



Prevalence and characteristics of healthcare utilization with different providers among Canadians with chronic back problems: A population-based study

Jessica J. Wong^{a,b,c,e,*}, Dan Wang^{a,b,d}, Sheilah Hogg-Johnson^{a,d,f}, Silvano A. Mior^{a,b,d,e}, Pierre Côté^{a,b,e,f}

^a Institute for Disability and Rehabilitation Research, Ontario Tech University, 2000 Simcoe Street North, Oshawa, Ontario, L1H 7K4, Canada

^b Faculty of Health Sciences, Ontario Tech University, 2000 Simcoe Street North, Oshawa, Ontario, L1G 0C5, Canada

^c Graduate Studies, Canadian Memorial Chiropractic College, 6100 Leslie Street, Toronto, Ontario, M2H 3J1, Canada

^d Department of Research and Innovation, Canadian Memorial Chiropractic College, 6100 Leslie Street, Toronto, Ontario, M2H 3J1, Canada

^e Institute of Health Policy, Management and Evaluation, University of Toronto, 155 College Street, 4th Floor, Toronto, Ontario, M5T 3M6, Canada

^f Dalla Lana School of Public Health, University of Toronto, 155 College Street, 6th Floor, Toronto, Ontario, M5T 3M7, Canada

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ABSTRACT

Introduction: Understanding healthcare utilization by Canadians with back problems informs healthcare planning nationally.

Research question: What is the prevalence of utilization of healthcare providers (medical doctors, chiropractors, physiotherapists, nurses), and associated characteristics among Canadians with chronic back problems (2001–2016)?

Material and methods: This population-based study used Canadian Community Health Survey data (2001–2016) restricted to respondents with chronic back problems (aged ≥ 12 years). We used self-reported consultation with healthcare providers (medical doctors, chiropractors, physiotherapists, nurses) from 2001–2010, and self-reported regular healthcare provider from 2015–2016. We calculated the 12-month prevalence of utilization with providers, and used modified Poisson regression to assess sociodemographic, health-related and behavioural factors associated with utilization of different providers.

Results: From 2001 to 2010 and 2015/2016, respectively, prevalence of utilization of medical doctors was 87.9% (95% CI 87.6–88.2) and 86.7% (95% CI 85.9–87.5); chiropractors 24.0% (95% CI 23.6–24.4) and 14.5% (95% CI 13.8–15.3); physiotherapists 17.2% (95% CI 16.9–17.6) and 10.7% (95% CI 10.0–11.4); nurses 14.0% (95% CI 13.7–14.2) and 6.6% (95% CI 6.1–7.0). Females were more likely to see any provider than males. Persons of lower socioeconomic status were less likely to consult chiropractors or physiotherapists (2001–2016), or nurses (2001–2010). Immigrants were less likely to consult chiropractors or nurses. Persons aged >65 years were less likely to consult chiropractors or physiotherapists, and those with fair/poor general health were less likely to consult chiropractors, but more likely to consult other providers.

Discussion and conclusion: Medical doctors were most commonly consulted by Canadians with back problems, then chiropractors and physiotherapists. Characteristics of healthcare utilization varied by provider. Findings inform the need to strengthen healthcare delivery for Canadians with back problems.

1. Introduction

Back pain is the leading cause of disability worldwide, and this

burden is projected to further increase over time (Hoy et al., 2014; Wu et al., 2020). Back pain also drives healthcare use and costs across many high-income countries (Hart et al., 1995; Dieleman et al., 2016; Cypress,

* Corresponding author. Institute for Disability and Rehabilitation Research, Ontario Tech University, 2000 Simcoe Street North, Oshawa, Ontario, L1H 7K4, Canada.

E-mail addresses: jessica.wong@ontariotechu.ca (J.J. Wong), dawang@cmcc.ca (D. Wang), shoggjohnson@cmcc.ca (S. Hogg-Johnson), smior@cmcc.ca (S.A. Mior), pierre.cote@ontariotechu.ca (P. Côté).

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1983; Côté et al., 2001; Wong et al., 2021). Given the burden of back pain and changing nature of healthcare systems in Canada, it is important to understand which providers Canadians with back problems consult for their healthcare. Canadians with back pain can directly seek primary care from family physicians, chiropractors, and physiotherapists without referral, while physician referral is needed to see specialists. Physician services are publicly funded in Canada, but chiropractic and physiotherapy for back conditions are generally not publicly funded (with few exceptions that are provincially dependent). In 2000–2001, Canadians with back problems primarily consulted family doctors (87%), chiropractors (26%), and physiotherapists (17%) (Lim et al., 2006). In 2009/2010, most Canadians with chronic back pain consulted family physicians (85.9%), followed by chiropractors (23.7%), and physiotherapists (17.5%) (Bath et al., 2018). Moreover, studies suggest that differences in healthcare utilization may be associated with age, gender, socioeconomic status and health-related factors (Lim et al., 2006; Bath et al., 2018). These population-based studies used Canadian data from 2000 to 2010, so results are outdated and require updating (Lim et al., 2006; Bath et al., 2018).

Healthcare utilization data is important given the Canadian healthcare system is currently overburdened and considered in crisis (The Fraser Institute, 2022; Canadian Medical Association, 2022; Moir and Barua, 2021). Recently, the Fraser Institute compared the global performance of universal healthcare countries (Moir and Barua, 2021). Although Canada was ranked second highest in healthcare spending (% Gross Domestic Product), it ranked modest-to-poor on performance, including availability of doctors, hospital beds, and specialist wait (Moir and Barua, 2021). An up-to-date population-based analysis is needed to investigate the utilization of various healthcare providers among Canadians with back pain to inform healthcare planning. This focus on back pain is important due to its high prevalence and main reason for unmet needs for rehabilitation globally, highlighting that many people requiring rehabilitation are not receiving these services (Cieza et al., 2021).

Rehabilitation is a set of interventions to optimize physical, mental and social functioning when a person is experiencing limitations when interacting with their environment (World Health Organization, 2021). Rehabilitation may help decrease healthcare burden associated with more intensive care such as hospitalizations, and help people be independent in performing daily activities and participating in education, work, recreation, and meaningful life roles (World Health Organization, 2021; World Health Organization (WHO), 2017; Stucki et al., 2005; Katajisto and Laitinen, 2017; Thomas et al., 2019). Rehabilitation services are delivered by different healthcare providers, and understanding their utilization across the health system and differences in patient characteristics by provider group could help identify gaps in access-to-care and rehabilitation. Underserved populations, including older adults and those of lower socioeconomic status, have unmet care needs related to functioning and challenges accessing different types of healthcare (Lim et al., 2006; Bath et al., 2018; Abdi et al., 2019). Elucidating healthcare access across sociodemographic, health-related, and behavioural factors can inform the development of strategies to improve access. Overall, a nationwide, comprehensive view on healthcare access among Canadians with back pain provides the evidentiary basis for knowledge users (government, health professional associations) to inform healthcare delivery and resource planning. This information guides areas to strengthen and integrate healthcare and rehabilitation in the health system, particularly in primary care settings across a range of providers in efforts to mitigate the burden of back pain. Our research is aligned with SPINE20 recommendations to inform strategies ensuring accessible and affordable quality care to persons with spine disorders, and spine care delivery systems tailored to individual and population health needs (Chhabra et al., 2023).

Overall, an updated national perspective on utilization of different healthcare providers and associated characteristics among Canadians with back problems is needed. Therefore, our objectives were to

determine the: 1) prevalence of healthcare utilization with different providers (medical doctors, chiropractors, physiotherapists, and nurses); and 2) prevalence of healthcare utilization with different providers stratified by sociodemographic, health-related, and behavioural characteristics among Canadians (aged ≥ 12 years) with chronic back problems from 2001 to 2016. We also aimed to examine sociodemographic, health-related, and behavioural factors associated with utilization of different healthcare providers in this population.

2. Materials and methods

2.1. Study design

A population-based analysis of cross-sectional data collected in six cycles of the Canadian Community Health Survey (CCHS) was conducted from 2001 to 2010 and 2015/2016. The study was reported according to the Strengthening the Reporting of Observational Studies in Epidemiology Statement (STROBE Statement, 2009). This project was approved by the Research Ethics Board at Ontario Tech University (#15791–130103).

2.2. Study sample and setting

Study population included all Canadian participants aged ≥ 12 years in at least one CCHS cycle between 2001 and 2010 and 2015/2016. Study sample included participants who self-reported chronic back problems by answering “yes” to the question: “Do you have back problems, excluding fibromyalgia and arthritis?” (2015/2016 cycle also excluded scoliosis). This question refers to “conditions diagnosed by a health professional and expected to last or have already lasted ≥ 6 months.”

In Canada, many medical healthcare services are publicly funded through the government-run provincial health insurance plan. This includes physician visits (including specialists) and most basic and emergency medical healthcare services. Chiropractic and physiotherapy services for back conditions are not generally publicly funded, with few exceptions that depend on the province. Instead, these rehabilitation services for back pain may be paid out-of-pocket or through other sources (extended health insurance, workers’ compensation, automobile insurance). In general for primary care settings, people do not need a referral to see a family physician, chiropractor, or physiotherapist. Physician referral is needed to see a specialist.

2.3. Data sources

The CCHS is a cross-sectional survey administered by Statistics Canada that collects data on the distribution of health determinants, outcomes, and healthcare use across Canada. (Statistics Canada) The survey uses a multistage sampling survey design to target Canadians aged ≥ 12 years living in private dwellings. The survey excludes persons living in institutions (e.g., long-term care, complex continuing care facilities), full-time members of the Canadian Forces, and persons living on reserves and other First Nations settlements. CCHS collected data from a sample of respondents every two years from 2001 to 2007, after which data were collected annually. (Statistics Canada) CCHS data are representative of 98% of the Canadian population aged ≥ 12 years in private dwellings at the provincial and national level, with response rates $>60\%$. (Statistics Canada) Detailed survey methodology is described by Statistics Canada (Statistics Canada, 2005).

2.4. Outcomes

2.4.1. Consultation with healthcare provider (2001–2010)

Outcomes for 2001–2010 CCHS cycles were consultation with medical doctors, nurses, chiropractors, or physiotherapists in the past 12 months.

Outcome of consultation with medical doctors was based on a derived variable from two CCHS questions:

- 1) Not counting when you were an overnight patient, in the past 12 months, have you seen, or talked to a family doctor or general practitioner (about your physical, emotional or mental health)?” (responding “yes”); or
- 2) Not counting when you were an overnight patient, in the past 12 months, have you seen, or talked to any other medical doctor or specialist (such as surgeon, allergist, orthopedist, gynaecologist, or psychiatrist?” (responding “yes”)

Outcomes of consulting with chiropractors, physiotherapists or nurses were based on the CCHS question:

- 1) 2001–2005 cycles: “Not counting when you were an overnight patient, in the past 12 months, how many times have you seen, or talked to a chiropractor, physiotherapist, or nurse (about your physical, emotional or mental health)?” (≥ 1 consultation considered as yes to having consulted each provider)
- 2) 2007–2009 cycles: “Not counting when you were an overnight patient, in the past 12 months, have you seen, or talked to a chiropractor, physiotherapist, or nurse (about your physical, emotional or mental health)?” (responding “yes”).

2.4.2. Regular healthcare provider (2015/2016)

Outcome for the 2015–2016 CCHS cycle was self-report of receiving regular healthcare from medical doctors, chiropractors, physiotherapists, or nurses, based on three CCHS questions:

- 1) “Do you have a regular healthcare provider? (one health professional that you regularly see or talk to when you need care or advice for your health)” (responding “yes”);
- 2) “Is that regular healthcare provider a ...” with response options of ‘family doctor/general practitioner’, ‘medical specialist’, ‘nurse’, or ‘other’;
- 3) “Other than from the above regular healthcare provider, who else do you receive regular healthcare from (regular healthcare can also be considered as routine healthcare)?” with 10 response options that listed different healthcare providers.

Outcome of receiving regular care from medical doctors (including specialists) included “family doctor/general practitioner” or “medical specialist” response options from question #2; or “another family doctor/general practitioner” or “specialist doctor” from question #3. Outcome of regular care from chiropractors or physiotherapists was based on the response “chiropractor” or “physiotherapist”, respectively from question #3. Outcome of regular care from nurses was based on the response “nurse” from question #2 or “another nurse or nurse practitioner” from question #3. Previous studies used these questions to describe healthcare utilization in Canada (Lim et al., 2006; Bath et al., 2018; Nehumba et al., 2022; Ravichandiran et al., 2022).

2.5. Covariates

Informed by literature, (Côté et al., 2001, 2005; Lim et al., 2006; Bath et al., 2018) the following were hypothesized to be associated with healthcare utilization (Appendix A.1):

- Sociodemographic: age, sex, province/territory of residence, cultural/racial background, immigrant status, education, income, working status, marital status.
- Health-related: body mass index (BMI), self-perceived general health.
- Behavioural: smoking status, alcohol drinking status, physical activity level.

CCHS cycle was included in the models to assess differences in the prevalence of healthcare utilization over time.

2.6. Analysis

The 12-month prevalence of utilization of healthcare providers was calculated as the number of respondents with back problems who consulted (or received regular care from) a specific healthcare provider, divided by all respondents with back problems. Similarly, the socio-demographic, health-related and behavioural-specific prevalence estimates were calculated. In calculating prevalence of healthcare utilization with different providers, participants with missing data for each outcome of interest were excluded (<1%).

Univariable and multivariable modified Poisson regression models were conducted to assess factors (sociodemographic, health-related, and behavioural factors as independent variables) associated with consultation with each healthcare provider (dependent variable) to calculate crude and adjusted prevalence ratios (PR) and 95% confidence intervals (CI). All stated variables were kept in the multivariable model. In regression analyses, participants with missing data across all covariates were excluded (<10%), except household income, working status, and BMI (‘not applicable’/‘not stated’ category for these variables).

All analyses incorporated the CCHS survey weights provided by Statistics Canada to generate population estimates, and bootstrap weights were applied using balanced repeated replication (for 2015/2016). A pooled approach was used to combine data across CCHS cycles to increase sample size and statistical power (Thomas and Wannell, 2009). Analyses were performed using SAS software, version 9.4 (SAS Institute, Cary, NC).

3. Results

3.1. Sample characteristics

A total of 875,371 Canadians participated in the CCHS between 2001–2010 and 2015/2016 (Appendix A.2-A.3). After applying exclusions (no self-reported back problem or invalid response to back problem question), the study sample included 135,202 CCHS participants with chronic back problems between 2001 and 2010 (weighted to population of 5.2 million) and 22,836 participants in 2015/2016 (weighted to population of 5.7 million).

Among Canadians with chronic back problems in 2001–2010, 53% were female, 31% were aged 35–49 years, 28% aged 50–64 years, and 15% aged 65–79 years (Table 1). Most were white (84%), non-immigrant (78%), had post-secondary education (59%), worked in the past week (53%), non-smoker (72%), regular alcohol drinker (≥ 1 drink per month; 60%), physically inactive (53%), and overweight/obese (51%). For self-perceived general health, 23% reported fair/poor, 34% good, 31% very good, and 12% excellent.

In 2015/2016, 53% of Canadians with chronic back problems were female, with 24% aged 35–49 years, 33% aged 50–64 years, and 20% aged 65–79 years (Table 2). Most were white (77%), non-immigrant (76%), some post-secondary education (59%), non-smoker (76%), and overweight/obese (56%). For self-perceived general health, 25% rated fair/poor, 34% good, 30% very good, and 12% excellent.

3.2. Prevalence of healthcare provider consultation

From 2001 to 2010, 12-month prevalence of consultation with medical doctors was 87.9% (95% CI 87.6–88.2), chiropractors 24.0% (95% CI 23.6–24.4), physiotherapists 17.2% (95% CI 16.9–17.6), and nurses 14.0% (95% CI 13.7–14.2) (Appendix A.4). Prevalence of consultation with different providers varied by certain sociodemographic, health-related, and behavioural characteristics (Appendix A.4). When stratified by region (provinces/territories), prevalence of consultation with medical doctors ranged 81.1–92.0%; chiropractors

Table 1
 Characteristics of participants with chronic back problems and those who consulted health professionals: Pooled analysis of CCHS 2001–2010^a.

Characteristics	Consultations with health care professionals among Canadians with chronic back problems				
	Canadians with chronic back problems	Medical doctor (incl. specialists)	Chiropractor	Physiotherapist	Nurse
	N (%)	n (%)	n (%)	n (%)	n (%)
Weighted sample	5,177,667 (100.0%)	4526363 (100.0%)	1241766 (100.0%)	890651 (100.0%)	721282 (100.0%)
Age group (years)					
12–19	153438 (3.0%)	125209 (2.8%)	47066 (3.8%)	28947 (3.3%)	24962 (3.5%)
20–34	968514 (18.7%)	812281 (17.9%)	269312 (21.7%)	173950 (19.5%)	167283 (23.2%)
35–49	1626494 (31.4%)	1379564 (30.5%)	447672 (36.1%)	306642 (34.4%)	211681 (29.3%)
50–64	1460551 (28.2%)	1308727 (28.9%)	331597 (26.7%)	248698 (27.9%)	175153 (24.3%)
65–79	753250 (14.5%)	699565 (15.5%)	123002 (9.9%)	106262 (11.9%)	98022 (13.6%)
≥80	215419 (4.2%)	201017 (4.4%)	23117 (1.9%)	26151 (2.9%)	44181 (6.1%)
Sex					
Male	2438085 (47.1%)	2013342 (44.5%)	588977 (47.4%)	389595 (43.7%)	275162 (38.1%)
Female	2739582 (52.9%)	2513021 (55.5%)	652789 (52.6%)	501056 (56.3%)	446120 (61.9%)
Province of residence					
Newfoundland	84353 (1.6%)	77341 (1.7%)	10040 (0.8%)	12048 (1.4%)	11555 (1.6%)
Prince Edward Island	21198 (0.4%)	18993 (0.4%)	2249 (0.2%)	3695 (0.4%)	2883 (0.4%)
Nova Scotia	168551 (3.3%)	153705 (3.4%)	19314 (1.6%)	31587 (3.5%)	20355 (2.8%)
New Brunswick	129342 (2.5%)	115795 (2.6%)	16388 (1.3%)	21628 (2.4%)	18547 (2.6%)
Quebec	1056063 (20.4%)	885565 (19.6%)	189526 (15.3%)	165162 (18.5%)	197753 (27.4%)
Ontario	2066139 (39.9%)	1828734 (40.4%)	495368 (39.9%)	334286 (37.5%)	272115 (37.7%)
Manitoba	180427 (3.5%)	155209 (3.4%)	62197 (5.0%)	34326 (3.9%)	22581 (3.1%)
Saskatchewan	161018 (3.1%)	142343 (3.1%)	50890 (4.1%)	25927 (2.9%)	20767 (2.9%)
Alberta	531226 (10.3%)	460435 (10.2%)	181675 (14.6%)	101540 (11.4%)	67923 (9.4%)
British Columbia	766805 (14.8%)	678097 (15.0%)	212221 (17.1%)	158228 (17.8%)	82749 (11.5%)
Yukon, Northwest Territories and Nunavut	12545 (0.2%)	10146 (0.2%)	1901 (0.2%)	2225 (0.2%)	4053 (0.6%)
Cultural/racial background					
White	4360237 (84.2%)	3822806 (84.5%)	1092830 (88.0%)	737787 (82.8%)	624629 (86.6%)
Non-white	675691 (13.1%)	586093 (12.9%)	124226 (10.0%)	128547 (14.4%)	77099 (10.7%)
Unknown	141738 (2.7%)	117464 (2.6%)	24710 (2.0%)	24317 (2.7%)	19554 (2.7%)
Immigrant status					
Non-immigrant	4038148 (78.0%)	3518140 (77.7%)	1034807 (83.3%)	687048 (77.1%)	605343 (83.9%)
Immigrant (0–9 years)	171453 (3.3%)	147083 (3.2%)	29401 (2.4%)	33412 (3.8%)	15476 (2.1%)
Immigrant (≥10 years)	845610 (16.3%)	760598 (16.8%)	157006 (12.6%)	149763 (16.8%)	83938 (11.6%)
Unknown	122456 (2.4%)	100541 (2.2%)	20551 (1.7%)	20427 (2.3%)	16526 (2.3%)
Highest level of education					
Less than secondary	1165673 (22.5%)	1011138 (22.3%)	201898 (16.3%)	147950 (16.6%)	156275 (21.7%)
Secondary graduate	850607 (16.4%)	735072 (16.2%)	210912 (17.0%)	133909 (15.0%)	106732 (14.8%)
Some post-secondary education	404047 (7.8%)	354856 (7.8%)	108037 (8.7%)	69984 (7.9%)	62387 (8.6%)
Post-secondary grad/university degree	2629333 (50.8%)	2320633 (51.3%)	700893 (56.4%)	516862 (58.0%)	379318 (52.6%)
Unknown	128008 (2.5%)	104664 (2.3%)	20027 (1.6%)	21944 (2.5%)	16571 (2.3%)
Total household income					
1st quintile	695108 (13.4%)	610630 (13.5%)	94321 (7.6%)	90187 (10.1%)	116315 (16.1%)
2nd quintile	689621 (13.3%)	603827 (13.3%)	140445 (11.3%)	106885 (12.0%)	100142 (13.9%)
3rd quintile	906331 (17.5%)	799761 (17.7%)	221402 (17.8%)	148084 (16.6%)	125532 (17.4%)
4th quintile	1104385 (21.3%)	962282 (21.3%)	309700 (24.9%)	206286 (23.2%)	142809 (19.8%)
5th quintile	1033120 (20.0%)	906477 (20.0%)	317388 (25.6%)	217155 (24.4%)	134365 (18.6%)
NA/NS ^b	749101 (14.5%)	643385 (14.2%)	158510 (12.8%)	122054 (13.7%)	102120 (14.2%)
Working status last week					
Working	2753985 (53.2%)	2333258 (51.5%)	797090 (64.2%)	479954 (53.9%)	324307 (45.0%)
Absent	258068 (5.0%)	230943 (5.1%)	71966 (5.8%)	71471 (8.0%)	50939 (7.1%)
No job	1348962 (26.1%)	1213741 (26.8%)	257697 (20.8%)	212287 (23.8%)	197742 (27.4%)
Unable/permanent	256875 (5.0%)	244287 (5.4%)	31433 (2.5%)	46789 (5.3%)	55182 (7.7%)
NA (age <15 or >75) ^b	457744 (8.8%)	420063 (9.3%)	64966 (5.2%)	61749 (6.9%)	80798 (11.2%)
Unknown	102033 (2.0%)	84071 (1.9%)	18614 (1.5%)	18401 (2.1%)	12313 (1.7%)
Marital status					
Married	2809757 (54.3%)	2496604 (55.2%)	704692 (56.7%)	491456 (55.2%)	339439 (47.1%)
Common-law	515814 (10.0%)	426850 (9.4%)	126402 (10.2%)	87120 (9.8%)	80845 (11.2%)
Widowed/Divorced/Separated	827494 (16.0%)	749504 (16.6%)	153500 (12.4%)	130003 (14.6%)	131856 (18.3%)
Single	1016061 (19.6%)	846423 (18.7%)	255407 (20.6%)	180639 (20.3%)	168040 (23.3%)
Unknown	8540 (0.2%)	6982 (0.2%)	1765 (0.1%)	1432 (0.2%)	1102 (0.2%)
Type of smoker					
Daily	1180476 (22.8%)	988027 (21.8%)	226332 (18.2%)	166314 (18.7%)	167293 (23.2%)
Occasional	242317 (4.7%)	207575 (4.6%)	61874 (5.0%)	40366 (4.5%)	37291 (5.2%)
Not at all	3736084 (72.2%)	3315522 (73.2%)	949823 (76.5%)	680707 (76.4%)	514355 (71.3%)
Unknown	18789 (0.4%)	15238 (0.3%)	3736 (0.3%)	3264 (0.4%)	2344 (0.3%)
Type of alcohol drinker					
Regular	3086270 (59.6%)	2664000 (58.9%)	815941 (65.7%)	553295 (62.1%)	398377 (55.2%)
Occasional	942035 (18.2%)	840294 (18.6%)	216226 (17.4%)	154575 (17.4%)	143954 (20.0%)
Did not drink	1070831 (20.7%)	957915 (21.2%)	195220 (15.7%)	169853 (19.1%)	169068 (23.4%)
Unknown	78531 (1.5%)	64153 (1.4%)	14379 (1.2%)	12927 (1.5%)	9883 (1.4%)

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Table 1 (continued)

Characteristics	Consultations with health care professionals among Canadians with chronic back problems				
	Canadians with chronic back problems	Medical doctor (incl. specialists)	Chiropractor	Physiotherapist	Nurse
	N (%)	n (%)	n (%)	n (%)	n (%)
Physical activity					
Active	1084632 (20.9%)	929654 (20.5%)	301144 (24.3%)	217750 (24.4%)	151049 (20.9%)
Moderate active	1182652 (22.8%)	1043926 (23.1%)	314808 (25.4%)	216813 (24.3%)	162665 (22.6%)
Inactive	2740793 (52.9%)	2403453 (53.1%)	595892 (48.0%)	428613 (48.1%)	381677 (52.9%)
Unknown	169590 (3.3%)	149331 (3.3%)	29923 (2.4%)	27475 (3.1%)	25892 (3.6%)
BMI^c					
Underweight	133840 (2.6%)	118892 (2.6%)	26602 (2.1%)	23716 (2.7%)	22094 (3.1%)
Normal weight	1900439 (36.7%)	1638081 (36.2%)	462199 (37.2%)	341051 (38.3%)	258428 (35.8%)
Overweight (incl. obese)	2626192 (50.7%)	2317354 (51.2%)	636533 (51.3%)	442140 (49.6%)	352911 (48.9%)
NA (age <18 or pregnant) ^b	331682 (6.4%)	288364 (6.4%)	80259 (6.5%)	56296 (6.3%)	52726 (7.3%)
Unknown	185515 (3.6%)	163672 (3.6%)	36173 (2.9%)	27448 (3.1%)	35123 (4.9%)
Perceived general health					
Poor	355517 (6.9%)	337329 (7.5%)	48015 (3.9%)	72971 (8.2%)	87556 (12.1%)
Fair	834648 (16.1%)	773144 (17.1%)	144947 (11.7%)	145416 (16.3%)	144038 (20.0%)
Good	1745341 (33.7%)	1533808 (33.9%)	415934 (33.5%)	298906 (33.6%)	232624 (32.3%)
Very good	1610222 (31.1%)	1375292 (30.4%)	447410 (36.0%)	269426 (30.3%)	192390 (26.7%)
Excellent	625295 (12.1%)	501447 (11.1%)	184323 (14.8%)	102667 (11.5%)	63545 (8.8%)
Unknown	6645 (0.1%)	5343 (0.1%)	1136 (0.1%)	1265 (0.1%)	1129 (0.2%)
CCHS survey cycle					
2001	905678 (17.5%)	802508 (17.7%)	234444 (18.9%)	161442 (18.1%)	109379 (15.2%)
2003	1043833 (20.2%)	906309 (20.0%)	250440 (20.2%)	166935 (18.7%)	136984 (19.0%)
2005	1017931 (19.7%)	882461 (19.5%)	244313 (19.7%)	170283 (19.1%)	144558 (20.0%)
2007	1129597 (21.8%)	981872 (21.7%)	257370 (20.7%)	191145 (21.5%)	164222 (22.8%)
2009	1080627 (20.9%)	953213 (21.1%)	255199 (20.6%)	200844 (22.6%)	166139 (23.0%)

BMI – body mass index; CCHS – Canadian Community Health Survey; NA – not applicable; NS – not stated.

^a Weighted using Canadian Community Health Survey sampling weights provided by Statistics Canada to provide population estimates.

^b NA = not applicable according to population exclusions; NS = not stated or responses without enough information for classification.

^c BMI = BMI categories based on classification system recommended by Health Canada and the World Health Organization.

ranged 10.6–34.5%; physiotherapists ranged 14.3–20.7%; and nurses ranged 10.8–32.4%. Prevalence of consultation with healthcare providers was greater with higher education levels (higher than secondary graduate) across all providers. Across most providers, prevalence of healthcare consultation was higher in females (except chiropractors), white populations (except physiotherapists), and poor self-perceived general health (except chiropractors).

3.3. Prevalence of receiving care from regular healthcare provider

In 2015/2016, prevalence of receiving regular healthcare from medical doctors was 86.7% (95% CI 85.8–87.6), chiropractors 14.5% (95% CI 13.7–15.3), physiotherapists 10.7% (95% CI 10.0–11.4), and nurses 6.6% (95% CI 6.1–7.0) (Appendix A.5). Prevalence of receiving regular care varied by certain sociodemographic, health-related, and behavioural characteristics (Appendix A.5). When stratified by region, prevalence of regular care from medicals doctor ranged 43.5–92.9%; chiropractors ranged 7.6–25.4%; physiotherapists ranged 8.0–15.0%; and nurses ranged 2.5–12.0%. Across most providers, prevalence of receiving regular care was higher in females (except chiropractors), white populations (except physiotherapists), higher income (except nurses), poor general health (except chiropractors and physiotherapists).

3.4. Factors associated with consultation with specific healthcare provider

Across all healthcare providers in regression analyses, females were more likely to consult a provider than males (ranged $PR_{\text{chiropractor}} = 1.06$, 95% CI 1.02–1.09 to $PR_{\text{nurse}} = 1.37$, 95% CI 1.31–1.44) (Table 3).

Medical doctor. We observed a positive association with age, with older ages more likely to consult medical doctors than 12–19 years ($PR_{65-79\text{years}} = 1.06$, 95% CI 1.03–1.09; $PR_{\geq 80\text{years}} = 1.08$, 95% CI 1.05–1.11) (Table 3). No differences were observed across sociodemographic or behavioural factors. Those with fair/poor ($PR_{\text{fair}} = 1.15$, 95% CI 1.13–1.17; $PR_{\text{poor}} = 1.18$, 95% CI 1.16–1.20) general health were

more likely to consult medical doctors. Prevalence of consultation with medical doctors was stable over time ($PR = 1.00$, 95% CI 1.00–1.00).

Chiropractor. Older age groups were less likely to consult chiropractors than 12–19 years ($PR_{65-79\text{years}} = 0.61$, 95% CI 0.54–0.68; $PR_{\geq 80\text{years}} = 0.42$, 95% CI 0.36–0.49) (Table 3). The following were less likely to consult chiropractors: non-White ($PR = 0.80$, 95% CI 0.74–0.86), immigrants ($PR 0.73$ –0.81), less than secondary education ($PR = 0.85$, 95% CI 0.81–0.89), lower income ($PR 0.68$ –0.90), no job or unable/permanently off work ($PR 0.69$ –0.85), or smoker ($PR 0.75$ –0.92). Those reporting fair/poor ($PR_{\text{fair}} = 0.85$, 95% CI 0.79–0.91; $PR_{\text{poor}} = 0.78$, 95% CI 0.71–0.86) general health were less likely to consult chiropractors. Prevalence of consultation with chiropractors was stable over time ($PR = 1.02$, 95% CI 1.00–1.03).

Physiotherapist. Older ages were less likely to consult physiotherapists than 12–19 years ($PR_{65-79\text{years}} = 0.72$, 95% CI 0.63–0.83; $PR_{\geq 80\text{years}} = 0.70$, 95% CI 0.59–0.84) (Table 3). Persons who were non-white ($PR = 1.10$, 95% CI 1.10–1.19), absent or unable/permanently off work ($PR 1.18$ –1.54) were more likely to consult physiotherapists. Persons with less than secondary education ($PR = 0.72$, 95% CI 0.67–0.76), lower income ($PR 0.60$ –0.74), smokers ($PR 0.79$ –0.87), or physical inactive ($PR = 0.82$, 95% CI 0.78–0.86) were less likely to consult physiotherapists. Individuals reporting fair/poor ($PR_{\text{fair}} = 1.43$, 95% CI 1.31–1.57; $PR_{\text{poor}} = 1.77$, 95% CI 1.60–1.96) general health were more likely to consult physiotherapists. Prevalence of consultation with physiotherapists increased by 4% every two years ($PR = 1.02$, 95% CI 1.02–1.06).

Nurse. Individuals aged 50–79 years were less likely to consult nurses than 12–19 years ($PR_{50-64\text{years}} = 0.73$, 95% CI 0.62–0.84; $PR_{65-79\text{years}} = 0.72$, 95% CI 0.62–0.83) (Table 3). The following were less likely to consult nurses: non-white ($PR = 0.90$, 95% CI 0.83–0.99), immigrants ($PR 0.54$ –0.70), less than secondary education ($PR = 0.74$, 95% CI 0.70–0.79), lower income ($PR 0.89$ –0.91), not working ($PR 1.22$ –1.51), or physically inactive ($PR = 0.89$, 95% CI 0.83–0.94). Individuals reporting fair/poor ($PR_{\text{fair}} = 1.88$, 95% CI 1.72–2.07; $PR_{\text{poor}} = 2.62$, 95% CI 2.36–2.90) health were more likely to consult nurses. Prevalence

Table 2
 Characteristics of participants with chronic back problems and those who received regular health care from different health professionals: CCHS 2015–2016*.

Characteristics	Canadians with chronic back problems N (%)	Have received regular health care from a health professional			
		Medical doctor (incl. specialists) n (%)	Chiropractor n (%)	Physiotherapist n (%)	Nurse n (%)
Weighted sample	5679185 (100.0%)	4850240 (100.0%)	809276 (100.0%)	595914 (100.0%)	365952 (100.0%)
Age group (years)					
12–19	152259 (2.7%)	119563 (2.5%)	24629 (3.0%)	29640 (5.0%)	6837 (1.9%)
20–34	892353 (15.7%)	647658 (13.4%)	115302 (14.2%)	82263 (13.8%)	46453 (12.7%)
35–49	1373547 (24.2%)	1135529 (23.4%)	247393 (30.6%)	155272 (26.1%)	72436 (19.8%)
50–64	1855816 (32.7%)	1626724 (33.5%)	261024 (32.3%)	196390 (33.0%)	115374 (31.5%)
65–79	1114184 (19.6%)	1052057 (21.7%)	142121 (17.6%)	109735 (18.4%)	89645 (24.5%)
≥80	291026 (5.1%)	268709 (5.5%)	18806 (2.3%)	22615 (3.8%)	35207 (9.6%)
Sex					
Male	2715722 (47.8%)	2250817 (46.4%)	386721 (47.8%)	250191 (42.0%)	150664 (41.2%)
Female	2963464 (52.2%)	2599422 (53.6%)	422555 (52.2%)	345723 (58.0%)	215288 (58.8%)
Province of residence					
Newfoundland	100582 (1.8%)	93413 (1.9%)	13010 (1.6%)	10284 (1.7%)	10478 (2.9%)
Prince Edward Island	22574 (0.4%)	20789 (0.4%)	1905 (0.2%)	2589 (0.4%)	2009 (0.5%)
Nova Scotia	191084 (3.4%)	171468 (3.5%)	22807 (2.8%)	19605 (3.3%)	16234 (4.4%)
New Brunswick	138278 (2.4%)	125175 (2.6%)	11697 (1.4%)	12726 (2.1%)	10562 (2.9%)
Quebec	1238378 (21.8%)	946074 (19.5%)	105319 (13.0%)	107831 (18.1%)	89354 (24.4%)
Ontario	2167335 (38.2%)	1944385 (40.1%)	337056 (41.6%)	226820 (38.1%)	158167 (43.2%)
Manitoba	198888 (3.5%)	172128 (3.5%)	37729 (4.7%)	29604 (5.0%)	14207 (3.9%)
Saskatchewan	170695 (3.0%)	145062 (3.0%)	42790 (5.3%)	25143 (4.2%)	16161 (4.4%)
Alberta	624265 (11.0%)	522998 (10.8%)	119163 (14.7%)	69037 (11.6%)	26803 (7.3%)
British Columbia	808536 (14.2%)	700736 (14.4%)	116403 (14.4%)	90799 (15.2%)	19766 (5.4%)
Yukon, Northwest Territories and Nunavut	18571 (0.3%)	8011 (0.2%)	1397 (0.2%)	1477 (0.2%)	2211 (0.6%)
Cultural/racial background					
White	4395169 (77.4%)	3829257 (78.9%)	694224 (85.8%)	471702 (79.2%)	305286 (83.4%)
Non-white	1075890 (18.9%)	899948 (18.6%)	102901 (12.7%)	114344 (19.2%)	53449 (14.6%)
Unknown	208126 (3.7%)	121035 (2.5%)	12151 (1.5%)	9868 (1.7%)	7217 (2.0%)
Immigrant status					
Non-immigrant	4304899 (75.8%)	3701523 (76.3%)	680146 (84.0%)	450169 (75.5%)	306714 (83.8%)
Immigrant (0–9 years)	193228 (3.4%)	142566 (2.9%)	13404 (1.7%)	11999 (2.0%)	4387 (1.2%)
Immigrant (≥10 years)	947396 (16.7%)	861467 (17.8%)	103065 (12.7%)	123686 (20.8%)	46365 (12.7%)
Unknown	233661 (4.1%)	144684 (3.0%)	12662 (1.6%)	10059 (1.7%)	8486 (2.3%)
Highest level of education					
Less than secondary	975414 (17.2%)	826317 (17.0%)	95632 (11.8%)	66531 (11.2%)	76841 (21.0%)
Secondary graduate	1267576 (22.3%)	1091126 (22.5%)	171487 (21.2%)	111558 (18.7%)	80634 (22.0%)
Some post-secondary education	3353680 (59.1%)	2864303 (59.1%)	536410 (66.3%)	411405 (69.0%)	203446 (55.6%)
Unknown	82515 (1.5%)	68494 (1.4%)	5748 (0.7%)	6420 (1.1%)	5032 (1.4%)
Distribution of total household income					
1st quintile	1240789 (21.8%)	1012543 (20.9%)	88244 (10.9%)	75306 (12.6%)	88773 (24.3%)
2nd quintile	1181106 (20.8%)	991814 (20.4%)	123704 (15.3%)	94629 (15.9%)	74974 (20.5%)
3rd quintile	1193127 (21.0%)	1032125 (21.3%)	171377 (21.2%)	127630 (21.4%)	75242 (20.6%)
4th quintile	1020416 (18.0%)	891798 (18.4%)	197883 (24.5%)	135374 (22.7%)	67597 (18.5%)
5th quintile	1022285 (18.0%)	911537 (18.8%)	226421 (28.0%)	160646 (27.0%)	56624 (15.5%)
NA (residents of territories) ^b	18211 (0.3%)	8011 (0.2%)	1397 (0.2%)	1477 (0.2%)	2135 (0.6%)
Unknown	3251 (0.1%)	2411 (0.0%)	251 (0.0%)	853 (0.1%)	607 (0.2%)
Working status last week					
Working	2796283 (49.2%)	2321209 (47.9%)	493565 (61.0%)	313329 (52.6%)	134063 (36.6%)
Absent	298633 (5.3%)	256158 (5.3%)	59560 (7.4%)	47310 (7.9%)	21981 (6.0%)
No job	1866849 (32.9%)	1667869 (34.4%)	200489 (24.8%)	179585 (30.1%)	149232 (40.8%)
NA (age <15 or >75) ^b	579002 (10.2%)	537273 (11.1%)	50800 (6.3%)	51199 (8.6%)	57003 (15.6%)
Unknown	138418 (2.4%)	67732 (1.4%)	4863 (0.6%)	4491 (0.8%)	3673 (1.0%)
Marital status					
Married	2859623 (50.4%)	2566505 (52.9%)	476423 (58.9%)	319133 (53.6%)	183297 (50.1%)
Common-law	712836 (12.6%)	582761 (12.0%)	101484 (12.5%)	68106 (11.4%)	43835 (12.0%)
Widowed/Divorced/Separated	948310 (16.7%)	839801 (17.3%)	100308 (12.4%)	96165 (16.1%)	74259 (20.3%)
Single	1144408 (20.2%)	850426 (17.5%)	129203 (16.0%)	110526 (18.5%)	64341 (17.6%)
Unknown	14008 (0.2%)	10746 (0.2%)	1858 (0.2%)	1983 (0.3%)	221 (0.1%)
Type of smoker					
Daily	1056320 (18.6%)	836916 (17.3%)	88733 (11.0%)	57430 (9.6%)	67593 (18.5%)
Occasional	280471 (4.9%)	219923 (4.5%)	41963 (5.2%)	37611 (6.3%)	21830 (6.0%)
Not at all	4338906 (76.4%)	3791715 (78.2%)	678436 (83.8%)	500760 (84.0%)	276157 (75.5%)
Unknown	3489 (0.1%)	1685 (0.0%)	144 (0.0%)	112 (0.0%)	372 (0.1%)
Type of alcohol drinker					
Regular	3457259 (60.9%)	2927937 (60.4%)	582371 (72.0%)	385246 (64.6%)	198011 (54.1%)
Occasional	987033 (17.4%)	844644 (17.4%)	106322 (13.1%)	93314 (15.7%)	80157 (21.9%)
Did not drink	1207389 (21.3%)	1057028 (21.8%)	118231 (14.6%)	113835 (19.1%)	85591 (23.4%)
Unknown	27505 (0.5%)	20631 (0.4%)	2353 (0.3%)	3520 (0.6%)	2193 (0.6%)
Physical activity					

(continued on next page)

Table 2 (continued)

Characteristics	Canadians with chronic back problems	Have received regular health care from a health professional			
		Medical doctor (incl. specialists)	Chiropractor	Physiotherapist	Nurse
		n (%)	n (%)	n (%)	n (%)
Active	2946824 (51.9%)	2485971 (51.3%)	480747 (59.4%)	328,301 (55.1%)	182,393 (49.8%)
Moderate active	1207048 (21.3%)	1038834 (21.4%)	170,454 (21.1%)	124,390 (20.9%)	75,734 (20.7%)
Inactive	1306891 (23.0%)	1144331 (23.6%)	128,721 (15.9%)	112,182 (18.8%)	95,348 (26.1%)
NA (age <18) ^b	94,521 (1.7%)	75,639 (1.6%)	16,195 (2.0%)	19,068 (3.2%)	5135 (1.4%)
Unknown	123,901 (2.2%)	105,464 (2.2%)	13,160 (1.6%)	11,973 (2.0%)	7342 (2.0%)
BMI^c					
Underweight	92,489 (1.6%)	72,874 (1.5%)	9753 (1.2%)	3179 (0.5%)	8926 (2.4%)
Normal weight	1922755 (33.9%)	1578804 (32.6%)	261,141 (32.3%)	210,287 (35.3%)	95,985 (26.2%)
Overweight (incl. obese)	3168292 (55.8%)	2758962 (56.9%)	487,465 (60.2%)	329,036 (55.2%)	221,391 (60.5%)
NA (age<18 or pregnant) ^b	95,524 (1.7%)	76,579 (1.6%)	16,548 (2.0%)	19,443 (3.3%)	5135 (1.4%)
Unknown	400,125 (7.0%)	363,021 (7.5%)	34,369 (4.2%)	33,969 (5.7%)	34,515 (9.4%)
Perceived general health					
Poor	462,785 (8.1%)	416,092 (8.6%)	33,668 (4.2%)	48,088 (8.1%)	54,794 (15.0%)
Fair	943,777 (16.6%)	817,537 (16.9%)	92,614 (11.4%)	95,642 (16.0%)	72,685 (19.9%)
Good	1925078 (33.9%)	1657109 (34.2%)	282,295 (34.9%)	213,201 (35.8%)	132,345 (36.2%)
Very good	1683598 (29.6%)	1411123 (29.1%)	292,084 (36.1%)	171,514 (28.8%)	81,615 (22.3%)
Excellent	654,091 (11.5%)	541,941 (11.2%)	108,088 (13.4%)	67,286 (11.3%)	23,780 (6.5%)
Unknown	9855 (0.2%)	6437 (0.1%)	527 (0.1%)	184 (0.0%)	734 (0.2%)

BMI – body mass index; CCHS – Canadian Community Health Survey; NA – not applicable; NS – not stated.

^a Weighted using Canadian Community Health Survey sampling weights provided by Statistics Canada to provide population estimates.

^b NA = not applicable according to population exclusions; NS = not stated or responses without enough information for classification.

^c BMI=BMI categories based on classification system recommended by Health Canada and the World Health Organization.

of consultation with nurses increased by 6% every two years (PR = 1.06, 95% CI 1.04–1.08).

3.5. Factors associated with receiving care from regular healthcare provider

Across all providers in regression analyses, females were more likely to consult a provider than males (ranged PR_{medical doctor} = 1.06, 95% CI 1.04–1.09 to PR_{nurse} = 1.31, 95% CI 1.11–1.55) (Table 4).

Medical doctor. Recent immigrants (PR_{0–9 years} = 0.89, 95% CI 0.81–0.97) were less likely to report medical doctor as a regular healthcare provider (Table 4). No differences were observed for other sociodemographic or behavioural factors. Persons reporting poor general health were slightly more likely to report medical doctor as regular provider (PR = 1.06, 95% CI 1.02–1.11).

Chiropractor. Persons aged ≥80 years were less likely to consult chiropractors than 12–19 years (PR = 0.49, 95% CI 0.28–0.86) (Table 4). Persons who were immigrants (PR 0.53–0.76), lower income (PR 0.64–0.74), no job (PR = 0.73, 95%CI 0.62–0.87), daily smokers (PR = 0.59, 95% CI 0.51–0.69), or physically inactive (PR = 0.83, 95% CI 0.69–0.99) were less likely to consult chiropractors. Persons absent from work in the past week were more likely to have regular care from chiropractors. Individuals with fair (PR = 0.84, 95% CI 0.69–1.02) general health tended to be less likely to consult chiropractors.

Physiotherapist. Older ages were less likely to consult physiotherapists than 12–19 years (PR_{65–79years} = 0.43, 95% CI 0.23–0.79; PR ≥ 80years = 0.39, 95% CI 0.18–0.86) (Table 4). Persons with less than secondary education (PR = 0.56, 95% CI 0.38–0.82), lower income (PR 0.42–0.54), or daily smokers (PR = 0.50, 95% CI 0.40–0.63) were less likely to consult physiotherapists. Persons absent from work in the past week were more likely for regular care from physiotherapists (PR = 1.35, 95% CI 1.07–1.70). Those with fair/poor (PR_{fair} = 1.77, 95% CI 1.33–2.35; PR_{poor} = 1.80, 95% CI 1.21–2.70) health were more likely to consult physiotherapists.

Nurse. Older ages were more likely to have nurse as regular provider (PR_{65–79years} = 2.08, 95% CI 0.75–5.78; PR ≥ 80years = 3.36, 95% CI 1.11–10.2) (Table 4). Persons who were physically inactive were less likely (PR = 0.78, 95% CI 0.63–0.96), while those overweight/obese (PR = 1.30, 95% CI 1.10–1.53) or absent from work/no job (PR 1.28–1.32) were more likely to consult nurses. Those with fair/poor

(PR_{fair} = 1.97, 95% CI 1.37–2.85; PR_{poor} = 2.94, 95% CI 1.93–4.49) general health were more likely to consult nurses. No differences by other sociodemographic or behavioural factors were observed.

4. Discussion

Among selected providers, medical doctors were most commonly consulted by Canadians with chronic back problems, followed by chiropractors then physiotherapists. From 2001 to 2010, prevalence of consultation with medical doctors was 87.9%, chiropractors 24.0%, physiotherapists 17.2%, and nurses 14.0%. In 2015/2016, prevalence of receiving regular healthcare from medical doctors was 86.7%, chiropractors 14.5%, physiotherapists 10.7%, and nurses 6.6%. Females were more likely to see a provider than males across all groups. Persons of lower socioeconomic status (education and income) were less likely to consult chiropractors or physiotherapists (2001–2016), or nurses (2001–2010). Older ages were less likely to consult chiropractors or physiotherapists, but more likely to consult medical doctors or nurses. Persons with fair/poor general health were less likely to consult chiropractors, but more likely to consult medical doctors, physiotherapists, or nurses.

Findings extend our knowledge of healthcare utilization of a range of providers in Canadians with back problems. Findings support those in previous studies that medical physicians were most consulted (>85%) by Canadians with back pain, followed by chiropractors, then physiotherapists, (Lim et al., 2006; Bath et al., 2018) but extend knowledge by comparing estimates with those consulting nurses. Studies also reported that persons with lower socioeconomic status were less likely to consult healthcare providers (Lim et al., 2006; Bath et al., 2018). A notable addition from our study is that those of lower socioeconomic status (income and education levels) were less likely to consult chiropractors or physiotherapists across all time points. While physician services are publicly funded in Canada, chiropractic and physiotherapy are not generally publicly funded (with few exceptions that are provincially dependent), and patients need to pay using other means (e.g., extended health insurance) or out-of-pocket. Therefore, care-seeking for back pain is likely driven by structural barriers to accessing rehabilitation services including costs. Study results also showed important differences by age and self-perceived general health across provider groups. Older ages were less likely to consult chiropractors or physiotherapists, but more

Table 3

Regression analysis of the association between personal characteristics and self-reported consultations with health professionals among Canadians with chronic back problems: Pooled analysis of CCHS 2001–2010^a.

Characteristics	Medical doctor (including specialists)		Chiropractor		Physiotherapist		Nurse	
	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c
Age group (years)								
12–19	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20–34	1.03 (1.00–1.05)	1.00 (0.97–1.03)	0.91 (0.84–0.98)	0.86 (0.77–0.96)	0.95 (0.86–1.05)	0.91 (0.79–1.05)	1.06 (0.95–1.17)	1.15 (1.00–1.33)
35–49	1.04 (1.01–1.06)	1.00 (0.97–1.03)	0.90 (0.83–0.96)	0.84 (0.75–0.94)	1.00 (0.91–1.10)	0.93 (0.81–1.07)	0.80 (0.72–0.88)	0.88 (0.76–1.02)
50–64	1.10 (1.07–1.12)	1.03 (1.00–1.06)	0.74 (0.69–0.80)	0.73 (0.65–0.82)	0.90 (0.82–0.99)	0.82 (0.71–0.95)	0.74 (0.66–0.82)	0.73 (0.62–0.84)
65–79	1.14 (1.12–1.17)	1.06 (1.03–1.09)	0.53 (0.49–0.58)	0.61 (0.54–0.68)	0.75 (0.68–0.83)	0.72 (0.63–0.83)	0.80 (0.72–0.89)	0.72 (0.62–0.83)
≥80	1.16 (1.13–1.18)	1.08 (1.05–1.11)	0.35 (0.31–0.39)	0.42 (0.36–0.49)	0.64 (0.57–0.73)	0.70 (0.59–0.84)	1.26 (1.13–1.41)	0.97 (0.82–1.15)
Sex								
Male	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Female	1.11 (1.11–1.12)	1.11 (1.10–1.12)	0.99 (0.96–1.02)	1.06 (1.02–1.09)	1.14 (1.10–1.19)	1.19 (1.14–1.25)	1.44 (1.38–1.51)	1.37 (1.31–1.44)
Province of residence								
Newfoundland	1.03 (1.02–1.05)	1.03 (1.02–1.05)	0.50 (0.44–0.56)	0.49 (0.43–0.55)	0.88 (0.79–0.99)	0.97 (0.86–1.10)	1.04 (0.93–1.16)	0.93 (0.82–1.05)
Prince Edward Island	1.01 (0.99–1.03)	1.02 (1.00–1.04)	0.44 (0.37–0.53)	0.43 (0.35–0.52)	1.08 (0.94–1.23)	1.21 (1.06–1.38)	1.03 (0.89–1.19)	0.96 (0.82–1.12)
Nova Scotia	1.03 (1.01–1.04)	1.02 (1.01–1.03)	0.48 (0.43–0.53)	0.48 (0.43–0.54)	1.16 (1.06–1.27)	1.23 (1.12–1.35)	0.92 (0.83–1.01)	0.82 (0.74–0.91)
New Brunswick	1.01 (0.99–1.02)	1.01 (0.99–1.02)	0.53 (0.48–0.58)	0.53 (0.47–0.58)	1.03 (0.94–1.13)	1.11 (1.01–1.22)	1.09 (0.99–1.19)	0.96 (0.87–1.06)
Quebec	0.94 (0.93–0.95)	0.96 (0.95–0.97)	0.75 (0.71–0.79)	0.72 (0.68–0.76)	0.97 (0.91–1.03)	1.00 (0.94–1.07)	1.42 (1.35–1.50)	1.37 (1.29–1.45)
Ontario	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Manitoba	0.97 (0.96–0.99)	0.98 (0.97–1.00)	1.44 (1.36–1.53)	1.39 (1.31–1.48)	1.18 (1.08–1.28)	1.27 (1.16–1.39)	0.95 (0.86–1.05)	0.92 (0.83–1.02)
Saskatchewan	1.00 (0.99–1.01)	1.01 (0.99–1.02)	1.32 (1.25–1.39)	1.25 (1.18–1.32)	1.00 (0.91–1.08)	1.05 (0.96–1.15)	0.98 (0.90–1.07)	0.91 (0.83–1.00)
Alberta	0.98 (0.97–0.99)	0.99 (0.98–1.00)	1.43 (1.36–1.50)	1.32 (1.26–1.39)	1.18 (1.10–1.27)	1.18 (1.10–1.27)	0.97 (0.90–1.05)	0.95 (0.87–1.02)
British Columbia	1.00 (0.99–1.01)	1.00 (0.99–1.01)	1.16 (1.11–1.21)	1.12 (1.07–1.17)	1.28 (1.21–1.35)	1.26 (1.19–1.33)	0.82 (0.77–0.88)	0.81 (0.75–0.87)
Yukon, Northwest Territories and Nunavut	0.91 (0.88–0.94)	0.95 (0.92–0.98)	0.63 (0.55–0.72)	0.64 (0.55–0.73)	1.09 (0.97–1.24)	1.14 (1.00–1.31)	2.46 (2.25–2.67)	2.47 (2.23–2.74)
Cultural/racial background								
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Non-white	0.99 (0.98–1.01)	1.00 (0.98–1.01)	0.73 (0.69–0.79)	0.80 (0.74–0.86)	1.12 (1.05–1.20)	1.10 (1.02–1.19)	0.80 (0.74–0.86)	0.90 (0.83–0.99)
Immigrant status								
Non-immigrant	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Immigrant (0–9 years)	0.99 (0.97–1.01)	1.00 (0.97–1.02)	0.67 (0.58–0.78)	0.73 (0.62–0.85)	1.15 (1.00–1.31)	1.11 (0.96–1.29)	0.60 (0.50–0.72)	0.54 (0.44–0.66)
Immigrant (≥10 years)	1.04 (1.03–1.05)	1.00 (0.99–1.01)	0.72 (0.68–0.77)	0.81 (0.77–0.86)	1.04 (0.98–1.11)	1.05 (0.98–1.12)	0.66 (0.61–0.72)	0.70 (0.64–0.77)
Highest level of education								
Less than secondary	0.99 (0.98–1.00)	0.96 (0.95–0.97)	0.65 (0.62–0.68)	0.85 (0.81–0.89)	0.65 (0.61–0.68)	0.72 (0.67–0.76)	0.93 (0.89–0.98)	0.74 (0.70–0.79)
Secondary graduate	0.98 (0.97–0.99)	0.97 (0.96–0.98)	0.93 (0.89–0.97)	0.96 (0.92–1.00)	0.80 (0.76–0.85)	0.84 (0.79–0.90)	0.87 (0.82–0.93)	0.85 (0.79–0.90)
Some post-secondary education	1.00 (0.98–1.01)	1.00 (0.99–1.01)	1.00 (0.95–1.06)	1.03 (0.97–1.09)	0.88 (0.82–0.95)	0.90 (0.84–0.97)	1.07 (0.99–1.16)	0.96 (0.89–1.04)
Post-secondary grad/ university degree	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total household income								
1st quintile	1.01 (1.00–1.02)	0.96 (0.95–0.98)	0.44 (0.41–0.47)	0.68 (0.63–0.74)	0.62 (0.57–0.67)	0.60 (0.54–0.65)	1.29 (1.20–1.38)	0.91 (0.83–0.99)
2nd quintile	1.00 (0.99–1.01)	0.97 (0.95–0.98)	0.66 (0.62–0.70)	0.90 (0.85–0.96)	0.74 (0.68–0.79)	0.74 (0.68–0.80)	1.12 (1.04–1.20)	0.89 (0.82–0.97)
3rd quintile	1.01 (1.00–1.02)	0.99 (0.97–1.00)	0.79 (0.76–0.83)	0.98 (0.93–1.04)	0.78 (0.73–0.83)	0.79 (0.74–0.85)	1.07 (0.99–1.14)	0.92 (0.85–0.99)
4th quintile	0.99 (0.98–1.00)	0.99 (0.98–1.00)	0.91 (0.87–0.95)	1.01 (0.97–1.05)	0.89 (0.84–0.94)	0.91 (0.86–0.97)	0.99 (0.93–1.07)	0.92 (0.85–0.98)
5th quintile	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NA/NS ^b	0.99 (0.98–1.01)	0.97 (0.95–0.98)	0.69 (0.66–0.73)	0.92 (0.87–0.98)	0.78 (0.73–0.83)	0.76 (0.71–0.83)	1.05 (0.98–1.13)	0.86 (0.79–0.94)
Working status last week								

(continued on next page)

Table 3 (continued)

Characteristics	Medical doctor (including specialists)		Chiropractor		Physiotherapist		Nurse	
	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c
Working	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Absent	1.06 (1.04–1.07)	1.04 (1.02–1.05)	0.96 (0.90–1.03)	1.02 (0.95–1.09)	1.59 (1.48–1.71)	1.54 (1.43–1.66)	1.68 (1.54–1.82)	1.51 (1.38–1.64)
No job	1.07 (1.06–1.07)	1.02 (1.01–1.03)	0.66 (0.64–0.69)	0.85 (0.81–0.89)	0.90 (0.86–0.95)	1.03 (0.97–1.09)	1.25 (1.18–1.31)	1.22 (1.15–1.30)
Unable/permanent	1.13 (1.12–1.14)	1.07 (1.06–1.08)	0.42 (0.38–0.47)	0.69 (0.62–0.78)	1.05 (0.96–1.14)	1.18 (1.06–1.32)	1.83 (1.70–1.97)	1.46 (1.33–1.59)
NA (age <15 or >75) ^b	1.10 (1.09–1.11)	1.01 (0.99–1.02)	0.49 (0.46–0.52)	0.84 (0.76–0.92)	0.78 (0.73–0.83)	0.96 (0.86–1.07)	1.51 (1.42–1.60)	1.29 (1.15–1.44)
Marital status								
Married	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Common-law	0.93 (0.92–0.94)	0.97 (0.95–0.98)	0.98 (0.93–1.03)	0.98 (0.92–1.03)	0.97 (0.90–1.04)	1.00 (0.93–1.08)	1.30 (1.21–1.39)	1.04 (0.96–1.12)
Widowed/Divorced/ Separated	1.02 (1.02–1.03)	0.99 (0.98–1.00)	0.74 (0.71–0.77)	0.98 (0.93–1.03)	0.90 (0.85–0.95)	1.04 (0.98–1.10)	1.32 (1.25–1.39)	1.10 (1.04–1.17)
Single	0.94 (0.93–0.95)	0.98 (0.96–0.99)	1.00 (0.96–1.04)	0.94 (0.90–0.99)	1.02 (0.97–1.07)	1.04 (0.98–1.10)	1.37 (1.30–1.44)	1.11 (1.04–1.19)
Type of smoker								
Daily	0.94 (0.93–0.95)	0.96 (0.95–0.97)	0.75 (0.72–0.79)	0.75 (0.72–0.79)	0.77 (0.73–0.82)	0.79 (0.74–0.84)	1.03 (0.98–1.08)	0.95 (0.90–1.01)
Occasional	0.97 (0.95–0.98)	0.99 (0.98–1.01)	1.00 (0.93–1.08)	0.92 (0.85–0.99)	0.91 (0.83–1.01)	0.87 (0.78–0.97)	1.12 (1.02–1.23)	1.05 (0.95–1.16)
Not at all	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Type of alcohol drinker								
Regular	0.96 (0.95–0.96)	1.00 (1.00–1.01)	1.45 (1.38–1.52)	1.07 (1.02–1.13)	1.13 (1.07–1.19)	1.10 (1.04–1.17)	0.82 (0.78–0.86)	0.93 (0.88–0.98)
Occasional	0.99 (0.98–1.00)	1.00 (0.99–1.01)	1.26 (1.19–1.33)	1.06 (1.00–1.12)	1.03 (1.00–1.10)	1.03 (0.96–1.10)	0.97 (0.91–1.02)	0.99 (0.93–1.06)
Did not drink	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Physical activity								
Active	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Moderate active	1.03 (1.02–1.04)	1.01 (1.00–1.02)	0.96 (0.92–1.00)	1.00 (0.96–1.05)	0.91 (0.86–0.97)	0.91 (0.86–0.96)	0.99 (0.93–1.05)	0.95 (0.89–1.02)
Inactive	1.03 (1.02–1.04)	0.99 (0.98–1.00)	0.78 (0.75–0.81)	0.95 (0.91–0.99)	0.78 (0.74–0.82)	0.82 (0.78–0.86)	1.00 (0.95–1.06)	0.89 (0.83–0.94)
BMI								
Underweight	1.04 (1.02–1.05)	1.02 (1.00–1.04)	0.82 (0.73–0.91)	0.88 (0.79–0.99)	0.99 (0.88–1.12)	0.98 (0.87–1.11)	1.21 (1.08–1.37)	1.01 (0.90–1.14)
Normal weight	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Overweight (incl. obese)	1.02 (1.02–1.03)	1.02 (1.01–1.02)	1.00 (0.96–1.03)	1.01 (0.98–1.05)	0.94 (0.90–0.98)	0.95 (0.91–1.00)	0.99 (0.94–1.04)	1.02 (0.97–1.07)
NA (age<18 or pregnant) ^b	1.01 (1.00–1.02)	0.99 (0.97–1.01)	1.00 (0.94–1.06)	1.11 (1.02–1.21)	0.95 (0.88–1.02)	1.09 (0.98–1.21)	1.17 (1.09–1.26)	1.10 (0.99–1.22)
Perceived general health								
Poor	1.20 (1.19–1.22)	1.18 (1.16–1.20)	0.46 (0.42–0.50)	0.78 (0.71–0.86)	1.25 (1.15–1.37)	1.77 (1.60–1.96)	2.43 (2.23–2.66)	2.62 (2.36–2.90)
Fair	1.16 (1.15–1.18)	1.15 (1.13–1.17)	0.59 (0.55–0.63)	0.85 (0.79–0.91)	1.06 (0.98–1.15)	1.43 (1.31–1.57)	1.70 (1.56–1.85)	1.88 (1.72–2.07)
Good	1.10 (1.08–1.11)	1.10 (1.08–1.11)	0.81 (0.77–0.85)	0.95 (0.90–1.00)	1.04 (0.97–1.12)	1.22 (1.13–1.31)	1.31 (1.21–1.43)	1.40 (1.28–1.52)
Very good	1.07 (1.05–1.08)	1.06 (1.05–1.08)	0.94 (0.90–0.99)	0.97 (0.92–1.02)	1.02 (0.95–1.10)	1.06 (0.98–1.14)	1.18 (1.08–1.28)	1.19 (1.09–1.30)
Excellent	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CCHS survey cycle								
Every two-year increase	1.00 (1.00–1.00)	1.00 (1.00–1.00)	0.98 (0.97–0.99)	1.02 (1.00–1.03)	1.02 (1.00–1.03)	1.04 (1.02–1.06)	1.06 (1.04–1.07)	1.06 (1.04–1.08)

BMI – body mass index; CCHS – Canadian Community Health Survey; CI – confidence interval; NA – not applicable; NS – not stated; PR – prevalence ratio.
^a Weighted using Canadian Community Health Survey sampling weights provided by Statistics Canada to provide population estimates; public use microdata file used (without bootstrap weights; only scaled sampling weight applied).
^b NA = not applicable according to population exclusions; NS = not stated or responses without enough information for classification.
^c Multivariable modified Poisson regression model adjusted for age, sex, province, cultural/racial background, immigrant status, education, income, working status, marital status, smoking status, alcohol consumption, physical activity, BMI, perceived general health, CCHS cycle.

likely to consult medical doctors or nurses, suggesting potential inequitable access to allied healthcare by age. Moreover, persons with fair/poor general health were less likely to consult chiropractors, but more likely to consult physiotherapists, medical doctors, or nurses. This may highlight barriers to accessing care provided by chiropractors among persons with fair/poor health; future research in this area is warranted. The results also showed regional differences in utilization of

different providers among adults with back problems. Prevalence of consultation with chiropractors ranged by over 20% across provinces. This may reflect differences in provincial publicly-funded and extended health insurance coverage for chiropractic services, affecting access to care. Prevalence of consultation with nurses was higher in the territories than provinces, whereas consultation with medical doctors was lower in the territories than provinces. This may reflect less access to medical

Table 4

Regression analysis of the association between personal characteristics and regular health care utilization among Canadians with chronic back problems: CCHS 2015–2016.

Characteristics	Medical doctor (including specialists)		Chiropractor		Physiotherapist		Nurse	
	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c
Age group (years)								
12–19	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20–34	0.92(0.86–0.98)	0.89 (0.78–1.01)	0.80(0.59–1.08)	0.60 (0.40–0.91)	0.47(0.34–0.66)	0.42 (0.23–0.78)	1.15(0.71–1.89)	1.57 (0.58–4.23)
35–49	1.05(0.99–1.12)	0.97 (0.85–1.10)	1.12(0.83–1.50)	0.77 (0.55–1.08)	0.58(0.42–0.81)	0.45 (0.25–0.82)	1.18(0.73–1.91)	1.63 (0.60–4.48)
50–64	1.12(1.05–1.19)	1.01 (0.89–1.15)	0.88(0.66–1.17)	0.64 (0.43–0.94)	0.55(0.40–0.75)	0.40 (0.22–0.73)	1.39(0.88–2.22)	1.74 (0.64–4.75)
65–79	1.20(1.13–1.27)	1.06 (0.94–1.20)	0.79(0.59–1.06)	0.74 (0.49–1.13)	0.51(0.37–0.70)	0.43 (0.23–0.79)	1.79(1.13–2.84)	2.08 (0.75–5.78)
≥80	1.19(1.12–1.27)	1.05 (0.93–1.19)	0.41(0.29–0.57)	0.49 (0.28–0.86)	0.41(0.28–0.59)	0.39 (0.18–0.86)	2.75(1.67–4.53)	3.36 (1.11–10.2)
Sex								
Male	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Female	1.06(1.04–1.08)	1.06 (1.04–1.09)	1.01(0.91–1.11)	1.13 (0.98–1.31)	1.27(1.12–1.44)	1.30 (1.13–1.50)	1.31(1.14–1.52)	1.31 (1.11–1.55)
Province of residence								
Newfoundland	1.01(0.98–1.04)	1.01 (0.98–1.04)	0.81(0.58–1.12)	0.77 (0.46–1.27)	0.95(0.64–1.40)	1.00 (0.66–1.51)	1.38(0.91–2.11)	1.12 (0.68–1.86)
Prince Edward Island	1.01(0.97–1.04)	1.01 (0.97–1.04)	0.53(0.35–0.81)	0.49 (0.36–0.68)	1.07(0.70–1.64)	1.08 (0.65–1.81)	1.19(0.80–1.78)	0.78 (0.49–1.25)
Nova Scotia	0.98(0.95–1.01)	0.99 (0.96–1.03)	0.75(0.56–1.00)	0.71 (0.53–0.95)	0.96(0.69–1.32)	1.01 (0.71–1.45)	1.13(0.84–1.53)	1.02 (0.73–1.44)
New Brunswick	0.99(0.96–1.03)	0.99 (0.95–1.02)	0.53(0.37–0.77)	0.46 (0.33–0.65)	0.86(0.64–1.16)	0.90 (0.66–1.23)	1.02(0.75–1.40)	0.86 (0.61–1.22)
Quebec	0.84(0.81–0.86)	0.86 (0.84–0.89)	0.53(0.45–0.63)	0.49 (0.42–0.58)	0.81(0.68–0.97)	0.94 (0.77–1.14)	0.97(0.80–1.16)	0.95 (0.76–1.17)
Ontario	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Manitoba	0.94(0.91–0.98)	0.96 (0.92–1.00)	1.19(0.98–1.44)	1.05 (0.91–1.21)	1.39(1.05–1.83)	1.47 (1.12–1.94)	0.95(0.72–1.26)	0.96 (0.71–1.30)
Saskatchewan	0.94(0.90–0.97)	0.94 (0.90–0.98)	1.58(1.34–1.86)	1.38 (1.21–1.56)	1.38(1.01–1.88)	1.37 (1.01–1.87)	1.27(0.97–1.68)	1.11 (0.81–1.53)
Alberta	0.93(0.90–0.96)	0.94 (0.91–0.97)	1.21(1.05–1.39)	1.06 (0.87–1.29)	1.04(0.85–1.27)	1.01 (0.81–1.25)	0.58(0.43–0.78)	0.56 (0.39–0.79)
British Columbia	0.95(0.92–0.97)	0.95 (0.92–0.97)	0.91(0.78–1.05)	0.84 (0.73–0.97)	1.05(0.87–1.27)	1.00 (0.81–1.22)	0.33(0.24–0.44)	0.32 (0.23–0.45)
Cultural/racial background								
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Non-white	0.96(0.94–0.99)	0.99 (0.96–1.03)	0.61(0.51–0.73)	0.79 (0.62–1.00)	1.00(0.81–1.23)	1.09 (0.86–1.37)	0.72(0.57–0.91)	1.09 (0.83–1.42)
Immigrant status								
Non-immigrant	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Immigrant (0–9 years)	0.86(0.78–0.94)	0.89 (0.81–0.97)	0.44(0.25–0.77)	0.53 (0.32–0.89)	0.59(0.35–1.02)	0.58 (0.31–1.06)	0.32(0.07–1.47)	0.46 (0.10–2.13)
Immigrant (≥10 years)	1.06(1.04–1.09)	1.00 (0.97–1.03)	0.69(0.58–0.83)	0.76 (0.64–0.90)	1.26(1.03–1.53)	1.34 (1.09–1.65)	0.69(0.54–0.89)	0.63 (0.45–0.88)
Highest level of education								
Less than secondary	0.99(0.97–1.02)	0.97 (0.94–0.99)	0.61(0.52–0.72)	0.89 (0.80–0.99)	0.56(0.42–0.73)	0.56 (0.38–0.82)	1.30(1.09–1.54)	0.91 (0.72–1.15)
Secondary graduate	1.01(0.99–1.03)	1.01 (0.98–1.03)	0.85(0.75–0.96)	0.97 (0.87–1.09)	0.72(0.62–0.84)	0.83 (0.70–0.98)	1.05(0.88–1.26)	0.99 (0.81–1.23)
Some post-secondary education	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Distribution of total household income								
1st quintile	0.93(0.90–0.96)	0.95 (0.91–0.98)	0.33(0.27–0.39)	0.64 (0.50–0.82)	0.39(0.32–0.48)	0.42 (0.32–0.54)	1.32(1.05–1.65)	1.03 (0.79–1.34)
2nd quintile	0.96(0.94–0.99)	0.96 (0.93–0.99)	0.48(0.41–0.57)	0.74 (0.56–0.98)	0.52(0.43–0.64)	0.54 (0.43–0.68)	1.17(0.95–1.44)	0.89 (0.70–1.13)
3rd quintile	0.98(0.95–1.01)	0.98 (0.96–1.01)	0.65(0.56–0.76)	0.82 (0.67–1.00)	0.69(0.57–0.84)	0.72 (0.59–0.87)	1.15(0.90–1.47)	1.02 (0.79–1.33)
4th quintile	0.98(0.96–1.01)	0.98 (0.95–1.01)	0.88(0.77–1.00)	0.98 (0.83–1.15)	0.84(0.72–0.99)	0.79 (0.66–0.94)	1.20(0.94–1.53)	1.14 (0.88–1.47)
5th quintile	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Working status last week								
Working	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Absent	1.03(0.98–1.08)	1.02 (0.97–1.06)	1.12(0.91–1.39)	1.22 (0.92–1.62)	1.41(1.13–1.75)	1.35 (1.07–1.70)	1.53(1.10–2.12)	1.32 (0.93–1.88)
No job	1.07(1.05–1.10)	1.03 (1.01–1.06)	0.61(0.54–0.68)	0.73 (0.62–0.87)	0.86(0.74–0.99)	0.98 (0.82–1.17)	1.67(1.42–1.95)	1.28 (1.04–1.57)

(continued on next page)

Table 4 (continued)

Characteristics	Medical doctor (including specialists)		Chiropractor		Physiotherapist		Nurse	
	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c	Crude PR (95% CI)	PR (95% CI) ^c
NA (age <15 or >75)	1.14(1.11–1.16)	1.03 (1.00–1.06)	0.51(0.43–0.60)	0.78 (0.62–0.98)	0.81(0.65–1.00)	0.82 (0.51–1.32)	2.10(1.73–2.54)	1.20 (0.84–1.73)
Marital status								
Married	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Common-law	0.90(0.87–0.93)	0.97 (0.94–1.00)	0.84(0.72–0.99)	0.88 (0.73–1.06)	0.85(0.68–1.05)	0.88 (0.70–1.12)	0.95(0.74–1.21)	1.00 (0.76–1.33)
Widowed/Divorced/ Separated	0.99(0.97–1.00)	0.97 (0.94–0.99)	0.63(0.55–0.73)	0.89 (0.72–1.09)	0.91(0.74–1.12)	1.14 (0.88–1.47)	1.22(1.03–1.45)	0.89 (0.72–1.11)
Single	0.82(0.79–0.85)	0.88 (0.85–0.92)	0.67(0.59–0.77)	0.77 (0.66–0.91)	0.86(0.73–1.02)	0.86 (0.71–1.05)	0.87(0.72–1.06)	0.88 (0.69–1.11)
Type of smoker								
Daily	0.91(0.88–0.93)	0.95 (0.92–0.98)	0.54(0.46–0.63)	0.59 (0.51–0.69)	0.47(0.39–0.57)	0.50 (0.40–0.63)	1.00(0.82–1.22)	0.95 (0.76–1.19)
Occasional	0.90(0.85–0.95)	0.95 (0.90–1.01)	0.95(0.76–1.20)	0.90 (0.75–1.08)	1.16(0.88–1.53)	1.13 (0.85–1.49)	1.22(0.91–1.65)	1.36 (0.97–1.90)
Not at all	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Type of alcohol drinker								
Regular	0.96(0.94–0.98)	1.00 (0.98–1.03)	1.69(1.47–1.95)	1.26 (1.07–1.48)	1.16(0.97–1.39)	1.05 (0.85–1.30)	0.79(0.67–0.94)	1.01 (0.82–1.24)
Occasional	0.97(0.95–1.00)	0.99 (0.96–1.02)	1.09(0.91–1.30)	0.93 (0.76–1.13)	0.99(0.77–1.29)	0.93 (0.69–1.24)	1.13(0.92–1.40)	1.21 (0.94–1.56)
Did not drink	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Physical activity								
Active	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Moderate active	1.02(1.00–1.05)	0.99 (0.97–1.02)	0.87(0.76–0.99)	0.98 (0.89–1.08)	0.93(0.79–1.09)	0.98 (0.83–1.17)	1.01(0.86–1.20)	0.89 (0.74–1.07)
Inactive	1.06(1.03–1.08)	0.99 (0.97–1.02)	0.62(0.54–0.71)	0.83 (0.69–0.99)	0.79(0.66–0.94)	0.84 (0.68–1.03)	1.21(1.02–1.43)	0.78 (0.63–0.96)
BMI								
Underweight	0.94(0.85–1.04)	0.99 (0.89–1.09)	0.76(0.47–1.24)	0.94 (0.56–1.58)	0.31(0.15–0.65)	0.34 (0.14–0.81)	1.90(0.81–4.45)	1.69 (0.73–3.92)
Normal weight	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Overweight (incl. obese)	1.05(1.03–1.07)	1.03 (1.01–1.05)	1.13(1.01–1.26)	1.10 (0.95–1.27)	0.94(0.82–1.09)	0.95 (0.81–1.10)	1.39(1.18–1.63)	1.30 (1.10–1.53)
Perceived general health								
Poor	1.10(1.06–1.14)	1.06 (1.02–1.11)	0.45(0.32–0.62)	0.63 (0.38–1.05)	1.03(0.76–1.39)	1.80 (1.21–2.70)	3.33(2.40–4.61)	2.94 (1.93–4.49)
Fair	1.04(1.00–1.08)	1.02 (0.97–1.06)	0.59(0.48–0.73)	0.84 (0.69–1.02)	0.98(0.77–1.26)	1.77 (1.33–2.35)	2.12(1.56–2.87)	1.97 (1.37–2.85)
Good	1.04(1.00–1.07)	1.01 (0.98–1.05)	0.89(0.75–1.05)	1.04 (0.96–1.12)	1.08(0.87–1.34)	1.50 (1.17–1.94)	1.89(1.39–2.57)	1.92 (1.34–2.73)
Very good	1.01(0.97–1.04)	0.99 (0.95–1.02)	1.04(0.89–1.22)	1.05 (0.96–1.15)	0.99(0.79–1.24)	1.18 (0.91–1.52)	1.33(0.98–1.80)	1.34 (0.94–1.90)
Excellent	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

BMI – body mass index; CCHS – Canadian Community Health Survey; CI – confidence interval; NA – not applicable; NS – not stated; PR – prevalence ratio.

^a Weighted using Canadian Community Health Survey sampling weights provided by Statistics Canada to provide population estimates.

^b NA = not applicable according to population exclusions; NS = not stated or responses without enough information for classification.

^c Multivariable modified Poisson regression model adjusted for age, sex, province, cultural/racial background, immigrant status, education, income, working status, marital status, smoking status, alcohol consumption, physical activity, BMI, perceived general health, CCHS cycle.

doctors in the territories, (Canadian Institute for Health Information (CIHI), 2015) which may be supplemented by consultation with nurses. Further research is needed to explore factors associated with regional differences in utilization of providers in this population.

Findings have important implications for healthcare planning in Canada, particularly to help address the high burden and costs of back pain. First, it provides an up-to-date national perspective of healthcare utilization in Canadians with back problems, examining associated characteristics across sociodemographic, health-related and behavioural factors. Second, findings highlight potential inequities to accessing care and rehabilitation services delivered especially by allied healthcare providers, particularly related to age, socioeconomic status, and overall general health. Healthcare planning that enhances access to allied healthcare providers, including chiropractors, physiotherapists, and nurses, may assist in addressing unmet rehabilitation needs for back pain in Canada and abroad (Cieza et al., 2021). Further research focused on studying population-based programs of care for back pain in primary care settings is warranted (Ahmadzadeh et al., 2023). Third, findings

provide the evidentiary basis to inform knowledge users, including government and health professional associations, to guide the delivery of tailored healthcare and rehabilitation services to help meet the needs of persons with back problems in Canada. Demographics of Canadians are changing with aging of the population and increasing immigration (The Organisation for Economic Co-operation and Development (OECD), 2021; Statistics Canada, 2022). These changing demographics would likely place greater needs for healthcare services among older adults and communities of newcomers with back pain, and increase inequities to care in the future. Further studies are needed to explore potential facilitators and barriers to accessing healthcare providers, including allied healthcare, in diverse groups to promote equitable and inclusive care.

4.1. Strengths and limitations

This study has strengths. First, CCHS data are representative of 98% of the community-dwelling Canadian population aged ≥12 years.

(Statistics Canada) This study was thus able to determine prevalence and associations generalizable to the entire Canadian population. Second, a range of sociodemographic, health-related, and behavioural factors were accounted for when assessing association with prevalence of healthcare utilization. Third, analyses were conducted using CCHS data nationwide over 15 years to provide a comprehensive perspective on access to care in persons with back problems.

There are limitations. There may be measurement error with self-reported data on healthcare utilization and these CCHS questions have unknown validity and reliability. However, previous studies have used these questions to describe healthcare utilization in persons with back problems and other populations (Lim et al., 2006; Bath et al., 2018; Nehumba et al., 2022; Ravichandiran et al., 2022). In addition, CCHS sampling frame includes individuals living in private dwellings only, and results may not be generalizable to other populations (e.g., persons living in institutions, on reserve and other First Nations settlements). Finally, our study focused on prevalence of healthcare utilization; information such as treatment duration, effectiveness, patient satisfaction, and cost-effectiveness of healthcare services were not captured in CCHS and remains outside the scope of our study. We were also unable to examine surgeries for back problems. Although CCHS has some questions on surgical treatment, they are not specific to back problems and could be surgeries for various other health conditions. Future research in this area is warranted.

5. Conclusion

Findings showed that medical doctors were most commonly consulted by Canadians with chronic back problems, followed by chiropractors then physiotherapists. Factors associated with healthcare utilization varied by provider, particularly with age, socioeconomic status, and self-perceived general health. Findings inform knowledge users, including government and health professional associations, to guide healthcare delivery to meet the needs of persons with back problems in Canada. Further research is required to understand the impact and address identified health inequities and unmet needs of diverse Canadians with back problems.

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Author contributions

Jessica Wong: conceptualization, methodology, writing – original draft, review, and editing; Dan Wang: conceptualization, methodology, formal analysis, writing – review and editing; Sheilah Hogg-Johnson: conceptualization, methodology, writing – review and editing; Silvano Mior: conceptualization, methodology, writing – review and editing; Pierre Côté: conceptualization, methodology, writing – review and editing. All authors have approved the final article.

Declaration of competing interest

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Appendix A. Supplementary data

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