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The aim of this research was to better understand what information sources patients in a smaller, more remote northern community use to learn about medications, and to explore whether the available information sources are appropriately meeting patients' needs. In particular, we were interested in examining the impact of direct-to-consumer advertising.

L'objectif de cette recherche était de mieux comprendre quelles sources d'information utilisent les patients dans les petites collectivités nordiques isolées pour s'informer sur les médicaments et de savoir si les sources d'information disponibles répondent aux besoins des patients. Nous étions particulièrement intéressés à connaître les répercussions de la publicité s'adressant directement aux consommateurs.

The effects of direct-to-consumer-advertising on patients in a northern Canadian community: A cross-sectional survey

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Abstract

Background: Previous studies have investigated the effects of direct-to-consumer advertising (DTCA) of prescription medication in the United States and in a large Canadian centre close to the US border. This study examined how DTCA affects patients in a smaller, more remote Canadian community.

Methods: A cross-sectional survey of patients ≥ 18 years was conducted in 8 primary care practices in Prince George, BC. Main outcome measures were past and present requests for advertised and non-advertised prescription medications.

Results: Of 435 eligible patients, 217 (49.8%) agreed to be surveyed; 209 questionnaires were included in the final analysis. Patients with high exposure to DTCA were significantly more likely to be under the age of 50 ($p = 0.016$). A total of 1.6% of patients with high DTCA exposure versus 0% with low exposure requested advertised medications during the study ($p = 0.26$), and 4.8% versus 0%, respectively, had requested advertised medications in the past ($p = 0.052$).

The percentage of patients requesting *any* prescription medication, advertised or non-advertised, was 10.2% in the high DTCA exposure group, compared to 4.9% in the low exposure group. (OR = 2.18, 95% CI 0.69-6.93).

Discussion: The rate of requests for advertised prescription medications in this northern Canadian community was lower than rates reported from larger, less-remote centres. However, exposure to DTCA remained surprisingly high, especially in younger patients. Results suggest that patients with higher self-reported exposure to DTCA may be more likely to request both advertised and non-advertised prescription medications.

Conclusions: All health care professionals with a prescribing role should be aware of the potential impact of DTCA and ensure that patients are receiving objective, evidence-based information that will enable them to make fully informed decisions. *Can Pharm J* 2010;143:126-133.

Introduction

While Canada's shortage of health care professionals may limit access to medication information directly from prescribers, direct-to-consumer advertising (DTCA) of pharmaceutical products is just a remote control click away. Advocates for

DTCA claim that it increases patient awareness.¹ However, concerns have been raised that medication advertisements could endanger rather than empower patients by minimizing risk information and exaggerating benefits.² A 10-year review of US print advertisements found that only 9% of

advertisements reported the estimated success rate of the medication, 71% failed to mention alternative treatments and 76% omitted information on behavioural changes that could support pharmacological treatment.³ Another review showed that most magazine advertisements for medication vaguely described the drug's benefits, using qualitative terms only and making emotional appeals without offering quantitative data to support the claims.⁴ In a 2005 systematic review of the benefits and harms of DTCA, Gilbody and colleagues concluded that while DTCA is associated with increased requests for, and increased prescriptions of, advertised products, there is a lack of evidence to support any benefits of DTCA in terms of actual health outcomes.⁵

New Zealand and the United States are the only developed countries that allow full DTCA of prescription medications.⁶ Spending on DTCA in the United States increased by 330% from 1996 to 2005,⁷ and totalled US\$3.7 billion in 2007.⁸ Both the Canadian Pharmacists Association and the Canadian Medical Association have released statements opposing DTCA.⁹⁻¹¹ Canada currently prohibits full, detailed advertising of prescription medications. However, DTCA of over-the-counter medications is permitted, as are "reminder advertisements," which state brand names without mentioning the product's indication or making health claims.^{12,13} Inflation-adjusted spending on such branded DTCA in Canada grew from less than C\$2 million per year before 1999 to over \$22 million in 2006.¹³ In addition, Canadian consumers are subject to exposure through US cable and satellite television, US magazines and the Internet. The Canadian media company Canwest launched a legal challenge of the federal prohibition of full DTCA in December 2005, demanding the right to fully advertise prescription medications to the Canadian public. Canwest argued that the restriction on advertising of prescription medications contravenes the constitutional charter guaranteeing freedom of thought, belief, opinion and expression. In June 2009, the media firm sought indefinite adjournment of the case, but remains free to revive the case at some future date.¹⁴ In view of these events, a closer look at how Canadians are affected by DTCA is crucial.

A previous study comparing prescribing behaviour in Sacramento, CA, where full, detailed DTCA is allowed, with Vancouver, BC, where DTCA is more restricted but considerable cross-border exposure occurs, reported that increased exposure to DTCA was associated with more requests for advertised medications and more prescriptions.^{15,16}

The aim of the present study was to examine the influence of DTCA on patients in a smaller, more remote, northern Canadian community, focusing on the following:

- Patients' opinion on the accuracy of different medication information sources
- The rate of requests for advertised and non-advertised prescription medications
- The relationship between the degree of self-reported exposure to advertising and the requests for advertised and non-advertised medications

Methods

Recruitment

Ethics approval was obtained from the Research Review Committee for the Northern Interior Health Service Delivery Area. The survey was conducted from February 16 to March 16, 2005, in 8 different primary care practices in Prince George, BC, involving the patients of 19 different physicians. Written consent was obtained from all participating physicians and patients. All consecutive patients attending a physician's office on pre-selected study days were invited to participate by the medical office assistant. Patients were excluded if they were <18 years, unable to provide informed consent, not seeing the doctor for their own care, non-English speaking or too ill to participate.

Survey instrument

The survey instrument was developed on the basis of a piloted, validated questionnaire used in a previously published study on DTCA,¹⁶ with some modifications to better reflect the context of a more remote northern BC community. The questionnaire addressed preferred sources of information on medications, past requests for advertised medications, the presence of a health condition targeted by advertised medications, awareness of Canada's laws regarding DTCA, self-reported health status and patient demographics.

Exposure to DTCA was measured by asking how many different prescription medications a

Key points

- Direct-to-consumer advertising (DTCA) of prescription medication is currently restricted in Canada. Canadians are nevertheless exposed to DTCA via US television, US magazines and the Internet.
- DTCA does not appear to provide balanced information regarding medications.
- This study showed that DTCA has impact in a smaller, more remote northern Canadian community and may influence requests for both advertised and non-advertised prescription medications.
- Additional research is needed to confirm the observed trends and to elucidate the wider impact of DTCA on health outcomes and health care costs.
- As the number of health care disciplines with prescribing privileges increases, all health care professionals with a prescribing role need to be aware of the potential impact of DTCA and ensure that patients are receiving objective, accurate information on prescription medications that will enable them to make fully informed decisions.

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patient had seen advertised in the previous year and by whether or not they had seen advertisements for 8 listed brands. A fictional medication — “Rilovan” — was included to check the reliability of responses. The other 7 listed brands were taken from a list of the 10 products with the highest DTCA budgets in 2002.¹⁷ Two products were excluded due to the recent media attention they had received, and 1 was excluded because it is available over the counter in Canada.

After their appointment, patients were asked to answer the last question on the questionnaire, which addressed whether they had received a prescription that day, whether they had requested it and whether they had seen the medication advertised. This added a prospective component to the study, allowing direct observation of the rate of requests for advertised and non-advertised prescription medications without the disadvantage of potential recall bias associated with questions addressing past behaviours.

Statistical analysis and sample size

In a first phase of analysis, descriptive statistics and frequency tables were calculated for the entire sample of patients. In a subsequent phase of analysis, patients were divided into 2 groups, depending on whether they reported having seen ≥ 4 listed brands (high-exposure group) or < 4 listed brands (low-exposure group). Chi-square analysis was used to compare the 2 groups. The primary outcome measures were rates of requests for advertised and non-advertised prescription medications. Sample size was calculated to provide 80% power to detect a 20% difference between groups with respect to most variables, where $\alpha = 0.05$

(2-sided).¹⁸ Based on available published literature, the rate of reported past requests for advertised medications was expected to be below 5% in both groups, with a rate of requests occurring during the study period expected to be even lower. With regard to requests for any prescription medication, the hypothesized rate was $< 10\%$. To show a statistically significant difference between groups at these rates would have required sample sizes of over 400 per group, which was beyond the scope of this project. For these outcome measures, this must therefore be considered a pilot study.

Results

A total of 628 patients attended the selected practices during the study period; 435 patients met the inclusion criteria, and of these, 217 (49.8%) agreed to participate. Six questionnaires were not returned, and 2 were excluded because the participants had completed less than 1/3 of the questionnaire, leaving 209 included in the final analysis. There were 128 participants (61%) who met the criteria for high exposure to DTCA, and 81 (39%) who met the criteria for low exposure.

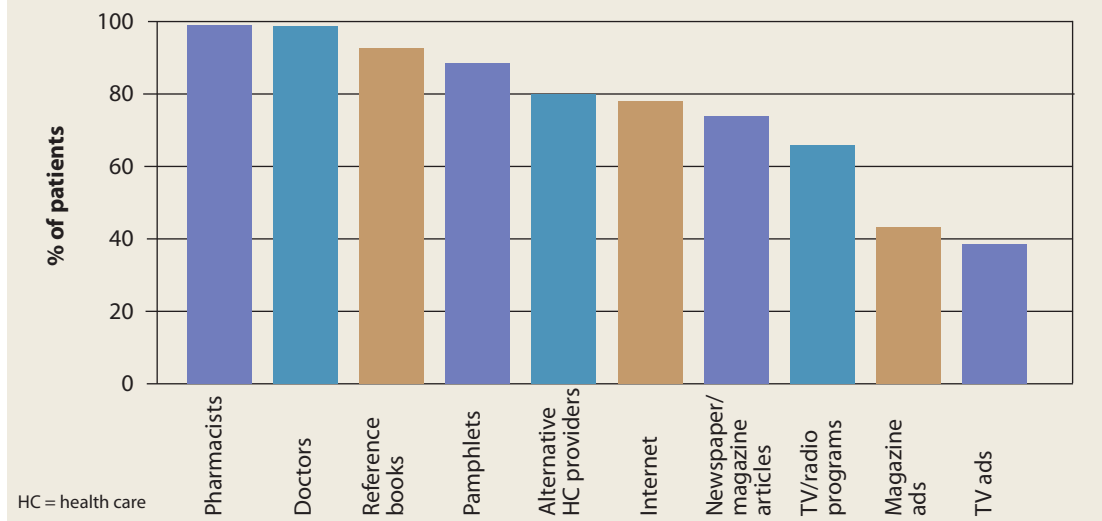
Preferred information sources

Close to 100% of patients viewed doctors and pharmacists as accurate sources of information. Television and magazine ads were judged accurate by a much lower percentage (around 40%) of participants (Figure 1).

Advertising exposure

The percentage of patients who reported having seen over 10 different products advertised over the last year was 39.2%. With respect to specific

FIGURE 1 Information sources considered “accurate” or “fairly accurate”



brands, 91.4% had seen advertisements for Viagra, and over 50% had seen ads for Allegra, Paxil and Zoloft; 10% reported that they had seen ads for the fictional medication Rilovan. Almost 1/4 of patients (23.4%, $n = 49/209$) identified themselves as having 1 or more health conditions that could be treated by a medication they had seen advertised, with depression, acid reflux and high cholesterol mentioned most frequently (Table 1).

TABLE 1 Conditions treatable by an advertised medication

Condition	No. (%)
Depression	14 (7)
Acid reflux	9 (4.5)
High cholesterol	9 (4.5)
Anxiety/panic attacks	4 (2)
Asthma	4 (2)
Diabetes	2 (1)
Arthritis	2 (1)
Acne	1 (0.5)
Rheumatoid arthritis	1 (0.5)
Osteoporosis	1 (0.5)
Migraines	1 (0.5)
Enlarged prostate	1 (0.5)
Overweight	1 (0.5)
Hypertension	1 (0.5)
Yeast infection	1 (0.5)

Legislation regarding DTCA

Sixteen percent of participants (34/209) thought that Canada's laws currently forbade advertising of prescription medication to the public, 17.5% (36/209) believed this to be false and 65.5% (135/209) stated that they did not know. When asked whether they thought advertising should be prohibited, opinions were evenly split, with 42.2% patients stating that they disagreed or strongly

disagreed, and 44.1% stating that they agreed or strongly agreed; 13.7% had no opinion.

Rate of requests for advertised drugs in the combined sample

Two patients requested advertised medications during the study period (1%). Six patients (2.9%) indicated that they had requested advertised prescription medications in the past.

Comparison between high-exposure and low-exposure groups

There were 128 participants (61%) who met the criteria for high exposure to DTCA and 81 (39%) who met the criteria for low exposure. With respect to patient demographics, 11.4% of participants did not provide income information; for the remaining variables, data were missing in less than 2% of cases. The 2 groups did not differ significantly with respect to self-reported health status, income or ethnicity (Table 2). Participants in the high-exposure group were more likely to be female and report education above the high school level, although the differences did not reach statistical significance. Age was inversely associated with exposure to medication advertising; 57.8% in the high-exposure group and 40.5% in the low-exposure group were under the age of 50 ($p = 0.016$).

Requests for advertised and non-advertised medications versus exposure to medication advertising

No participants in the low-exposure group requested advertised medications during the study period versus 2 participants (1.6%) in the high-exposure group ($p = 0.26$). No participants in the low-exposure group reported requesting advertised medications in the past, while 6 participants (4.8%) in the high-exposure group reported hav-

TABLE 2 Patient demographics: Low-exposure and high-exposure DTCA groups

Demographic	Low exposure No. (%)	High exposure No. (%)	p-value
Good-to-excellent health	66 (81.5)	106 (82.8)	0.81
Household income <\$60,000	38 (56.7)	66 (55.9)	0.92
Ethnicity			
Caucasian	71 (91)	118 (92.9)	0.58
Aboriginal	7(9)	8 (6.3)	0.58
Other	0 (0)	1 (0.8)	0.58
Female gender	46 (59)	89 (69.5)	0.12
Above high school education	44 (56.4)	86 (67.2)	0.12
Age <50 years	32 (40.5)	74 (57.8)	0.016

DTCA = direct-to-consumer advertising.

ing done so ($p = 0.052$). Patients in the high-exposure group were twice as likely as patients in the low-exposure group to request *any* prescription medication during the study period, advertised or non-advertised (10.2% [13/128] versus 4.9% [4/81], respectively, OR = 2.18, 95% CI 0.69-6.93).

Medications requested

As shown in Table 3, Tri-Cyclen (for acne) and Zyban (for smoking cessation) were the 2 advertised medications requested during the study period. Advertised medications requested in the past included Zoloft, Viagra, Xenical, Tri-Cyclen and Meridia. Most requests for non-advertised medications during the study period were for antibiotics, topical steroids and anti-inflammatories. (Table 3).

Discussion

Despite the restrictions on DTCA of prescription medication in Canada, exposure to medication advertising in this northern BC community was considerable — 39.2% of patients reported having seen over 10 medications advertised in the last year. Current legislation around DTCA in Canada is complex: while full, detailed advertising of prescription medication is prohibited, DTCA of over-the-counter medications and “reminder advertisements” mentioning brand name only are permitted. The fact that the majority of study participants stated that they did not know whether Canada’s laws currently forbade advertising of prescription medication to the public appears to reflect this complexity. Most patients maintained

skepticism regarding the accuracy of TV and magazine ads and indicated that they preferred doctors and pharmacists as medication information sources. However, it is worth considering whether Canada’s current shortage of health care professionals, including physicians and pharmacists, might compel patients to turn more readily to advertisements as alternative information sources.

When asked whether they had a health condition that could be treated by a medication they had seen advertised, patients most frequently reported depression, acid reflux and high cholesterol. Heavy advertising of medications used to treat these conditions may be encouraging patients to reach for pharmacotherapy rather than first trying lifestyle modifications and nonpharmacological treatments. The depiction of health conditions treatable by advertised medications may also lead to increased self-diagnosis of these conditions, and patients may request and receive the advertised drug whether or not their self-diagnosis is accurate. For instance, a study using standardized patients showed that those who asked to be prescribed advertised antidepressants for depressive symptoms associated with adjustment disorder were still likely to receive the requested medications even though there is no evidence to support their use for this condition.¹⁹

In the combined sample, the rate of requests for advertised prescription medications during the study period (1%) as well as the rate of past requests (2.9%) was lower than reported rates in Sacramento, CA (7.2% and 10.6%, respectively), where full range DTCA is legal, and Vancouver, BC (3.3% and 6.4%, respectively), where DTCA is restricted.^{15,16} The level of exposure in northern BC can be expected to be lower due to the demographics of the population. Differences in level of education obtained, occupation, magazine purchasing habits, rates of television ownership, satellite/cable channel subscriptions and viewing habits, and computer ownership and Internet access may all contribute to decreased exposure to DTCA compared to Vancouver. Our results are consistent with the published literature, which supports that exposure to DTCA correlates positively with requests for advertised medicines.^{5,15,16} Nonetheless, correlation does not equal causation, and this has to be interpreted with caution.

Patients under the age of 50 were significantly more likely to report high exposure to medication advertising ($p = 0.016$). In addition, participants with higher self-reported exposure to medication advertising were more likely to be female and have above high school level education, although

TABLE 3 Specific medications requested

Medication	No. (%)
Advertised medications requested during the study	
Tri-Cyclen (for acne)	1 (0.5)
Zyban (for smoking cessation)	1 (0.5)
Advertised medications requested in the past	
Zoloft	2 (1)
Viagra	1 (0.5)
Xenical	1 (0.5)
Meridia	1 (0.5)
Tri-Cyclen (for acne)	1 (0.5)
Non-advertised medications requested during the study	
Antibiotic	4 (2)
Topical steroid	3 (1.4)
Anti-inflammatory	3 (1.4)
Narcotic	2 (1)
Antihypertensive	2 (1)
Non-advertised antidepressant	1 (0.5)

these differences did not reach statistical significance. Further studies are needed to confirm these trends. One could speculate that in the future, the pharmaceutical industry will focus more on promoting drugs that treat conditions prevalent in a younger, predominantly female population, such as social phobia or premenstrual dysphoric disorder. This would be in line with the observed trend toward heavy advertising of “lifestyle drugs” for milder conditions that are prevalent but not life-threatening.²⁰⁻²²

Study results suggest an association between the degree of self-reported exposure to advertising and patient requests for both advertised and non-advertised medications; 1.6% of patients in the high-exposure group versus none in the low-exposure group requested advertised drugs during the study period, and 4.8% versus none indicated that they had requested advertised drugs in the past. Patients with higher exposure to DTCA were twice as likely to request *any* prescription medication, advertised or non-advertised. With respect to past requests for advertised medications, the difference was close to reaching statistical significance ($p = 0.052$). During the study period, differences in request rates for advertised and non-advertised medications did not reach statistical significance, which may reflect insufficient sample size in view of the low rate of requests. Overall, preliminary results suggest that DTCA leads to increased requests for non-advertised as well as advertised drugs. A possible explanation is that DTCA promotes a positive view of pharmacotherapy in general. Larger studies are needed to confirm these findings. Future research should also evaluate the clinical outcomes of patients who receive prescription medications at their own request and examine the associated potential effects on health care costs.

Across Canada, the number of health care professionals with a role in prescribing is increasing. Within the last 3 years in BC, nurse practitioners, optometrists and naturopathic physicians have been granted prescribing privileges, with differing limitations.²³⁻²⁵ Pharmacists in BC have been granted the ability to adapt prescriptions,²⁶ while in Alberta, pharmacists practising in specific settings and with demonstrated ability have been granted prescribing privileges.²⁷ Physicians, pharmacists and all health care professionals with a prescribing role must be aware of the potential impact of DTCA on patients and strive to ensure that patients are receiving objective, accurate information on prescription medications that will enable them to make fully informed decisions.

Study limitations

The majority of patients were recruited from practices affiliated with the University of British Columbia Department of Family Practice, Prince George site (6 of the 8 participating practices), and 92.2% of participating patients were Caucasian. The participating patients may therefore not be broadly representative of the population of northern BC. Specifically, the First Nations peoples, who comprise 10% of the population in Prince George,²⁸ are likely under-represented. This may limit the applicability of the survey results to the general population. Future studies should include participants from a random sample of northern communities and ask patients to record a broader range of demographic information and behaviour patterns (e.g., magazine purchasing and television viewing habits) in order to fully appreciate the impact of DTCA in northern populations.

The observed trends in rates of requests for prescription medications did not reach statistical significance, which could reflect insufficient sample size in view of the low rate of requests. However, these preliminary results highlight the importance of additional research to further elucidate the role of DTCA in northern Canadian communities and its consequences on health outcomes and health care costs.

Conclusions

The rate of requests for advertised prescription medications in this northern Canadian community was lower than rates reported from larger centres. However, exposure to DTCA remained surprisingly high, especially in patients under the age of 50. Results suggest that patients with higher self-reported exposure to DTCA may be more likely to request any prescription medication, both advertised and non-advertised. While additional research is needed to confirm these trends and to further explore the wider influence of DTCA on

Points clés

- Pour le moment, la publicité directe des médicaments d'ordonnance (PDMO) est restreinte au Canada. Néanmoins, les Canadiens sont exposés à la PDMO par le biais des chaînes de télévision et des revues américaines et de l'Internet.
- La PDMO ne semble pas fournir de renseignements équilibrés concernant les médicaments.
- Cette étude indique que la PDMO a des répercussions sur les petites collectivités nordiques isolées canadiennes et pourrait influencer sur les demandes pour les médicaments d'ordonnance faisant l'objet ou non de publicités.
- Des recherches additionnelles sont nécessaires afin de confirmer les tendances observées et d'expliquer l'incidence plus large de la PDMO sur la santé et les coûts de soins de santé.
- Étant donné que le nombre de professions du milieu de la santé possédant des privilèges de prescription augmente, les professionnels des soins de la santé, ayant ce privilège, doivent connaître les répercussions potentielles de la PDMO et s'assurer que leurs patients reçoivent des renseignements objectifs et précis sur les médicaments sur ordonnance qui leur permettront de prendre des décisions informées.

the health of Canada's northern communities, one thing is clear — DTCA has impact. As health care professionals, we have been trained to approach

information critically and with scientific objectivity. Our patients have a right to unbiased, evidence-based information. It is our duty to provide it. ■

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