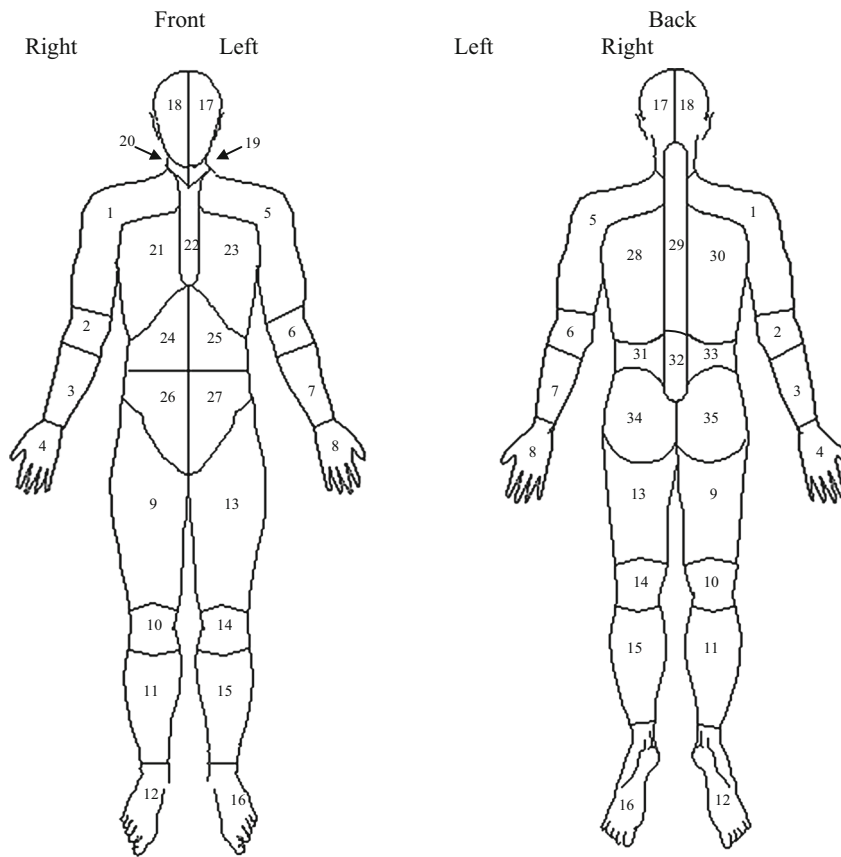
Rheumatoid arthritis (RA)

Arthritis (other than OA or RA): *please specify:* _____

Vulvodynia

Other, *please specify:* _____

None of the above



5. I experience pain in the area(s) marked with the number(s) _____

6. I experience my most troublesome pain in the area marked with the number(s) _____
 (please indicate just one area, this may be one or two numbers depending on whether you experience your most troublesome pain on one or both sides of your body)

7. Have you been told by a health professional that you have any of the following chronic health conditions? (*Please select all that apply*)

- Asthma
- Anxiety disorder (e.g. phobia, obsessive-compulsive disorder, or panic disorder)
- Bowel disorder (e.g. Crohn's disease, ulcerative colitis, irritable bowel syndrome, or bowel incontinence)
- Chronic bronchitis, emphysema, or chronic obstructive pulmonary disease (COPD)
- Chronic fatigue syndrome
- Diabetes
- Heart disease (e.g. heart attack, congestive heart failure)
- Hypertension or high blood pressure
- Mood disorder (e.g. depression, bipolar disorder, mania, or dysthymia)
- Multiple chemical sensitivities
- Intestinal or stomach ulcers
- Stroke
- Urinary incontinence
- Other, *please specify*: _____

8. Are you? Male Female

9. What is your current age? _____

10. Which best describes your marital status?

- Single
- Married
- Living together
- Separated
- Divorced
- Widowed

11. What is your highest level of education?

- Grade 8 or less
- Some high school without diploma
- High school diploma
- CEGEP, uncompleted
- Completed CEGEP
- Trade or professional school certificate/diploma
- Some university
- University degree
- Post-graduate degree(s)
- Other, *please specify*: _____

12. Which of the following best describes your current employment status:

- Working full time (35 hrs or more per week)
- Working part time (less than 35 hrs per week)
- Unemployed and looking for work
- Unable to work due to disability and receiving disability compensation
- Unable to work due to disability and seeking disability compensation
- Retired
- At home and not looking for paid employment
- Student
- Other, *please specify*: _____

13. Is your home:

- Owned or mortgaged by you or your family
- Rented from a private landlord
- Rented from the city/council
- Other, *please specify*: _____

14. How many persons usually live at this address as of August 1st, 2011? _____

(Include all persons who have their main residence at this address, even if they are temporarily away. Children in joint custody should be included in the home of that parent where they live most of the time. Children who spend equal time with each parent should be included in the home of that parent with whom they are staying August 1st, 2011 (same as date above). Students should be included in their parents' address, even if they live elsewhere while attending school or working at a summer job. Spouses or common-law partners temporarily away should be listed in the main residence of their family. Persons in an institution for less than 6 months should be listed at their usual residence)

15. Is your main source of income from:

- Employment
- Employment insurance/Workplace compensation/Welfare
- Senior's benefits
- Other, *please specify*: _____

16. Is your annual household income:

- Less than \$19,999
- \$20,000 to \$49,999
- \$50,000 to \$99,999
- \$100,000 to \$149,999
- \$150,000 or more

17. Please indicate your ethnic origin:

- White
- South Asian (e.g. East Indian, Pakistani, Sri Lankan, etc.)
- Chinese
- Black
- Filipino
- Latin American
- Arab
- Southeast Asian (e.g. Vietnamese, Cambodian, Malaysian, Laotian, etc.)
- West Asian (e.g. Iranian, Afghan, etc.)
- Korean
- Japanese
- Other, please specify: _____

18. Which of the following best describes your smoking habits? (*For this question, a regular smoker is someone who has smoked at least 1 cigarette per day for at least 1 year.*)

- I have never smoked
- I am an ex-smoker
- I smoke occasionally
- I am a regular smoker now

19. In the past 12 months, how many times have you seen your doctor, a specialist, visited the emergency department or visited a walk-in clinic? (if you have not visited one/all of the listed services, please write "0")

_____ Doctor
 _____ Specialist
 _____ Walk-in
 _____ ER

20. In the past 12 months, how many days of work, school, or other regular activities did you miss due to health-related issues? _____ Days

21. In the past 12 months, how many days did your health interfere with physical or daily activities including socializing? _____ Days

22. In the past 12 months, how many times have you seen other health care professionals (e.g. chiropractors, physiotherapists)? _____ Times

23. In the past 12 months, how happy have you been with your ability to **control your pain** by means of medication or other therapy?

- Not applicable, since I have no significant pain
- Completely dissatisfied
- Somewhat or fairly satisfied
- Completely satisfied

The following questions ask for your views about your health. Answer every question by selecting your answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

24. In general, would you say your health is:

Excellent	Very Good	Good	Fair	Poor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a. <u>Vigorous activities</u> , such as running, lifting heavy objects, participating in strenuous sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Lifting or carrying groceries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Climbing <u>several</u> flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Climbing <u>one</u> flight of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Bending, kneeling, or stooping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Walking <u>more than a kilometre</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Walking <u>several hundred meters</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Walking <u>one hundred meters</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Bathing or dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Cut down on the <u>amount of time</u> you spent on work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b <u>Accomplished less</u> than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Were limited in the <u>kind</u> of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d Had <u>difficulty</u> performing the work or other activities (for example, it took extra effort)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

28. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. Cut down on the <u>amount of time</u> spent on work other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <u>Accomplished less</u> than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Did work or other activities <u>less carefully than usual</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

29. During the past 4 weeks, to what extent has your physical or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

Not at all	Slightly	Moderately	Quite a bit	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. How much bodily pain have you had during the past 4 weeks?

None	Very Mild	Mild	Moderate	Severe	Very Severe
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all A little bit Moderately Quite a bit Extremely

32. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks . . .

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. Did you feel full of life?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have you been very nervous?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Have you felt so down in the dumps that nothing could cheer you up?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Have you felt calm and peaceful?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Did you have a lot of energy?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Have you felt downhearted and depressed?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Did you feel worn out?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Have you been happy?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Did you feel tired?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time Most of the time Some of the time A little of the time None of the time

34. How TRUE or FALSE is each of the following statements for you?

- | | Definitely
true | Mostly
true | Don't
know | Mostly
false | Definitely
false |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| a. I seem to get sick a little easier than other people | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. I am as healthy as anyone I know | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. I expect my health to get worse | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. My health is excellent | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

35. On the scale below, please indicate how bad your pain (that you have previously identified on the body diagram) has been in the last week where: '0' means no pain and '10' means pain as severe as it could be.

NONE 0 1 2 3 4 5 6 7 8 9 10 SEVERE PAIN

*Think about how your pain that you showed in the diagram has felt **over the last week**. Put a tick against the descriptions that best match your pain. These descriptions may, or may not match your pain no matter how severe it feels. Only circle the responses that describe your pain.*

36. In the area where you have pain, do you also have 'pins and needles', tingling, or prickling sensations?

- NO – I don't get these sensations
 YES – I get these sensations often

37. Does the painful area change colour (perhaps looks mottled or more red) when the pain is particularly bad?

- NO – The pain does not affect the colour of my skin
 YES – I have noticed that the pain does make my skin look different from normal

38. Does your pain make the affected skin abnormally sensitive to touch? Getting unpleasant sensations or pain when lightly stroking the skin might describe this.

- NO – The pain does not make my skin in that area abnormally sensitive to touch
 YES – My skin in that area is particularly sensitive to touch

39. Does your pain come on suddenly and in bursts for no apparent reason when you are completely still? Words like ‘electric shocks’, jumping and bursting might describe this.

- NO – My pain doesn’t really feel like this
 YES – I get these sensations often

40. In the area where you have pain, does your skin feel unusually hot like a burning pain?

- NO – I don’t have burning pain
 YES – I get burning pain often

41. Gently rub the painful area with your index finger and then rub a non-painful area (for example, an area of skin further away or on the opposite side from the painful area). How does this rubbing feel in the painful area?

- The painful area feels no different from the non-painful area
 I feel discomfort, like pins and needles, tingling, or burning in the painful area that is different from the non-painful area

42. Gently press on the painful area with your finger tip then gently press in the same way onto a non-painful area (the same non-painful area that you chose in the last question). How does this feel in the painful area?

- The painful area does not feel different from the non-painful area
 I feel numbness or tenderness in the painful area that is different from the non-painful area

43. Does the pain have one or more of the following characteristics?

	YES	NO
Burning	<input type="checkbox"/>	<input type="checkbox"/>
Painful cold	<input type="checkbox"/>	<input type="checkbox"/>
Electric shocks	<input type="checkbox"/>	<input type="checkbox"/>

44. Is the pain associated with one or more of the following symptoms in the same area?

	YES	NO
Tingling.....	<input type="checkbox"/>	<input type="checkbox"/>
Pins and needles.....	<input type="checkbox"/>	<input type="checkbox"/>
Numbness.....	<input type="checkbox"/>	<input type="checkbox"/>
Itching	<input type="checkbox"/>	<input type="checkbox"/>

45. Please use the scale below to tell us how intense your pain is. Place an “X” through the number that best describes the intensity of your pain.

No pain sensation	0	1	2	3	4	5	6	7	8	9	10	The most <u>intense</u> pain imaginable
-------------------	---	---	---	---	---	---	---	---	---	---	----	---

46. Please use the scale below to tell us how sharp your pain feels. Words used to describe “sharp” feelings include “like a knife”, “like a spike”, “jabbing” or “like jolts.”

Not sharp

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

 The most sharp sensation imaginable (“like a knife”)

47. Please use the scale below to tell us how hot your pain feels. Words used to describe very hot pain include “burning” and “on fire”.

Not hot

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

 The hottest sensation imaginable (“on fire”)

48. Please use the scale below to tell us how dull your pain feels. Words used to describe very dull pain include “like a dull toothache,” “dull pain,” and “like a sore muscle.”

Not Dull

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

 The dullest sensation imaginable

49. Please use the scale below to tell us how cold your pain feels. Words used to describe very cold pain include “like ice” and “freezing.”

Not cold

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

 The coldest pain sensation imaginable (“freezing”)

50. Please use the scale below to tell us how sensitive your skin is to light touch or clothing. Words used to describe sensitive skin include “like sunburned skin” and “raw skin.”

Not sensitive

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

 The most sensitive pain sensation imaginable (“raw skin”)

51. Please use the scale below to tell us how itchy your pain feels. Words used to describe itchy skin include “like poison oak” and “like a mosquito bite.”

Not itchy

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

 The itchiest pain sensation imaginable (“like poison ivy”)

52. Which of the following best describes the time quality of your pain? Please check only one answer.

() I feel a background pain all of the time **and** occasional flare-ups (break-through pain) some of the time.

Describe the background pain: _____

Describe the flare-up (break-through) pain: _____

() I feel a single type of pain all the time. Describe this pain: _____

() I feel a single type of pain only sometimes. Other times I am pain free.

Describe this occasional pain: _____

53. Now that you have told us the different physical aspects of your pain, and the different types of sensations, we want you to tell us overall how unpleasant your pain is to you. Words used to describe very unpleasant pain include “miserable” and “intolerable.” Remember, pain can have a low intensity, but still feel extremely unpleasant, and some kinds of pain can have a high intensity but be very tolerable. With this scale, please tell us how unpleasant your pain feels.

Not unpleasant	0	1	2	3	4	5	6	7	8	9	10	The most <u>unpleasant</u> sensation imaginable (“intolerable”)
----------------	---	---	---	---	---	---	---	---	---	---	----	---

54. Lastly, we want you to give us an estimate of the severity of your deep versus surface pain. We want you to rate each location of pain separately. We realize that it can be difficult to make these estimates, and most likely it will be a “best guess,” but please give us your best estimate.

HOW INTENSE IS YOUR DEEP PAIN?

No <u>deep</u> pain	0	1	2	3	4	5	6	7	8	9	10	The most <u>intense deep</u> pain sensation imaginable
---------------------	---	---	---	---	---	---	---	---	---	---	----	--

HOW INTENSE IS YOUR SURFACE PAIN?

No <u>surface</u> pain	0	1	2	3	4	5	6	7	8	9	10	The most <u>intense surface</u> pain sensation imaginable
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- | | Yes | No |
|--|--------------------------|--------------------------|
| 55. Have you sought treatment for this pain or discomfort recently? | <input type="checkbox"/> | <input type="checkbox"/> |
| 56. Have you sought treatment for this pain or discomfort often? | <input type="checkbox"/> | <input type="checkbox"/> |
| 57. Have you taken painkillers for this pain or discomfort recently? | <input type="checkbox"/> | <input type="checkbox"/> |
| 58. Have you taken painkillers for this pain or discomfort often? | <input type="checkbox"/> | <input type="checkbox"/> |

59. What treatments or medications are you receiving for your pain?

These items deal with ways you've been coping with the stress in your life since you developed chronic pain. Different people deal with things in different ways, but we are interested in how you have tried to deal with it. Each item says something about a particular way of coping. Please indicate how much or how frequently you have been doing each item. Don't answer on the basis of whether it seems to be working or not—just whether or not you are doing it. Make your answers as true FOR YOU as you can.

60. I've been turning to work or other activities to take my mind off things.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

61. I've been concentrating my efforts on doing something about the situation I'm in.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

62. I've been saying to myself "this isn't real."

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

63. I've been using alcohol or other drugs to make myself feel better.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

64. I've been getting emotional support from others.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

65. I've been giving up trying to deal with it.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

66. I've been taking action to try to make the situation better.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

67. I've been refusing to believe that it has happened.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

68. I've been saying things to let my unpleasant feelings escape.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

69. I've been getting help and advice from other people.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

70. I've been using alcohol or other drugs to help me get through it.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

71. I've been trying to see it in a different light, to make it seem more positive.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

72. I've been criticizing myself.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

73. I've been trying to come up with a strategy about what to do.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

74. I've been getting comfort and understanding from someone.

- I haven't been doing this at all
 I've been doing this a little bit
 I've been doing this a medium amount
 I've been doing this a lot

75. I've been giving up the attempt to cope.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

76. I've been looking for something good in what is happening.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

77. I've been making jokes about it.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

78. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

79. I've been accepting the reality of the fact that it has happened.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

80. I've been expressing my negative feelings.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

81. I've been trying to find comfort in my religion or spiritual beliefs.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

82. I've been trying to get advice or help from other people about what to do.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

83. I've been learning to live with it.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

84. I've been thinking hard about what steps to take.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

85. I've been blaming myself for things that happened.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

86. I've been praying or meditating.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

87. I've been making fun of the situation.

- I haven't been doing this at all I've been doing this a little bit I've been doing this a medium amount I've been doing this a lot

88. From the list below, please select any of the things you feel have made managing your chronic pain either easier or harder (select all that apply):

- Self-confidence in your ability to manage your pain
 Support from family and/or friends
 Relationship with your health care provider(s)
 Access to health care services
 Depression or feeling down
 Intensity of your pain
 Fear of making your pain worse
 Your ability to read and/or understand health information
 Other, please specify: _____

Please rate how *confident* you are that you can do the following things *at present, despite the pain*. To indicate your answer, circle *one* of the numbers on the scale under each item, where 0 = not at all confident and 6 = completely confident. Remember, this questionnaire is *not* asking whether or not you have been doing these things, but rather *how confident you are that you can do them at present, despite the pain*.

89. I can enjoy things, despite the pain.

0 1 2 3 4 5 6
 Not at all Completely
 confident confident

90. I can do most of the household chores (e.g. tidying-up, washing dishes, etc.), despite the pain.

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

91. I can socialize with my friends or family members as often as I used to do, despite the pain.

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

92. I can cope with my pain in most situations.

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

93. I can do some form of work, despite the pain. (“work” includes housework, paid and unpaid work).

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

94. I can still do many of the things I enjoy doing, such as hobbies or leisure activities, despite pain.

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

95. I can cope with my pain without medications.

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

96. I can still accomplish most of my goals in life, despite the pain.

0 1 2 3 4 5 6
Not at all **Completely**
confident **confident**

97. I can live a normal lifestyle, despite the pain.

	1	2	3	4	5
102. Has your doctor involved you as an equal partner in making decisions and illness management strategies and goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
103. Has your doctor or other health care advisor listened carefully to what you had to say about your illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
104. Has your doctor or other health advisor (nurse, dietician) answered your questions and addressed your concerns during office visits?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
105. Has your doctor or other health care provider thoroughly explained the results of tests you have had done (e.g. cholesterol, blood pressure, or other laboratory tests)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
106. How important are <i>health care team</i> resources to you in managing your illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
107. Have family or friends exercised with you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
108. Have family or friends listened carefully to what you have to say about your illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
109. Have family or friends encouraged you to do the things you need to do for your illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
110. Have family or friends selected or requested healthy food choices when you ate with them?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
111. Have you shared healthy low-fat recipes with family or friends?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
112. Have family or friends helped you remember to take your medicine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Not at all			A moderate amount	
	1	2	3	4	5
					A great deal

113. Have family or friends bought food or prepared food for you that was especially healthy or recommended?
114. How **important** is *family and friend* support in managing your illness?

Over the **last 2 weeks**, how often have you been bothered by any of the following problems?

- | | Not at
all | Several
days | More than
half the
days | Nearly
every
day |
|---|--------------------------|--------------------------|-------------------------------|--------------------------|
| 115. Little interest or pleasure in doing things | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 116. Feeling down, depressed or hopeless | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 117. Trouble falling or staying asleep, or sleeping too much | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 118. Feeling tired or having little energy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 119. Poor appetite or overeating | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 120. Feeling bad about yourself – or that you are a failure or have let yourself or your family down | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 121. Trouble concentrating on things, such as reading the newspaper or watching television | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 122. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 123. Thoughts that you would be better off dead or of hurting yourself in some way | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

THANK YOU FOR YOUR PARTICIPATION!

References

1. Elzahaf RA, Tashani OA, Unsworth BA, Johnson MI. The prevalence of chronic pain with an analysis of countries with a Human Development Index less than 0.9: a systematic review without meta-analysis. *Curr Med Res Opin* 2012; 28: 1221-9.
2. American Society of Anesthesiologists Task Force on Chronic Pain Management, American Society of Regional Anesthesia and Pain Medicine. Practice guidelines for chronic pain management: an updated report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology* 2010; 112: 810-33.
3. Leadley RM, Armstrong N, Lee YC, Allen A, Kleijnen J. Chronic diseases in the European Union: the prevalence and health cost implications of chronic pain. *J Pain Palliat Care Pharmacother* 2012; 26: 310-25.
4. Barham L. Economic burden of chronic pain across Europe. *J Pain Palliat Care Pharmacother* 2012; 26: 70-2.
5. Canadian Institute for Health Information. Doctors' Pay Still Growing, But Slower Than Before. Available from URL: http://www.cihi.ca/CIHI-ext-portal/internet/EN/document/spending+and+health+workforce/workforce/physicians/release_22jan13 (accessed (February, 2015)).
6. Hong J, Reed C, Novick D, Hapich M. Costs associated with treatment of chronic low back pain: an analysis of the UK General Practice Research Database. *Spine (Phila Pa 1976)* 2013; 38: 75-82.
7. Gore M, Sadosky A, Stacey BR, Tai KS, Leslie D. The burden of chronic low back pain: clinical comorbidities, treatment patterns, and health care costs in usual care settings. *Spine (Phila Pa 1976)* 2012; 37: E668-77.
8. Roberts MH, Mapel DW, Hartry A, Von Worley A, Thomson H. Chronic pain and pain medication use in chronic obstructive pulmonary disease. A cross-sectional study. *Ann Am Thorac Soc* 2013; 10: 290-8.
9. Lim KL, Jacobs P, Klarenbach S. A population-based analysis of healthcare utilization of persons with back disorders: results from

- the Canadian Community Health Survey 2000-2001. *Spine (Phila Pa 1976)* 2006; 31: 212-8.
10. *Jonsdottir T, Jonsdottir H, Lindal E, Oskarsson GK, Gunnarsdottir S.* Predictors for chronic pain-related health care utilization: a cross-sectional nationwide study in Iceland. *Health Expect* 2014; . DOI:10.1111/hex.12245.
 11. *Jonsdottir T, Jonsdottir H, Gunnarsdottir S, Lindal E.* Health care utilization in chronic pain-A population based study. *Scand J Pain* 2013; 4: 255.
 12. *Gannon B, Finn DP, O'Gorman D, Ruane N, McGuire BE.* The cost of chronic pain: an analysis of a regional pain management service in Ireland. *Pain Med* 2013; 14: 1518-28.
 13. *Ruetsch C, Tkacz J, Kardel PG, Howe A, Pai H, Levitan B.* Trajectories of health care service utilization and differences in patient characteristics among adults with specific chronic pain: analysis of health plan member claims. *J Pain Res* 2013; 6: 137-49.
 14. *VanDenKerkhof EG, Mann EG, Torrance N, Smith BH, Johnson A, Gilron I.* An epidemiological study of neuropathic pain symptoms in Canadian adults. *Pain Res Manag* 2015; pii: 17125.
 15. *Task Force on Taxonomy of the International Association for the Study of Pain.* Classification of Chronic Pain. Descriptions of Chronic Pain Syndromes and Definitions of Pain Terms, 2nd ed. Seattle: IASP Press; 1994.
 16. *Torrance N, Smith BH, Bennett MI, Lee AJ.* The epidemiology of chronic pain of predominantly neuropathic origin. Results from a general population survey. *J Pain* 2006; 7: 281-9.
 17. *Azevedo LF, Costa-Pereira A, Mendonca L, Dias CC, Castro-Lopes JM.* Epidemiology of chronic pain: a population-based nationwide study on its prevalence, characteristics and associated disability in Portugal. *J Pain* 2012; 13: 773-83.
 18. *Johannes CB, Le TK, Zhou X, Johnston JA, Dworkin RH.* The prevalence of chronic pain in United States adults: results of an Internet-based survey. *J Pain* 2010; 11: 1230-9.
 19. *Vedsted P, Christensen MB.* Frequent attenders in general practice care: a literature review with special reference to methodological considerations. *Public Health* 2005; 119: 118-37.
 20. *Statistics Canada.* Canadian Community Health Survey (CCHS) - 2010. Available from URL: http://www23.statcan.gc.ca/imdb-bmdi/pub/instrument/3226_Q1_V7-eng.pdf (accessed October 2015).
 21. *Termer M, Reason B, McKeag AM, Tipper B, Webster G.* Chronic conditions more than age drive health system use in Canadian seniors. *Healthc Q* 2011; 14: 19-22.
 22. *Health Canada.* Complementary and Alternative Health Care: The Other Mainstream? Available from URL: <http://www.hc-sc.gc.ca/sr-sr/pubs/hpr-rpms/bull/2003-7-complement/index-eng.php#page9> (accessed October 2015).
 23. *Chechulin Y, Nazerian A, Rais S, Malikov K.* Predicting patients with high risk of becoming high-cost healthcare users in Ontario (Canada). *Healthc Policy* 2014; 9: 68-79.
 24. *Lehnert T, Heider D, Leicht H, et al.* Review: health care utilization and costs of elderly persons with multiple chronic conditions. *Med Care Res Rev* 2011; 68: 387-420.
 25. *Glynn LG, Valderas JM, Healy P, et al.* The prevalence of multimorbidity in primary care and its effect on health care utilization and cost. *Fam Pract* 2011; 28: 516-23.
 26. *Howard M, Goertzen J, Kaczorowski J, et al.* Emergency department and walk-in clinic use in models of primary care practice with different after-hours accessibility in Ontario. *Healthc Policy* 2008; 4: 73-88.
 27. *Moe J, Bailey AL, Oland R, Levesque L, Murray H.* Defining, quantifying, and characterizing adult frequent users of a suburban Canadian emergency department. *CJEM* 2013; 15: 214-26.
 28. *van Oostrom SH, Picavet HS, de Bruin SR, et al.* Multimorbidity of chronic diseases and health care utilization in general practice. *BMC Fam Pract* 2014; 15: 61.
 29. *van Hecke O, Torrance N, Smith BH.* Chronic pain epidemiology - where do lifestyle factors fit in? *Br J Pain* 2013; 7: 209-17.
 30. *Dominick CH, Blyth FM, Nicholas MK.* Unpacking the burden: understanding the relationships between chronic pain and comorbidity in the general population. *Pain* 2012; 153: 293-304.
 31. *Rashiq S, Dick BD.* Factors associated with chronic noncancer pain in the Canadian population. *Pain Res Manag* 2009; 14: 454-60.
 32. *Stokes M, Becker WJ, Lipton RB, et al.* Cost of health care among patients with chronic and episodic migraine in Canada and the USA: results from the International Burden of Migraine Study (IBMS). *Headache* 2011; 51: 1058-77.
 33. *Osmun WE, Copeland J, Parr J, Boisvert L.* Characteristics of chronic pain patients in a rural teaching practice. *Can Fam Physician* 2011; 57: e436-40.
 34. *Vicente P, Reis E, Santos M.* Using mobile phones for survey research. A comparison with fixed phones. *Int J Market Res* 2009; 51: 613-33.
 35. *Health Council of Canada.* Self-Management Support for Canadians with Chronic Health Conditions: A focus for Primary Health Care - May 2012. Available from URL: http://healthcouncilcanada.ca/rpt_det.php?id=372 (accessed October 2015).
 36. *Patel A, Rendu A, Moran P, Leese M, Mann A, Knapp M.* A comparison of two methods of collecting economic data in primary care. *Fam Pract* 2005; 22: 323-7.
 37. *Gordon LG, Patrao T, Hawkes AL.* Can colorectal cancer survivors recall their medications and doctor visits reliably? *BMC Health Serv Res* 2012; 12: 440.
 38. *White LA, Robinson RL, Yu AP, et al.* Comparison of health care use and costs in newly diagnosed and established patients with fibromyalgia. *J Pain* 2009; 10: 976-83.
 39. *Schopflocher D, Taenzer P, Jovey R.* The prevalence of chronic pain in Canada. *Pain Res Manag* 2011; 16: 445-50.
 40. *Boulanger A, Clark AJ, Squire P, Cui E, Horbay GL.* Chronic pain in Canada: have we improved our management of chronic noncancer pain? *Pain Res Manag* 2007; 12: 39-47.
 41. *Cowling TE, Cecil EV, Soljak MA, et al.* Access to primary care and visits to emergency departments in England: a cross-sectional, population-based study. *PLoS One* 2013; 8: e66699.