The Consequences of Patient Charges for Prescription Drugs in Canada

Running Head: The Consequences of Drug Charges

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ABSTRACT

Introduction

Many Canadians face significant out-of-pocket charges for prescription drugs. While prior work suggests this causes some patients to not take their medications as prescribed, we have little understanding of whether charges for prescription medicines lead patients to forego basic needs or use more health care services.

Methods

As part of the 2016 Statistics Canada Canadian Community Health Survey, we designed and fielded questions to 28,091 individuals regarding prescription drug affordability, consequent health services utilisation, and trade-offs with other expenditures. We calculated weighted population estimates and proportions, and used logistic regression to determine which patient characteristics were associated with these behaviours.

Results

We found that 5.5% of Canadians reported being unable to afford one or more drugs in the prior year, (95%CI: 5.1% to 6.0%), representing 8.2% of those with at least one prescription. Our survey responses suggest that 303,341 Canadians had additional doctor visits, 93,295 sought care in the emergency department, and 26,423 were admitted to hospital at the population level. Furthermore, we estimated that many Canadians forego basic needs such as food (729,706), heat (238,178), and other health care expenditures (238,611) as a result of drug costs. These outcomes were more

common among females, younger adults, Aboriginal Peoples, those in worse health, lacking drug insurance, and having lower income.

Interpretation

Out-of-pocket charges for medicines for Canadians are associated with foregoing prescription drugs and other necessary spending, as well as use of more health care services. Changes to protect vulnerable populations from drug costs might reduce these negative outcomes.

INTRODUCTION

All Canadian residents receive comprehensive public insurance for medically necessary hospital and physician services. As a result, patients do not have to pay for such services when they use them. However, prescription drugs are covered through a mix of public and private insurance plans and out-of-pocket payments by patients.[1] Across the population, individuals make these payments for 4 reasons: first, if they do not have drug coverage; second, for drugs not covered by a coverage plan; third, to satisfy the deductible requirements of public or private insurance coverage; and, fourth, to pay the out-of-pocket per-prescription charges common to most public and private drug plans.[2]

Overall, these payments are substantial: in 2014, Canadian households paid an estimated $6.5 billion out-of-pocket for prescription drugs—22% of total prescription drug expenditures.[3] Importantly, these costs are not evenly distributed: 4.8% of Canadians with a chronic condition reported spending 5% or more of their income on prescription drugs.[4 5] As a result of having to pay for prescription drugs out of pocket, many Canadians skip or reduce doses, delay refilling prescriptions, or do not fill prescriptions at all to reduce their drug costs—a phenomenon known as cost-related nonadherence (CRNA).[6] The largest study to date found that, in 2007, 9.6% of Canadians who received a prescription did not take the drug as prescribed as a result of cost in 2007.[6] Further, more recent data have found more expensive prescriptions are less likely to be dispensed.[7] Prior surveys have also suggested Canada has higher rates of CRNA than other countries with universal health care systems.[8]

Despite the frequency with which Canadians forego medicines due to cost, little is known about the other consequences of patient charges for medicines. Survey studies in the United States have suggested CRNA has negative implications for health, and many people trade off drug costs with other basic needs.[9,10] Surveys conducted to date in Canada, however, have not investigated such behaviours, nor have they investigated differences in the reporting of CRNA by some groups (e.g., different ethnicities), or studied which drugs are not adhered to due to cost.[6,11] Therefore, we conducted the first survey to-date on the consequences of patient charges for medicines in Canada.

METHODS

Data Sources

Our study utilized the Canadian Community Health Survey (CCHS), an annual telephone survey of community-dwelling household population aged 12 and over that covers 98% of the population.[12] The CCHS has been frequently used in prior research studies on a wide range of topics, including prior estimates of CRNA.[6,13,14] Working in collaboration with Statistics Canada, we designed and pilot tested a module of questions asking a broad set of questions regarding the consequences of out-of-pocket drug costs.[15] The module content was informed by both the prior literature as well as our team's recent qualitative study of CRNA.[16]

The module was fielded over the first six months of 2016, and contained questions assessing various consequences of out-of-pocket charges for drugs, including:

1. CRNA: two questions assessing various types of CRNA, and what conditions foregone drugs were intended to treat. For this section, we selected major health conditions that are commonly treated with prescription drugs. We also asked how much the most recent foregone prescription was going to cost the patient.
2. Health consequences that led to additional health care utilization: additional physician visits, emergency room visits, and hospitalizations resulting from CRNA.
3. Trade-offs: what was foregone by individuals to afford medicines (e.g. food, heat, etc.).

Statistical Analysis

We used the survey questions to calculate national estimates of totals and proportions for specific outcomes. Further, we developed three logistic regression models to determine what factors were associated with reporting (1) any type of cost-related nonadherence, (2) any health system consequence, and (3) any spending trade-off. Our models included variables shown to be associated with CRNA in prior studies, along with new variables such as ethnicity.[6,17] The first model was estimated using all Canadians who reported a prescription in the previous year, the second among all survey respondents, and the third among all Canadians who reported any out-of-pocket prescription drug spending in the prior year.

To account for the complex sampling design of the survey, we used the provided survey weights for all estimates and models, and calculated confidence intervals using bootstrapping.[18] As our initial examination revealed a missing data in some variables,

we used multiple imputation methods to fill in missing values for all independent variables.[19] We used a multi-step process whereby we first imputed values for education level, as it had the highest number of missing values. Subsequently, we used these imputed education values in the imputation of insurance, and continued until all variables were complete.[20] We imputed 5 datasets for the regression models, which were then recombined to fully incorporate the necessary variance adjustments.

RESULTS

Descriptive Characteristics

The rapid response module was completed by 28,091 respondents. The descriptive characteristics and responses regarding CRNA are shown below in Table 1. As shown in the Table, unadjusted rates of CRNA were highest among younger adults, those with poorer self-reported health, lower incomes, no drug insurance, and higher use and spending on prescription drugs.

Cost-related Nonadherence

As shown in Table 1, 5.53% of respondents reported one or more types of CRNA in the previous year (95% CI: 5.06% to 6.00%)— an estimated 1.69 million Canadians (95% CI: 1.55m to 1.85m). This was 8.20% of those who received a prescription (95% CI: 7.48% to 8.92%). Our multivariate model found several characteristics associated with a higher odds of reporting CRNA, including being female, being aged 19 to 44, having lower health status, being lower income, and having no prescription drug insurance (full model results presented in Appendix 1). Of note, we found individuals identifying as Aboriginal had 1.92 higher odds of reporting CRNA (95% CI: 1.27 to 2.91, $p<0.01$). Most other provinces had significantly higher rates of CRNA compared to Québec, with the highest rates in British Columbia.

As shown in Table 2, drugs to treat almost every condition we asked about were foregone due to CRNA, with the highest prevalence for depression, anxiety or other mental health conditions. The out-of-pocket cost of the most recent foregone

prescription varied, with half of the last prescription foregone costing between $51 and $200. Notably, nearly one-third of those reporting CRNA reported that their most recent forgone prescription was going to cost $50 or less—an estimated 427,966 individuals.

Health System Consequences

Based on the number of survey respondents reporting such consequences, we estimated that 374,461 Canadians reported CRNA which led to additional health care utilization they would not have needed otherwise (Table 3, 95% CI 308,263 to 440,659), representing 24.1% of those who reported CRNA (95% CI: 20.1% to 27.6%). This included 303,341 who reported an additional physician visit (95% CI: 242,651 to 364,032), 93,295 who reported an additional emergency room visit (95% CI: 63,451 to 123,139), and 26,423 who reported an additional hospital stay (95% CI: 14,502 to 38,345). As shown in Appendix 2, our logistic regression results once again found similar characteristics were associated with reporting health system consequences as with CRNA and foregoing spending. This included Aboriginal Peoples, being a younger adult (19-44), lower income, a lack of drug insurance, and number of chronic conditions. Notably, females had nearly two-fold higher odds of reporting health system use as a result of CRNA (OR=1.94, 95% CI: 1.27 to 2.95, p<0.01) compared to males.

Trade-offs with Other Spending Areas

We also found charges for prescription drugs were leading Canadians to reduce spending in other areas, including basic necessities. As shown in Table 4, we estimated that 1.45 million (95% CI: 1.31m to 1.58m) Canadians spent less on one or more other

areas due to drug costs. This included 729,706 spending less on food (95% CI: 637,166 to 822,246), 238,178 less on heat (95% CI: 182,771 to 293,584), and 238,611 less on other healthcare expenses (95% CI: 180,067 to 297,155). Our multivariate results, presented in Appendix 3, suggested many of the same factors were associated with spending less in other areas as were with reporting CRNA, including being a younger adult, lacking prescription drug insurance, lower income, and worse health.

DISCUSSION

In contrast to hospital and physician care, out-of-pocket charges for prescription drugs are a reality for most Canadians. We found these charges have significant implications, leading patients to not take prescription drugs, use more health care services than they would otherwise, and forego other household spending. These behaviours were all more common among young adults, lower income groups, and those without drug insurance. We also found significant associations with increased rates of two or more behaviors for females, Aboriginal Peoples, and those with worse health status.

Our findings support recommendations that prescribers consider whether patients can afford their medications.[7] Our findings also suggest that prescribers might consider asking whether patients are making related trade-offs. Furthermore, prescribers should be aware of the higher potential for CRNA, and related trade-offs, in females, Aboriginal Peoples, and those with worse health status. The characteristics of Canadians who engaged in trade-offs and experienced health consequences appears similar to those of citizens experiencing CRNA in other countries. For example, in the United States, the rate of cutting back on other spending was higher in women, younger, non-white, and low-income individuals.[9] High rates of trade-offs have also been shown in patients with COPD in Australia and those with arthritis and diabetes in the United States.[21–23]

Prescribers should also be aware that CRNA was not limited to expensive medications. This is consistent with our team's qualitative findings that suggest patients make very

individual decisions about taking particular prescriptions based on their own assessment of the importance of the medication and the flexibility of their budget.[16] Taken together, this indicates while certain personal characteristics are likely to help identify patients who are at higher risk for CRNA or trade-offs, clinicians should be aware the decisions patients make are likely very individual in nature.

The prevalence of CRNA reported above is slightly lower than comparable past estimates: we previously found 9.6% of those with a prescription in 2007 experienced CRNA compared to 8.2% in this analysis.[6] This modest reduction may be the result of several policy and demographic factors acting to provide better coverage to some segments of the population. For example, price negotiations by the provinces have likely resulted in more extensive listings on public drug plans. At the same time, more generic alternatives have become available for widely prescribed medicines[24], and large decreases in generic drug prices have been stimulated by changes in provincial policies.[25] Finally, as the population has aged, a higher proportion of patients will have "aged into coverage" in provinces such as Ontario with age-based public drug entitlements.

Limitations

Our study has limitations worth noting. As with any survey-based analysis, our results are necessarily based on patient report. Thus, they may be subject to recall and social desirability bias. On a related note, self-report may also mean the trade-offs and additional health system utilization reported by patients may not have been causally

related to drug charges. However, we know from prior studies that out-of-pocket costs for prescription drugs can be related to higher use of other health services.[26] Further, while we had hoped to link CRNA and trade-offs with specific insurance design features (such as coinsurance and deductibles), we found in pilot testing that the vast majority of respondents could not reliably describe these features of their own coverage. Therefore, we did not include them in our final survey instrument.

Conclusion

Our results confirm that cost remains a barrier to prescription medicines for many Canadians. This impact exists for medicines across a variety of clinical conditions and costs, and results in adverse consequences for both individuals and the health care system. There are many avenues through which governments might act to reduce CRNA.[27] Policies that reduce CRNA should be investigated to see if they reduce health care utilization that is a consequence of CRNA, and also allow Canadians who are currently disadvantaged in access to prescription drugs to avoid trade-offs with other essential spending.

TABLES

Table 1: Characteristics and prevalence of cost-related nonadherence among respondents to the Canadian Community Health Survey between January and June 2016

Variable	Number of Respondents	Weighted Proportion with CRNA % (95% CI)
Overall	28,091	5.53 (5.06 - 6.00)
Sex		
Female	15,024	6.50 (5.81 - 7.19)
Male	13,067	4.54 (3.92 - 5.16)
Age, yr		
12-18	2,511	2.06 (1.32 - 2.80)
19-34	5,234	7.65 (6.47 - 8.82)
35-44	3,568	6.04 (4.77 - 7.31)
45-54	4,046	5.64 (4.51 - 6.76)
55-64	4,897	5.01 (4.00 - 6.01)
65-74	4,615	4.77 (3.80 - 5.74)
≥75	3,220	3.35 (2.35 - 4.36)
Self-reported Health Status		
Excellent	5,996	2.88 (2.10 - 3.66)
Very good	10,221	3.64 (3.07 - 4.22)
Good	8,016	6.90 (5.92 - 7.88)
Fair	2,777	12.54 (10.21 - 14.87)
Poor	1,036	18.42 (14.56 - 22.28)
Chronic Conditions, no.		
0	12,339	3.18 (2.67 - 3.69)
1	7,401	6.01 (5.09 - 6.93)
2	4,380	7.32 (5.96 - 8.67)
3	2,328	12.43 (9.89 - 14.97)
≥4	1,643	14.82 (12.31 - 17.34)
Cultural Background		
South Asian	549	6.60 (3.01 - 10.18)
East Asian	671	3.83 (2.22 - 5.43)
Aboriginal	1,349	10.94 (7.95 - 13.92)
Other	2,493	6.30 (4.76 - 7.84)
White	23,029	5.13 (4.66 - 5.61)
Total Household Income, $		
<20,000	2,675	11.14 (8.85 - 13.43)
20,000-39,999	4,940	9.44 (7.92 - 10.95)
40,000-59,999	4,469	7.03 (5.74 - 8.32)
60,000-79,999	3,631	5.56 (4.27 - 6.84)

80,000-99,999	3,056	4.81 (3.48 - 6.15)
100,000-149,999	4,905	3.57 (2.69 - 4.45)
≥150,000	4,415	2.27 (1.59 - 2.94)
Education		
Secondary school	6,234	6.69 (5.59 - 7.8)
Post-secondary school	15,001	5.19 (4.57 - 5.82)
Less than secondary school	6,464	5.11 (4.17 - 6.05)
Prescription Drug Insurance		
Employer plan	13,573	3.44 (2.92 - 3.96)
Association plan	2,418	3.86 (2.65 - 5.07)
Government plan	5,896	7.13 (6.09 - 8.18)
None	5,331	11.29 (9.69 - 12.88)
Prescription Drugs, no. (prior 12 months)		
0	9,108	0.88 (0.63 - 1.13)
1 or 2	8,212	6.96 (6.01 - 7.92)
3 or 4	5,195	8.47 (7.29 - 9.65)
≥5	4,976	12.00 (10.23 - 13.76)
Out of Pocket Prescription Drug Spending (prior 12 months), $		
0	12,133	1.68 (1.35 - 2.01)
1-200	8,725	6.30 (5.42 - 7.19)
201-500	3,185	13.50 (11.10 - 15.90)
501-1000	1,722	15.37 (12.31 - 18.43)
>1000	1,149	17.96 (14.34 - 21.58)
Province		
Newfoundland and Labrador	836	4.51 (2.68 - 6.34)
Prince Edward Island	449	6.08 (3.66 - 8.51)
Nova Scotia	1,237	5.22 (3.55 - 6.89)
New Brunswick	900	4.83 (3.05 - 6.60)
Quebec	6,160	3.70 (3.01 - 4.39)
Ontario	8,733	5.77 (4.85 - 6.68)
Manitoba	1,356	5.51 (3.75 - 7.27)
Saskatchewan	1,187	5.69 (3.38 - 8.01)
Alberta	3,476	5.73 (4.55 - 6.91)
British Columbia	3,757	8.11 (6.74 - 9.47)

Table 2: Types of drugs foregone and the cost of prescriptions foregone due to cost-related nonadherence among respondents to the Canadian Community Health Survey between January and June 2016.

	Weighted Total (95% CI)	Weighted proportion (of population with CRNA %, 95% CI)
Types of drugs foregone in prior 12 months		
Depression, anxiety, or other mental health condition	331,866 (268,881-394,851)	21.43 (17.99-24.87)
Arthritis or chronic pain	252,590 (190,989-314,192)	16.31 (12.68-19.76)
Heart disease, high cholesterol, or high blood pressure	244,306 (191,779 - 296,833)	15.78 (12.60-18.95)
Infection	227,983 (166,112-289,855)	14.72 (11.16-18.28)
Gut problems (e.g. peptic ulcer, heartburn, bowel disease)	175,502 (136,984-214,020)	11.33 (8.96-13.71)
Asthma or chronic obstructive pulmonary disease	152,800 (119,051-186,548)	9.87 (7.78-11.95)
Diabetes	127,437 (93,474-161,399)	8.23 (6.13-10.33)
Cancer	9,267 (4,604-12,931)	0.60 (0.29-0.90)
Other condition	658,065 (573,155-742,975)	42.49 (38.56-46.42)
Cost of the most recent foregone prescription		
1 to 25 dollars	164,219 (120,569-207,868)	11.31 (8.54-14.08)
26 to 50 dollars	263,747 (214,091-313,403)	18.16 (15.20-21.13)
51 to 200 dollars	749,933 (650,338-849,528)	51.65 (47.18-56.12)
201 to 1000 dollars	236,765 (181,154-292,376)	16.31 (12.75-19.86)
1001 dollars or more	37,326 (24,227-50,426)	2.57 (1.69-3.45)

Table 3: Additional health care utilization resulting from cost-related nonadherence among respondents to the Canadian Community Health Survey between January and June 2016.

	Weighted Total (95% CI)	Weighted Proportion (of total population %, 95% CI)	Weighted proportion (of population with CRNA %, 95% CI)
Health Consequence			
Physician Visit	303,341 (242,651-364,032)	0.99 (0.79-1.19)	19.50 (16.11-22.89)
Emergency Department	93,295 (63,451-123,139)	0.31 (0.21-0.40)	6.00 (4.18-7.82)
Hospital Stay	26,423 (14,405-38,345)	0.09 (0.05-0.13)	1.70 (0.94-2.46)
Any of the above	374,461 (308,263-440,659)	1.23 (1.01-1.44)	24.08 (20.56-27.59)

Table 4: Expenditure areas where trade-offs were made by respondents to afford prescription drugs in the Canadian Community Health Survey January and June 2016.

	Weighted Total (95% CI)	Weighted Proportion (of total population %, 95% CI)
Trade-off		
Leisure or vacation	836,885 (735,937-937,832)	2.74 (2.41-3.07)
Food	729,706 (637,166-822,246)	2.39 (2.08-2.69)
Car, public transit, or other transportation costs	375,774 (307,488-444,060)	1.23 (1.01-1.45)
Other healthcare expenses for yourself or anyone else in the household	238,611 (180,067-297,155)	0.78 (0.59-0.97)
Heat	238,178 (182,771-293,584)	0.78 (0.60-0.96)
Housing	206,056 (147,832-265,289)	0.67 (0.48-0.86)
Other expenses not already mentioned	297,882 (231,905-363,858)	0.97 (0.76-1.19)
Any of the above	1,447,183 (1,313,582-1,580,785)	4.73 (4.30-5.17)

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APPENDICES

1. Logistic regression on CRNA
2. Logistic regression on spending trade-offs
3. Logistic regression on health system consequences

Appendix 1. Logistic Regression on Cost-Related Nonadherence

	OR (with 95% CI)	p
Sex		
Female	1.30 (1.04 - 1.62)	0.023
Male	Reference Group	
Age, yr		
12 to 18	3.64 (1.76 - 7.53)	0.001
19-34	13.05 (7.72 - 22.04)	<0.001
35-44	9.09 (5.21 - 15.85)	<0.001
45-54	6.25 (3.78 - 10.36)	<0.001
55-64	3.24 (1.83 - 5.76)	<0.001
65-74	1.91 (1.14 - 3.19)	0.013
≥75	Reference Group	
Self-reported Health Status		
Very good	0.98 (0.66 - 1.45)	0.923
Good	1.63 (1.06 - 2.51)	0.026
Fair	2.24 (1.38 - 3.63)	0.001
Poor	3.09 (1.71 - 5.61)	<0.001
Excellent	Reference Group	
Chronic Conditions, no.		
1	1.17 (0.83 - 1.66)	0.373
2	1.36 (1.00 - 1.85)	0.047
3	1.65 (1.12 - 2.42)	0.011
≥4	1.91 (1.27 - 2.88)	0.002
0	Reference Group	
Cultural Background		
South Asian	1.22 (0.63 - 2.38)	0.552
East Asian	0.52 (0.28 - 0.99)	0.045
Aboriginal	1.92 (1.27 - 2.91)	0.002
Other	1.55 (1.10 - 2.20)	0.013
White	Reference Group	
Total Household Income, $		
<20,000	3.63 (2.18 - 6.05)	<0.001
20,000-39,999	3.04 (1.88 - 4.93)	<0.001
40,000-59,999	2.55 (1.64 - 3.97)	<0.001
60,000-79,999	2.42 (1.50 - 3.90)	<0.001
80,000-99,999	1.83 (1.14 - 2.92)	0.012
100,000-149,999	1.55 (0.99 - 2.44)	0.057
≥150,000	Reference Group	
Education		
Secondary school	0.89 (0.55 to 1.43)	0.621

Post-secondary school	0.92 (0.62 to 1.37)	0.685
Less than secondary school	Reference Group	
Prescription Drug Insurance		
Association plan and private plan	1.15 (0.78 - 1.69)	0.487
Government plan	1.85 (1.22 - 2.80)	0.004
None	3.02 (2.26 - 4.05)	<0.001
Employer plan	Reference Group	
Prescription Drugs, no.		
3 or 4	1.21 (0.87 - 1.67)	0.255
≥5	1.15 (0.80 - 1.66)	0.447
1 or 2	Reference Group	
Out of Pocket Prescription Drug Spending, $		
1-200	2.10 (1.38 - 3.20)	0.001
201-500	3.81 (2.45 - 5.93)	<0.001
501-1000	5.40 (3.42 - 8.54)	<0.001
>1000	5.63 (3.40 - 9.32)	<0.001
0	Reference Group	
Province		
Newfoundland and Labrador	1.29 (0.77 - 2.14)	0.330
Prince Edward Island	1.56 (0.84 - 2.87)	0.157
Nova Scotia	1.75 (1.05 - 2.92)	0.032
New Brunswick	1.74 (1.08 - 2.81)	0.023
Ontario	2.09 (1.54 - 2.84)	<0.001
Manitoba	1.76 (1.13 - 2.75)	0.012
Saskatchewan	1.52 (0.91 - 2.53)	0.108
Alberta	2.13 (1.49 - 3.04)	<0.001
British Columbia	3.46 (2.50 - 4.80)	<0.001
Quebec	Reference Group	

Appendix 2. Logistic regression on health system consequences

	OR (with 95% CI)	p
Sex		
Female	1.94 (1.27 - 2.95)	0.00
Male	Reference Group	
Age		
12-18	9.99 (2.94 - 34.02)	0.00
19-34	20.33 (7.75 - 53.32)	<0.001
35-44	17.64 (6.63 - 46.94)	<0.001
45-54	5.16 (1.88 - 14.12)	0.00
55-64	4.18 (1.51 - 11.55)	0.01
65-74	2.28 (0.81 - 6.46)	0.12
≥75	Reference Group	
Self-reported Health Status		
Very good	0.90 (0.33 - 2.46)	0.84
Good	1.40 (0.63 - 3.11)	0.41
Fair	3.89 (1.67 - 9.04)	0.00
Poor	2.53 (0.89 - 7.18)	0.08
Excellent	Reference Group	
Chronic Conditions, no.		
1	1.34 (0.58 - 3.11)	0.49
2	1.91 (0.98 - 3.71)	0.06
3	3.40 (1.53 - 7.56)	0.00
≥4	3.76 (1.62 - 8.72)	0.00
0	Reference Group	
Cultural Background		
South Asian	2.26 (0.63 - 8.12)	0.21
East Asian	0.34 (0.05 - 2.36)	0.27
Aboriginal	2.64 (1.43 - 4.87)	0.00
Other	1.50 (0.82 - 2.73)	0.19
White	Reference Group	
Total Household Income, $		
<20,000	5.21 (1.47 - 18.46)	0.01
20,000-39,999	2.90 (0.90 - 9.33)	0.07
40,000-59,999	2.55 (0.71 - 9.08)	0.15
60,000-79,999	1.54 (0.41 - 5.81)	0.52
80,000-99,999	1.94 (0.54 - 6.90)	0.31
100,000-149,999	1.95 (0.47 - 8.14)	0.36
≥150,000	Reference Group	
Education		
Secondary school	0.96 (0.48 - 1.91)	0.90

Post-secondary school	1.07 (0.57 - 2.00)	0.84
Less than secondary school	Reference Group	
Prescription Drug Insurance		
Association and private plan	1.06 (0.40 - 2.81)	0.91
Government plan	3.69 (1.52 - 8.99)	0.00
None	3.34 (1.89 - 5.92)	<0.001
Employer plan	Reference Group	
Out of Pocket Prescription Drug Spending, $		
1-200	10.42 (5.06 - 21.50)	<0.001
201-500	23.81 (11.1 - 51.06)	<0.001
501-1000	28.38 (12.53 - 64.30)	<0.001
>1000	31.53 (12.86 - 77.33)	<0.001
0	Reference Group	
Province		
Newfoundland and Labrador	2.11 (0.29 - 15.57)	0.46
Prince Edward Island	1.07 (0.00 - 258.73)	0.98
Nova Scotia	3.52 (1.23 - 10.04)	0.02
New Brunswick	3.76 (1.64 - 8.61)	0.00
Ontario	4.60 (2.41 - 8.77)	<0.001
Manitoba	1.47 (0.30 - 7.14)	0.63
Saskatchewan	1.69 (0.49 - 5.86)	0.41
Alberta	3.99 (1.91 - 8.31)	0.00
British Columbia	5.24 (2.66 - 10.31)	<0.001
Quebec	Reference Group	

Appendix 3. Logistic regression on any spending trade-off

	OR (with 95% CI)	p
Sex		
Female	1.25 (0.99 - 1.57)	0.06
Male	Reference Group	
Age		
12 to 18	8.94 (5.11 - 15.65)	<0.001
19-34	8.74 (5.54 - 13.79)	<0.001
35-44	7.71 (4.78 - 12.41)	<0.001
45-54	4.67 (2.97 - 7.35)	<0.001
55-64	3.47 (2.30 - 5.24)	<0.001
65-74	2.13 (1.43 - 3.17)	0.00
≥75	Reference Group	
Self-reported Health Status		
Very good	0.70 (0.47 - 1.06)	0.09
Good	1.33 (0.91 - 1.93)	0.14
Fair	1.77 (1.15 - 2.72)	0.01
Poor	1.89 (1.14 - 3.12)	0.01
Excellent	Reference Group	
Chronic Conditions, no.		
1	1.70 (1.17 - 2.45)	0.00
2	2.12 (1.50 - 2.98)	<0.001
3	2.88 (1.96 - 4.23)	<0.001
≥4	4.87 (3.01 - 7.87)	<0.001
0	Reference Group	
Cultural Background		
South Asian	1.49 (0.78 - 2.86)	0.23
East Asian	0.45 (0.16 - 1.28)	0.13
Aboriginal	1.43 (0.93 - 2.20)	0.10
Other	2.06 (1.43 - 2.97)	0.00
White	Reference Group	
Total Household Income, $		
<20,000	4.27 (2.40 - 7.59)	<0.001
20,000-39,999	3.60 (2.08 - 6.22)	<0.001
40,000-59,999	2.53 (1.48 - 4.34)	0.00
60,000-79,999	2.07 (1.18 - 3.64)	0.01
80,000-99,999	2.25 (1.20 - 4.24)	0.01
100,000-149,999	1.35 (0.77 - 2.38)	0.29
≥150,000	Reference Group	
Education		
Secondary school	1.02 (0.71 - 1.47)	0.90

Post-secondary school	1.04 (0.74 - 1.46)	0.82
Less than secondary school	Reference Group	
Prescription Drug Insurance		
Association and private plan	1.11 (0.66 - 1.85)	0.70
Government plan	1.42 (1.06 - 1.92)	0.02
None plan	2.26 (1.68 - 3.04)	<0.001
Employer benefit plan	Reference Group	
Out of Pocket Prescription Drug Spending, $		
201-500	2.07 (1.56 - 2.73)	<0.001
501-1000	3.50 (2.46 - 4.98)	<0.001
>1000	5.00 (3.34 - 7.47)	<0.001
1-200	Reference Group	
Province		
Newfoundland and Labrador	0.84 (0.47 - 1.52)	0.57
Prince Edward Island	0.78 (0.40 - 1.54)	0.47
Nova Scotia	1.62 (1.06 - 2.47)	0.02
New Brunswick	1.28 (0.78 - 2.11)	0.33
Ontario	1.58 (1.13 - 2.19)	0.01
Manitoba	1.55 (1.03 - 2.34)	0.04
Saskatchewan	0.80 (0.44 - 1.44)	0.46
Alberta	1.44 (0.98 - 2.12)	0.06
British Columbia	2.03 (1.42 - 2.89)	<0.001
Quebec	Reference Group	