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Coping Strategies Used by Patients Infected with Hepatitis C Virus Who Are Facing Medication Costs

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ABSTRACT

Background: The prevalence of infection with hepatitis C virus (HCV) is increasing worldwide. Antiviral therapy, prescription and nonprescription medications, and nondrug therapies to treat HCV infection and to manage associated adverse effects are costly.

Objective: To determine whether individuals infected with HCV attending a hepatology clinic were negatively affected by the costs of prescription medications, and if so, to determine coping strategies they adopted.

Methods: Patients infected with HCV attending Hepatology Services, a clinic within the Queen Elizabeth II Health Sciences Centre in Halifax, Nova Scotia, were interviewed as part of an exploratory study (April 2 to July 8, 2008). The interview was based on a validated survey adapted for Nova Scotia. Information collected included demographic characteristics; types of prescription, nonprescription, and complementary medications used by patients; and strategies patients adopted to pay their medication costs.

Results: Fifty patients (age 33–64 years) participated in the interviewer-administered survey, including 35 (70%) men and 19 people (38%) with household income less than $30 000. Frequently used medications were antidepressants (19 patients [38%]), antihypertensive agents (12 [24%]), anxiolytics (10 [20%]), and nonsteroidal anti-inflammatory drugs (10 [20%]). More than half (29 [58%]) were concerned about having sufficient money to pay for their medications. Coping strategies adopted in response to costs of prescription medications were either self-initiated or undertaken in consultation with physicians and/or other health care professionals. Sixteen (32%) of the respondents expressed the belief that physicians usually do not consider patients' concerns about affordability when prescribing medications. Seven (14%) indicated they would seek help from a pharmacist to buy low-cost substitutes for their medications.

Conclusion: This study highlighted a range of coping strategies adopted by patients infected with HCV in response to medication costs. It underscores that cost may limit access to essential medications within this patient population, even in a publicly funded health care system. Some of the coping strategies adopted might reduce patients' persistence and adherence with medication therapy, which could lead to adverse health outcomes. Hospital and community pharmacists need to be aware of the challenges faced by patients in terms of paying for medications and should consider possible proactive responses to address potentially detrimental coping strategies.

RÉSUMÉ

Contexte : La prévalence de l'infection par le virus de l'hépatite C (VHC) augmente à l'échelle planétaire. Les traitements antiviraux, les médicaments d'ordonnance et en vente libre, ainsi que les traitements non médicamenteux contre l'infection par le VHC et pour prendre en charge les effets indésirables connexes coûtent cher.

Objectif : Évaluer si les personnes infectées par le VHC qui fréquentaient une clinique d'hépatologie étaient touchées négativement par le coût des médicaments d'ordonnance et, le cas échéant, déterminer les stratégies d'adaptation qu'ils ont adoptées.

Méthodes : Des patients infectés par le VHC qui fréquentaient les services d'hépatologie, une clinique au sein du Queen Elizabeth II Health Sciences Centre à Halifax, en Nouvelle-Écosse, ont été interviewés dans le cadre d'une étude préliminaire (du 2 avril au 8 juillet 2008). L'entrevue était fondée sur un sondage validé qui avait été adapté pour la Nouvelle-Écosse. Les données collectées comprenaient les caractéristiques démographiques; les types de médicaments d'ordonnance, en vente libre et complémentaires consommés par les patients; et les stratégies utilisées par ceux-ci pour payer leurs médicaments.

Résultats : Un total de 50 patients (âgés de 33 à 64 ans) ont participé à l'entrevue-sondage. De ces participants, 35 (70 %) étaient des hommes et 19 (38 %) avaient un revenu familial inférieur à 30 000 $. Les médicaments couramment utilisés étaient les antidépresseurs (19 patients [38 %]), les antihypertenseurs (12 [24 %]), anxiolytiques (10 [20 %]) et les antiinflammatoires non stéroïdiens (10 [20 %]). Plus de la moitié des participants (29 [58 %]) étaient inquiets de ne pas avoir suffisamment d'argent pour payer leurs médicaments. Les stratégies utilisées pour s'adapter aux coûts des médicaments d'ordonnance étaient entreprises par les patients eux-mêmes ou en collaboration avec les médecins ou d'autres professionnels de la santé. Des répondants, 16 (32 %) ont dit croire que les médecins ne tenaient généralement pas compte des préoccupations des patients à propos de l'abordabilité lorsqu'ils leur prescrivaient des médicaments. Sept patients (14 %) ont mentionné qu'ils demanderaient l'aide d'un pharmacien pour acheter des substituts à prix inférieurs.

Conclusion : Cette étude met en lumière des stratégies d'adaptation qui ont été adoptées par des patients infectés par le VHC en réponse au coût des médicaments. Elle souligne la possibilité que le coût limite l'accès à des médicaments essentiels dans cette population de patients, même dans un système de soins de santé universel. Certaines des stratégies

Key words: hepatitis C virus, treatment, cost of medications, chronic disease, coping strategies, pharmacists

d'adaptation utilisées pourraient nuire à la poursuite et à l'observance du traitement, ce qui pourrait entraîner des résultats cliniques indésirables. Les pharmaciens communautaires et hospitaliers doivent être conscients des difficultés auxquelles se heurtent les patients pour payer leurs médicaments et envisager des réponses proactives éventuelles pour redresser des stratégies d'adaptation potentiellement préjudiciables.

Mots clés : virus de l'hépatite C, traitement, coût des médicaments, maladie chronique, stratégies d'adaptation, pharmaciens

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INTRODUCTION

About 5000 Canadians become infected with the hepatitis C virus (HCV) annually, and the average lifetime cost (i.e., medical costs and economic losses) for an affected patient, from the time of diagnosis to death, has been estimated at $1 million.[1] In 2005, HCV infections cost the Canadian health care system about $500 million, an amount that was expected to double by 2010.[1] These trends are similar to those in the United States, where models from the year 2010 through 2019 project more than 190 000 deaths due to HCV, 165 900 deaths from chronic liver disease and 27 200 deaths from hepatocellular carcinoma, with direct medical and societal costs estimated at US$10.7 billion and US$54.2 billion, respectively.[2] Medication costs incurred by patients with HCV infections may include costs for prescription, nonprescription, and complementary medications (including natural health products, such as vitamins and minerals, herbal remedies, and homeopathic medicines) related to their antiviral treatment, to the management of adverse effects (i.e., drug-related morbidity from the antiviral treatment), and to any comorbid conditions.

In 2007, the prevalence of HCV infection in Atlantic Canada was estimated at 7961 cases, including 4252 cases in Nova Scotia.[3] Furthermore, 46% of affected Nova Scotians were unaware of their infection.[3-5] The current treatment for HCV infection combines pegylated interferon and ribavirin in a regimen lasting either 24 or 48 weeks, depending on viral genotype.[6] This treatment combination costs, on average, $1748 per month per patient.[7] The adverse effects of HCV treatment can be substantial,[8] and patients with HCV infection may also have comorbidities. Patients may require prescription, nonprescription, and complementary medications to manage the adverse effects of antiviral drug treatment and to manage comorbidities,[9] which, depending on their drug coverage plan, may lead to additional out-of-pocket costs. Coverage for prescription drugs in Canada is not universal and varies from province to province.[10] As a result, these medication costs may be "catastrophic" for a certain proportion of patients. In 2002, both the report of the Commission on the Future of Health Care in Canada (the Romanow Commission)[11] and the report of the Standing Senate Committee on Social Affairs, Science and Technology (the Kirby report)[12] recommended federal funding for catastrophic drug coverage. The Romanow Commission defined "catastrophic" to mean expenditures of $1500 or more annually on drugs,[11] whereas the Kirby report used a definition of 3% of family income.[12] In a 2009 document, the Canadian Parliamentary Information and Research Service[13] reported that about 17% of Canadian adults with a chronic illness had out-of-pocket expenses of more than $1000 for prescription drugs each year. Similar concerns were identified in a 2009 study of US households with Medicaid coverage.[14]

Faced with financial constraints, patients may adopt a range of coping strategies to deal with the out-of-pocket expenses required to access essential medications.[15-18] Such coping strategies might lead to a lack of persistence and adherence with medication use, poor health outcomes, and higher overall health care costs.[19,20] The unintended effects of patients' coping strategies arising from cost-sharing policies might exacerbate the burden of the disease. Studies have suggested that the burden of out-of-pocket expenses for prescription and nonprescription drugs might be profound for certain patients with chronic disease, in spite of current drug coverage plans with low copayments and/or deductibles.[14,16,21] Among patients with HCV, the effects of prescription, nonprescription, and complementary medication costs to manage comorbid conditions and the adverse effects of antiviral treatment have not been reported.

The objectives of this study were to examine the types of prescription, nonprescription, and complementary medications (including natural health products) used to treat comorbidities and medication-related adverse effects related to antiviral treatment for HCV infection, to identify the coping strategies adopted by affected patients to meet the costs of these

concomitant medications and complementary remedies, and to determine patients' inclination to discuss medication cost issues with their physicians or pharmacists.

METHODS

Study Population

In Nova Scotia, more than 90% of patients with HCV infection receive care through Hepatology Services, located at the Queen Elizabeth II Health Sciences Centre in Halifax, Nova Scotia, within the Capital District Health Authority. This collaborative practice team, including 2 nurse practitioners and a hepatologist (K.M.P.), responds to the health needs of more than 4000 patients with chronic liver diseases. Hepatology Services receives about 1400 outpatient clinic visits annually for the management of HCV infection (G. Hirsh, Nurse Practitioner, Hepatology Services, Queen Elizabeth II Health Sciences Centre, Capital District Health Authority, Halifax, Nova Scotia; personal communication, July 16, 2010). There is no dedicated clinical pharmacy service for the hepatitis C outpatient clinic, and patients fill their prescriptions at their own community pharmacies. Given their regional focus, the 2 nurse practitioners are able to negotiate the health care system on behalf of their patients to ensure access to HCV medications through private drug insurance, publicly funded Nova Scotia Community Services Pharmacare[22] (for those on social assistance), and through reimbursement programs supported by pharmaceutical manufacturers (i.e., Peg-Care and Pegassist).[23] The study population was drawn from patients with HCV infection who received care through Hepatology Services. Patients were eligible for inclusion if they were living in Nova Scotia, were 19 years of age or older, were eligible to receive treatment for HCV infection, and were able to understand English sufficiently to answer the survey questionnaire. The exclusion criteria were based on contraindications for antiviral drug treatment for HCV infection, including serious social, mental, or medical conditions that would impede the patient's ability to tolerate therapy or being pregnant.

Survey

A questionnaire developed by Schafheutle and others[24] in the United Kingdom was adapted for the Nova Scotia setting by a group of 4 experts in HCV and epidemiology survey methods (including K.M.P. and S.K.). The adapted survey was pilot-tested with 2 patient volunteers from the Hepatology Services outpatient clinic. The structured questionnaire (entitled "A Nova Scotia Survey of Health and Health Care Costs for Hepatitis C") had questions about the patient's general health status, his or her experience with HCV infection, specific medications taken (e.g., prescription, nonprescription, and complementary medications, including natural health products such as vitamins and minerals, herbal remedies, and homeopathic medicines), personal knowledge about HCV, knowledge about and attitudes toward prescription medication costs, and reflections on health care providers' sensitivity to costs. The survey also included questions about current drug insurance coverage and background demographic information. The complete survey is available from the authors upon request.

After receipt of ethics approval from the Capital District Health Authority Research Ethics Board (approval CDHA-RS/2007-358), the 2 nurse practitioners identified potential participants who either were currently attending or had previously attended Hepatology Services clinics and who met the inclusion criteria and were not excluded by the exclusion criteria. Once the nurse practitioners had initiated communication, an independent researcher (E.L.I.) contacted each person to request their participation in the survey. Written informed consent was obtained before each interview. All interviews were conducted in person at the Queen Elizabeth II Health Sciences Centre, between April 2 and July 8, 2008, with the exception of one interview conducted by telephone (after written consent had been received).

Urban/Rural and Income Characteristics

Each participant's location of residence, in terms of urban or rural setting, was determined from the first 3 alphanumeric characters of the person's postal code, which was collected during the interview. Participants were also asked to identify 1 of 11 categories of total gross household income from all sources during the past 12 months. These categories were collapsed into 3 categories, with cut points based on maintaining equivalent cell sizes (for statistical purposes) while capturing meaningful income brackets: less than $30 000, between $30 000 and $69 999, and $70 000 or more. This categorization was guided by Statistics Canada's low-income cut-offs for 2008[25]: in urban areas, $22 171 for a single individual and $41 198 for a household of 4 people; in rural areas, $15 262 for a single individual and $28 361 for a household of 4 people.

Medications Used

Data about medications identified by the participants were based on responses to the question "Below, please list the name(s) of the drugs for hepatitis C (HCV) that you get on prescription from your doctor and, if possible, the strength of the medicine, other prescription drugs, nonprescription drugs and complementary medicines, including natural health products and herbal remedies." The prescription medications were classified into therapeutic categories according to the 2010 World Health Organization Anatomical Therapeutic Chemical (WHO/ATC) system. Only those therapeutic categories reported by 5 or more respondents are reported here.

Statistical Analysis

The cross-sectional survey data were assessed, and responses were collapsed as appropriate (i.e., groupings of "always", "often", and "sometimes"; "strongly agree" and "agree"; and "disagree" and "strongly disagree") to describe the study population and address the objectives. Descriptive statistics were generated with SPSS statistical software (version 17.0.1, SPSS Inc, Chicago, Illinois).

RESULTS

Of the 87 potential participants initially identified, 50 (57%) completed the survey. Nonparticipants included people who could not be contacted, those who declined to participate, and "no shows".

Patient Characteristics

The majority of the participants were male (n = 35 [70%]) and were living in an urban area (n = 44 [88%]) (Table 1). Participants ranged in age from 33 to 64 years. Nineteen (38%) of the respondents had household income less than $30 000. Five participants (10%) reported that their general health status was "bad/very bad", and 10 participants (20%) had 5 or more comorbid conditions (Table 1).

Respondents reported taking a range of prescription medications, with antidepressants being the most frequent therapeutic class (Table 2). Two-thirds of the study participants (n = 33 [66%]) had a private drug insurance plan, and a further 13 (26%) had coverage through Nova Scotia Community Services Pharmacare. Respondents also reported taking a range of nonprescription and complementary medications, such as antiemetics, antihistamine, calcium, eye care products, laxatives, pain relievers, skin care products, vitamins, and milk thistle (Table 2). At the time of the survey, 35 (70%) of the study participants had completed their antiviral HCV treatment; hence they did not identify current use of antiviral medications.

Coping Strategies

Strategies to Meet Prescription Medication Costs

More than half of the respondents (n = 29 [58%]) indicated that they were thoughtful about how much money they had available to spend when they were obtaining medications (Table 3). The most common strategies were borrowing money to pay for prescriptions (n = 15 [30%]), staggering the filling of prescriptions for multiple medications listed on a single prescription form (n = 10 [20%]), and waiting until they got paid before filling a prescription (n = 9 [18%]).

Table 4 illustrates the concerns related to medication costs of the 19 patients with household income below $30 000:

Table 1. Characteristics of 50 Survey Respondents with Hepatitis C Virus, Seen by Hepatology Services, Capital District Health Authority, Halifax, Nova Scotia, Canada, 2008

Characteristic	No. (%) of Respondents*
Age (years)	
Mean ± SD	51 ± 6
Range	33–64
Sex	
Male	35 (70)
Female	15 (30)
Geographic location†	
Urban	44 (88)
Rural	6 (12)
Education	
Below high school graduation	6 (12)
Completed high school	8 (16)
Trade certificate or diploma	11 (22)
Completed college	12 (24)
Completed university	13 (26)
Employment status	
Working	16 (32)
Not working: permanently	15 (30)
Not working: temporarily	13 (26)
Household income in 2007/2008 ($)	
< 30 000	19 (38)
30 000 to 69 999	15 (30)
≥ 70 000	16 (32)
Health-related characteristics	
General health status	
Very good	11 (22)
Good	15 (30)
Fair	19 (38)
Bad or very bad	5 (10)
No. of current comorbidities	
0	6 (12)
1	6 (12)
2	12 (24)
3	7 (14)
4	9 (18)
5	5 (10)
≥6	5 (10)
Duration of infection with hepatitis C virus (years)	
1 to 3	11 (22)
> 3 to 10	27 (54)
> 10	11 (22)
Status of antiviral treatment for hepatitis C	
On treatment	13 (26)
Treatment completed	35 (70)

*Except where indicated otherwise. Percentage data are reported only for characteristics identified by at least 5 respondents, so do not sum to 100 in some cases.
†Urban or rural location was identified from postal codes (collected during the interview). The first 3 alphanumeric characters of each postal code represents a community identifier. A person is defined by Statistics Canada to be living in a rural area if the population density is less than 400/km^2 (www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=/pub/21-601-m/2002061/4193597-eng.pdf)

Table 2. Use of Concomitant Medications and Drug Insurance Reported by 50 Survey Respondents with Hepatitis C Virus, Seen by Hepatology Services, Capital District Health Authority, Halifax, Nova Scotia, Canada, 2008

Characteristic	No. (%) of Respondents*
Drug utilization	
Prescription medications†*	
Antidepressants (N06A)	19 (38)
Antihypertensives (C09A)	12 (24)
Anxiolytics (N05B)	10 (20)
Nonsteroidal anti-inflammatory drugs (M01A)	10 (20)
H_2-receptor antagonists (A02B)	6 (12)
Proton pump inhibitors (A02B)	6 (12)
Dermatologic agents (D07A)	5 (10)
Diuretic agents (C03C)	5 (10)
*Nonprescription medications and complementary remedies**	
Vitamins	23 (46)
Pain reliever	18 (36)
Skin care product	7 (14)
Milk thistle	7 (14)
Calcium	6 (12)
Drug insurance	
Current drug coverage	
I have a private drug insurance plan	33 (66)
I am a client of Nova Scotia Community Services and have coverage through Pharmacare	13 (26)
Drug benefit plan claims procedure	
Have to pay a fee to the physician to fill out forms for the drug benefit plan	8 (16)
Have to collect forms and mail, email, fax, or deliver them to the drug benefit plan	8 (16)
Have to pay for the drug first and then seek reimbursement with receipts	30 (60)

*Data are reported here for medications and products identified by at least 5 patients.
†Codes from the World Health Organization Anatomical Therapeutic Chemical System are provided in parentheses.

14 (74%) would consider the price of a nonprescription medication before purchasing it without a prescription; 12 (63%) would request a prescribed medication if it was covered (by insurance, etc.) because nonprescription and over-the-counter medications were too expensive; and 11 (58%) would request a low-cost substitute (e.g., a natural health product) at the pharmacy as an alternative to an expensive nonprescription health product.

Strategies Involving Health Care Professionals

Many respondents (n = 15 [30%]) reported asking the doctor or a nurse practitioner to provide free samples of medications to save the prescription charge (Table 4). Others asked the doctor or a nurse practitioner to recommend low-cost substitutes that could be purchased without a prescription (n = 12 [24%]) or requested a longer-duration supply (n = 9 [18%]), to reduce the costs of pharmacists' professional fees for processing prescriptions.

Self-initiated Practices for Nonprescription Medications

Several of the strategies reported by respondents highlighted self-initiated medication practices (Table 4). A common strategy adopted by patients concerned about medication costs was to request low-cost substitutes at the pharmacy when they were not able to afford nonprescription medications (n = 17 [34%]).

Patient–Physician Communication about Medication Costs

Forty (80%) of the respondents indicated that they knew the total cost (i.e., market price) of their prescription medications relative to what they actually paid (e.g., through a copayment) (Table 5). Other data suggest that respondents were not always keen to discuss issues related to the cost of medications and their affordability with their physicians (n = 28 [56%]). More than half of the respondents (n = 33 [66%]) felt that physicians should not be aware of their patients' concerns about affordability, yet a similar number (n = 31 [62%]) thought it was the physician's job to ask patients if they could pay for their medications. Ten (20%) of the respondents were concerned that prescription charges, including copayments, were too high.

DISCUSSION

To the authors' knowledge, this is the first published study to delineate the coping strategies adopted by patients with HCV infection who are faced with medication costs, including the costs of prescription, nonprescription, and complementary medications, such as natural health products (e.g., vitamins and minerals, herbal remedies, and homeopathic medicines), for the adverse effects of antiviral medications and/or comorbid conditions. This study, which enabled patients with HCV infection to share their experiences with managing their condition, used a survey instrument that was designed to examine chronic diseases associated with high drug costs. The survey was originally developed in the United Kingdom[24] and was adapted for use in Nova Scotia. This study highlights decision-making by patients, on their own or in consultation with physicians and/or other health care professionals (e.g., nurse practitioners), to modify their therapeutic regimens by a range of strategies when faced with out-of-pocket medication costs. About 10% of Canadians lack drug insurance coverage, and for an additional 10%, the drug insurance coverage they have is inadequate.[26] In a nation with universal health coverage, as specified in the Canada Health Act,[27] about 2% of citizens have

Table 3. Perceptions about Affordability of and Access to Medications, as Reported by Survey Respondents with Hepatitis C Virus in Halifax, 2008

Survey Statement	No. (%) of Respondents* (*n* = 50)
I think about how much money I have available to spend when obtaining medications (either on prescription or bought from a drug store/hospital)	29 (58)
If I can't afford my prescription I don't get my medicine dispensed at all	7 (14)
If I'm worried about money I take less of my medicine to make it last longer	5 (10)
I have to wait to get my prescription filled until I get paid (or social assistance cheque)	9 (18)
If I have a number of different items on my prescription, I don't get them all filled, because I can't afford them all at once	10 (20)
I have in the past borrowed money to pay for my prescription medicines	15 (30)

*Data represent the sum of responses for "always", "often", and "sometimes".

Table 4. Strategies to Ensure Access to Prescribed Medications, as Reported by Survey Respondents with Hepatitis C Virus in Halifax, 2008

Survey Statement	No. (%) of Respondents*
Strategies to access medications, household income < $30 000	*n* = 19
I consider the price of a medicine before I buy it without a prescription	14 (74)
I get a prescription, if it's covered, because buying the over-the-counter medications is too expensive	12 (63)
If I cannot afford an expensive over-the-counter product I ask for something else cheaper at the drug store/pharmacy	11 (58)
Strategies involving physician or nurse practitioner	*n* = 50
I ask my doctor or nurse practitioner to prescribe a longer supply of my medicine to help me when I haven't got enough money	9 (18)
If I can't afford my prescription I ask my doctor or nurse practitioner to recommend something cheaper to buy without a prescription	12 (24)
I ask the doctor or nurse practitioner for a free "sample" of medicine to save me having to pay for it on prescription	15 (30)
Self-initiated strategies to ensure access to nonprescription or over-the-counter medications	*n* = 50
I get a prescription, if it is covered, because buying an over-the-counter remedy tends to be too expensive	22 (44)
If I can't afford my prescription I ask the pharmacist to recommend something cheaper to buy	7 (14)
I consider the price of a medicine before I buy it without a prescription	26 (52)
I prefer to buy something from the pharmacist/ drug store in order to avoid going to see a doctor or nurse practitioner	7 (14)
If I cannot afford an expensive over-the-counter product I ask for something else cheaper at the drug store/pharmacy	17 (34)

*Data represent the sum of responses for "always", "often", and "sometimes".

no drug insurance, and 9% are only partially covered.[12] In the province of Nova Scotia, 22% of the population had no drug insurance coverage before introduction of the Nova Scotia Family Pharmacare Program.[28] This Pharmacare program[29] is a drug insurance coverage program that provides reimbursement to eligible Nova Scotians who do not have a drug insurance coverage plan. It also provides some coverage for high-priced drugs that are not reimbursed by private drug plans. Eligible residents who are enrolled in the program pay an annual family deductible and copayment.

In Canada, employed individuals may have drug coverage under private drug insurance plans or through their provincial, territorial, or federal government plans. More specifically, some provinces and territories have plans that cover all eligible residents, whereas others cover only residents over 65 years of age and those who are clients of community services or social assistance.[13,30] There are also federal plans, such as the plan available through Veterans Affairs,[13] to provide coverage to specific clientele. Because both drug utilization and drug costs have increased, Canadian public and private drug insurance plans have implemented measures for sharing costs with patients.[10,31]

These cost-sharing policies, such as copayments, aid the health care system to offset overall drug expenditures; however, the out-of-pocket costs may discourage patients from using medications as suggested by their physicians. Previous studies

Table 5. Views about Prescription Medication Costs and Inclination to Discuss Cost-Related Issues with a Physician, as Identified by Survey Respondents with Hepatitis C Virus in Halifax, 2008

	Response; No. (%) of Respondents* (*n* = 50)	
Statement	**Agree†**	**Disagree‡**
When my doctor writes a prescription she/he does not consider how much it is going to cost me	16 (32)	29 (58)
I don't tend to talk to my doctor about the cost of my medicines and whether I can afford them or not	28 (56)	18 (36)
My doctor sometimes advises me to buy a medicine over-the-counter rather than give me a prescription	21 (42)	25 (50)
The doctor should take more of an interest in whether I can afford to pay for the medicines she/he prescribes	15 (30)	33 (66)
It is not a doctor's job to check if I can afford to pay for the medicines	14 (28)	31 (62)
I know how the cost of my prescription compared with what I have to pay when I buy something from the pharmacist/drug store	40 (80)	5 (10)
The copayment I need to pay for the prescription charge is too high	10 (20)	27 (54)

*Percentages across each row may not sum to 100, because there was a third category ("not applicable") that is not reported in this table.
†Data represent the sum of responses for "strongly agree" and "agree".
‡Data represent the sum of responses for "strongly disagree" and "disagree".

have suggested that out-of-pocket costs of medications, including copayments, may have an inverse relationship with drug utilization, which could lead to adverse health outcomes.[24,31-37] Moreover, physicians often lack awareness about price differentials across drugs, about patients' out of-pocket costs, and about the formulary status of medications.[38-41] Furthermore, lack of communication about drug prices between physicians and patients[39,40] might contribute to physicians not selecting the most cost-effective medications.

At Capital District Health Authority Hepatology Services, the majority of health care is provided by nurse practitioners using a holistic approach in an outpatient setting of chronic liver disease clinics.[42] This approach allows provision of acute and chronic care, primary and secondary prevention, health promotion, advocacy, education, coordination of services, referrals, and community development (Capital District Health Authority, Department of Medicine, Division of Gastroenterology: Annual Report, April 1, 2008, to March 31, 2009). This model facilitates communication and feedback within the system to improve delivery of care and support to this population. The ability of the nurse practitioners to negotiate the health care delivery system on behalf of their patients, and the insights they gain from this role, may help in identifying ways to improve the health of individuals with HCV infection, especially in terms of their ability to access treatment. The benefits of this type of collaborative health care delivery model have been reported previously.[43]

Almost 60% of the study population were concerned about having sufficient financial resources to afford their medications, a proportion lower than those reported in previous studies (using a similar approach) for patients with hypertension and dyspepsia in the United Kingdom (70%)[16,24] and Italy (66%).[16] This difference might arise because of differences in the health care systems and the chronic diseases examined; differences in study design, sample size, or patient characteristics; price elasticity across therapeutic classes; and variable reimbursement strategies.[16]

Coping strategies identified in this study suggest that out-of-pocket medication costs could have a profound effect on medication use. Thirty percent of survey participants reported borrowing money to pay for their prescription medications, a finding similar to that reported in a previous study from the United Kingdom.[24] Other self-initiated strategies identified in this study that were similar to strategies reported in the literature were not obtaining all medications listed on a single prescription form at one time and not getting prescription medications dispensed at all.[17,44-46] Self-initiated strategies such as not filling prescriptions or taking fewer doses to make a medication last longer might result in adverse health outcomes through lack of persistence and/or adherence. As reported in the literature,[18,47,48] the common strategies involving assistance from physicians were seeking free samples, substituting prescription medications with lower-cost nonprescription products, and requesting a longer-duration supply to reduce the cost associated with filling individual prescriptions. The coping strategies identified in this study suggest that barriers to accessing medications for the management of adverse effects associated with HCV treatment or comorbid conditions (which are not always paid for within the public health system)

should be recognized and addressed. For example, out-of-pocket copayments for concomitant prescription medications and payments for the costs of nonprescription medications and complementary remedies for treating comorbidities and the treatment-emergent adverse effects of antiviral therapy might lead the patient to either discontinue treatment or respond to the cost burden in a manner that is detrimental to treatment effectiveness. The extent of use of complementary medications, including natural health products, by patients with HCV infection in this study was similar to that documented in previous reports.[9,49]

Previous studies[38-41] have concluded that there is a lack of awareness among some physicians about price differentials across medications, which might prevent them from prescribing low-cost substitutes without compromising therapeutic benefit. Participants in the current study indicated that physicians were not always sensitive to affordability issues when prescribing medications, a finding similar to those of previous studies.[38-41] However, about a third of the study participants felt that physicians should be sensitive to these issues. Nearly half (42%) of the study population reported that physicians sometimes recommended substituting nonprescription medications for prescription medications, which suggests that price was sometimes taken into consideration. Furthermore, this study revealed that many respondents were not keen to discuss affordability of medications with their physicians, as reported elsewhere.[15,20,24,50,51] Some respondents sought advice from pharmacists to obtain low-cost substitutes, a finding consistent with the literature.[24]

Although the nurse practitioners at Hepatology Services can arrange resources to cover the costs associated with HCV treatment, they are unable to provide resources or access funds to cover out-of-pocket copayments for prescriptions to treat comorbid conditions or nonprescription and complementary medications, including natural health products. Study participants expressed concern about the costs of concomitant prescription medications, nonprescription medications, and complementary therapies. For many of these patients, it is critical that they use medications to manage the adverse effects of antiviral treatment and treatments for comorbid conditions in order to realize the overall therapeutic benefit of the HCV disease management strategy. As part of a chronic disease management strategy, integrated care by physicians and other health care professionals, such as nurse practitioners and pharmacists, has the potential to enhance access to essential medications, leading to better medication adherence and better health outcomes.[52,53]

A study at a Canadian children's hospital suggested that pharmacists' involvement in discharge planning led to decreased drug costs and avoidance of drug complications and readmissions.[54] It has also been suggested that with sufficient infrastructure at the community pharmacy level, pharmacists' identification and resolution of drug-related problems could lead to improved patient outcomes and could also reduce health care costs,[55,56] with recognition that there are incentives and barriers to implementation of such activities.[57] However, even with the availability of clinical pharmacists at the community level for chronic disease management, there remains the issue of whether the patient can afford the medications.

These study findings should be interpreted in light of the following limitations. First, generalizability of the findings might be affected by selection bias, in that those who attended the Hepatology Services outpatient clinic and agreed to participate in the study may have been systematically different from the larger population of individuals infected with HCV. Second, the self-reporting of medication use, as presented in this study, might have led to under- or over-reporting, which might in turn have influenced the study findings. Similarly, reported incomes may not be a true reflection of actual incomes because of poor recall or because of unreported or undocumented income. Finally, the Nova Scotia Family Pharmacare Program was implemented soon after the initial study interviews were conducted. Hence, the responses of patients who had already completed HCV treatment would not reflect the potential benefits of the new, more comprehensive program.

CONCLUSIONS

In the Canadian province of Nova Scotia, Hepatology Services, Queen Elizabeth II Health Sciences Centre, Capital District Health Authority, helped patients with HCV infection obtain their antiviral medications, but many patients experienced hardship in paying for concomitant medications. These patients employed various coping strategies, including borrowing money, asking their health care practitioners for free samples, not getting all of their prescriptions filled at the same time, and/or waiting to fill their prescriptions until they got paid (or received their social assistance cheques). Many patients felt that, when prescribing medications, physicians should take into account patients' ability to pay for the drugs.

Furthermore, health care professionals need to be sensitive to patients' ability to pay and should use strategies to help them. Pharmacists could play a key role in recognizing the various coping strategies used by patients with HCV infection and could help to develop proactive responses in conjunction with other health professionals.

Future studies should examine which medications provide the greatest cost burden, explore the cost-effectiveness of medications, and determine the impact of cost-sharing policies on patients with HCV infection and other chronic conditions.

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