

**Mettre au jour les facteurs expliquant
le recours aux services d'urgence
pour des problèmes de santé peu urgents
dans les régions urbaines et rurales**

Marilyn J. Hodgins et Judith Wuest

On dit des personnes qui se rendent à l'urgence pour des problèmes de santé peu urgents qu'elles font un usage inopportun du système de santé. Or on sait peu de choses des facteurs qui les incitent à y recourir et sur les éléments qui distinguent cette utilisation selon les endroits. Dans le cadre de cette étude descriptive et corrélationnelle fondée sur le modèle d'utilisation des services de santé Andersen, on a interrogé 1612 personnes qui se sont présentées à un service d'urgence avec un problème de santé peu urgent. L'analyse révèle qu'il existe des différences entre les régions rurales et urbaines en ce qui a trait aux caractéristiques des patients, la nature de leurs problèmes, les mesures adoptées et les facteurs qui les ont poussés à se présenter à l'urgence. Le pouvoir de prédiction du modèle Andersen s'est avéré limité, malgré la popularité de ce dernier, quand il s'est agi d'expliquer le recours aux soins auto-administrés ou la propension à attendre avant de recevoir des soins. On constate que le rôle des services d'urgence varie en fonction de leur emplacement. Ces conclusions offrent des éléments de réflexion propices à la mise en place de services s'adressant aux personnes ayant des problèmes de santé peu urgents, qui tiendraient compte de l'emplacement géographique.

Mots clés : utilisation des services de santé, services d'urgence, problèmes de santé peu urgents, emplacement géographique

Uncovering Factors Affecting Use of the Emergency Department for Less Urgent Health Problems in Urban and Rural Areas

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People who access the emergency department for less urgent health problems have been described as inappropriate users of the health-care system. Yet little is known about the factors precipitating such use and how these differ based on location of the emergency department. In this descriptive-correlational study guided by Andersen's Model of Health Services Use, 1,612 people who presented to an emergency department with a less urgent health problem were interviewed. Analysis revealed rural/urban differences in the characteristics of patients, nature of the problems, actions taken, and factors precipitating the visit. Despite its popularity, the predictive capabilities of Andersen's model were limited in explaining use of self-treatment or willingness to wait for treatment. The findings show that an emergency department's roles and functions vary according to its location. Such insights provide direction for developing services that respond to the needs of people with less urgent health problems that are cognizant of geographic location.

Keywords: Health-care behaviours, health-resource utilization, rural, urban, emergency department, less urgent health problems, geographic location

More than half (57%) of patients treated in emergency departments in Canada present with less urgent or non-urgent conditions (Canadian Institute for Health Information, 2005). Use of the emergency department for such problems has been labelled as inappropriate or even as abusive of the health-care system, largely due to concerns about the impact of increasing patient volumes and overcrowding on the quality of care provided to emergency patients, especially those with life-threatening conditions (Dunne & Martin, 1997; Lee et al., 1999; Martin et al., 2002). An alternative perspective is that such use is precipitated by a health-care system that is ill-equipped to respond to these health problems (Schull, 2005). A better understanding of the factors influencing people's health-care behaviours for less urgent problems in urban and rural locations will inform debate on the appropriateness of these actions. An appreciation of the differences in the health-care behaviours of urban and rural Canadians is also needed, to allow for the planning of appropriate and accessible care for less urgent health problems. Such know-

ledge will also assist in the planning and implementation of strategies to help people more efficiently navigate the health-care system and thereby achieve better health outcomes. Guided by Andersen's (1995) Model of Health Services Use, we surveyed 1,612 people who accessed an emergency department in the province of New Brunswick for treatment of a less urgent health problem. In this article, we describe differences between people who visited urban and rural emergency departments for less urgent care as well as factors influencing their health-care behaviours.

Background

Most people periodically experience the discomfort and distress caused by less urgent health problems. The term "less urgent" is used to describe non-life-threatening health problems or injuries caused by minor accidents. Other terms used to describe such conditions include "non-urgent health problems" and "minor health problems." People's response to such problems include (a) doing nothing and simply waiting to see what happens, (b) self-treating the symptoms and monitoring changes, (c) seeking advice from family or friends, and (d) accessing professional health-care services directly or by telephone. Little is known about the factors that influence when and how people respond to less urgent health problems, including the decision to access professional health-care resources such as the emergency department. Terms used for the range of activities that people engage in to promote or restore health or to treat symptoms include "health-care-seeking behaviours," "help-seeking behaviours," "care-seeking behaviours," and "health-care behaviours" (Andersen, 1995; Lauer, 1992; Weinert & Burman, 1994).

Self-Evaluation and Self-Treatment

Self-evaluation and self-treatment of health problems have been described as the basic forms of primary health care (Sorofman, Tripp-Reimer, Lauer, & Martin, 1990). Self-treatments are intentional behaviours that individuals initiate on their own behalf or on behalf of a family member to promote health or to treat an illness or injury (Dean, 1989; Fleming, Giachello, Andersen, & Andrade, 1984). They are undertaken without professional assistance, although people may have acquired knowledge and skills during previous interactions with health-care professionals and/or knowledgeable laypersons (Levin & Idler, 1983). Few studies have examined the relationship between self-treatment and the use of formal health-care services. In a secondary analysis of data from a 1976 national survey, Fleming and colleagues attempted to ascertain whether Americans self-treat as a substitute, supplement, or stimulus for professional health-care services. In addition to noting a

greater tendency towards self-treatment by those caring for young children, by women, and by those without a regular source of health care, they concluded that self-treatment is frequently used as a substitute for formal services.

Effect of Place on Health-Care Behaviours

There is increasing recognition that “place matters” to health, disease, and health-care access (Andrews, 2006; Carolan, Andrews, & Hodnett, 2006; Kearns, 1993; Kearns & Moon, 2002). Yet the role of place (also referred to as environment, location, context, or system) in shaping health-care behaviours, including the use of health-care services, is not clearly understood. Based on an examination of data from the National Center for Health Statistics, Wolinsky (1978) found that sociocultural characteristics were relatively unimportant factors in explaining Americans’ use of health-care services and suggests that characteristics of the delivery system may be more important. Although this observation was made almost three decades ago, most research continues to focus on characteristics of the people who use a service rather than the communities in which services are sought. More recently, Litaker, Koroukian, and Love (2005) noted that although there is accumulating evidence suggesting that contextual attributes affect a variety of health outcomes, the effect of these factors on people’s ability to access health-care services is less clear. Such information is required for effective health-care planning.

Within health research, *place* has frequently been operationalized as urban or rural. This operationalization stems from an appreciation of the potential impact of more than a decade of health-care reforms, including the amalgamation of health-care services in larger communities and the closure or conversion of services in smaller communities. Evaluating the effect of these reforms on health-care behaviours is complicated by the multiplicity of ways in which “rural” has been defined. Attempts to establish a common definition have been opposed by those who assert that a single, all-purpose definition of rural is neither feasible nor desirable and that the definition should be tailored to the task at hand (Halfaree, 1993; Racher, Vollman, & Annis, 2004; Vanderboom & Madigan, 2007); for example, Racher and colleagues propose that in nursing research rural should be defined in terms of the people who live in a particular area.

Several differences have been hypothesized regarding the health-care behaviours of people living in rural versus urban areas. Long (1993) proposes that, by necessity, rural dwellers learn to distinguish between health problems that if left untreated will impede functioning and those that can be tolerated for a period of time. It has also been suggested that people living in rural areas generally rely more than urban-dwellers on

informal networks of family members and friends for both the diagnosis and treatment of health problems (Long & Weinert, 1992; Weinert & Long, 1993). Distance to needed health-care services has also been identified as a critical variable for studying the health-care utilization patterns of people living in rural communities (Arcury et al., 2005; James, 1999; Weinert & Burman, 1994; Yantzi, Rosenberg, Burke, & Harrison, 2001). However, Nemet and Bailey (2000) suggest that the actual distance may contribute less to access patterns than the frequency with which people travel to a place. They label this characteristic “activity space.”

Finally, Beland, Lemay, and Boucher (1998) suggest that the roles and functions of health-care facilities are shaped in part by the community in which they are located. In their examination of two emergency departments in a large metropolitan area in Quebec, Beland and colleagues observe that the functions of these departments varied according to the availability of resources in the community (e.g., after-hours clinics) as well as the affiliated hospital. They also note that it is in this context that individuals choose whether or not to access the emergency department.

Andersen’s Model of Health Services Use

In their Model of Health Services Use, Andersen and colleagues hypothesize that people’s health behaviours and health outcomes are determined by factors (determinants) specific to the individual as well as the context (environment) in which health care is sought (Aday & Andersen, 1974; Andersen, 1968, 1995). Individual determinants, which Andersen (1995) posits as having the most immediate influence on health-care utilization, pertain to factors specific to the individual seeking health care and are grouped into three categories: need, predisposing, and enabling. Need determinants reflect the impetus for health-care use as measured by the perceived (self-rated) or evaluated (rated by a health-care professional) need for care. Predisposing factors indicate the propensity or inclination of individuals to use health-care services and include demographic characteristics (such as age and gender), attributes of social structure that may affect ability to cope and to demand resources (e.g., level of education, ethnicity), and knowledge and attitudes about health and health-care services. Enabling factors refer to resources specific to the individual that facilitate or impede the use of services, such as income, regular source of health care, and means of transportation. Meanwhile, contextual determinants encompass the social, economic, structural, and public-policy environment in which access to health-care services occurs and which is generally operationalized in terms of geographic location (Davidson, Andersen, Wyn, & Brown, 2004). In their more recent publications, Andersen and colleagues suggest that contextual determinants play a

larger role in explaining use of health-care services than originally conceptualized (Andersen & Davidson, 2001). Although Andersen's Model of Health Services Use has been utilized by a number of researchers as a theoretical framework to explain emergency department use (Halfon, Newacheck, Wood, & St. Peter, 1996; O'Brien et al., 1997), it has not been employed to examine people's health-care behaviours prior to presenting at an emergency department.

The Study

A descriptive-correlational study was conducted to test the ability of Andersen's theoretical model to explain health-care behaviours for less urgent health problems. In this article, we present a partial analysis of our findings by examining factors affecting people's response to such problems. Two research questions were addressed: 1. *To what extent can people's response to less urgent health problems be predicted based on characteristics reflecting Andersen's predisposing, enabling, and need determinants?* 2. *Does the role played by these characteristics differ based on the place (geographic location) in which health care is sought?*

Questionnaire and Study Variables

Based on Andersen's Model of Health Services Use and the authors' unpublished review of the research literature on emergency department use, a structured interview guide was developed. Information collected during the interview included the type of health problem experienced, actions taken prior to presenting at the emergency department, factors influencing the decision to seek professional care, and demographic characteristics. For this analysis, two dichotomous indicators of health-care behaviours were selected as outcome variables: attempted self-treatment, and willingness to wait 2 days for an appointment with a medical doctor or nurse practitioner (Table 1). Self-treatment was defined as self-reported use of over-the-counter products or home remedies. Willingness to wait 2 days for treatment was selected as an indicator differentiating participants who perceived the need for immediate care from those who might be managed by services offered on a more conventional Monday-to-Friday, 9-to-5 basis.

Five variables were selected to elicit information about the need for care. Two of these examined the nature of the current health problem (an injury; disturbing symptoms, including pain) and the remaining three addressed participants' subjective ratings of the health problem (self-reports of how bad, how worried, and how afraid). Predisposing characteristics were measured in terms of three demographic characteristics

Table 1 Variables Used to Measure Dimensions of Andersen's Model of Health Services Use

Variables	Description and Coding
Outcome Variables	
Attempted self-treatment	Prior to arrival at ED, did you try any over-the-counter product or home remedy? <i>Dichotomous variable</i>
Willingness to wait	If you could have gotten an appointment with a doctor or nurse practitioner within 2 days, would you have waited? <i>Dichotomous variable</i>
Predictor Variables	
Need characteristics	
How bad	On scale of 1 to 10 with 1 being 'not bad at all' and 10 being 'as bad as could be', how bad was problem when you decided to come to ED? <i>Recorded: 0 = 1 to 4; 1 = 5 to 7; 2 = 8 to 10</i>
How worried	How worried were you about health problem when you decided to come to ED? (5-point scale: 1 = not worried at all; 5 = very worried) <i>Recorded: 0 = not at all to somewhat worried; 1 = worried or very worried</i>
An injury	Description of presenting problem from emergency record. <i>Dichotomous variable</i>
Disturbing symptom	Based on description of presenting problem recorded on emergency record. Indication of disturbing symptom such as pain, shortness of breath, laceration, bleeding or drainage. <i>Dichotomous variable</i>

Predisposing characteristics	Description and Coding
Participant's age	Age in years grouped <i>Coded: 0 = less than 25 years; 1 = 25 to 39 years; 2 = 40 to 64 years; 3 = 65+ years</i>
Problem for self	Is this ED visit for a problem experienced by yourself (as opposed to a dependent child or adult)? <i>Dichotomous variable</i>
Participant, male	Sex of study participant <i>Dichotomous variable</i>
Has partner	Married or in common-law relationship <i>Dichotomous variable</i>
Children in household	Children less than 18 years of age in household <i>Dichotomous variable</i>
Education	Highest level of education attained by participant <i>Coded: 0 = less than high school diploma; 1 = high school diploma; 2 = some postsecondary education</i>
Health belief, internal control	Agreement with statement, "there is a lot that you can do to control this health problem" 5-point scale: 1 = strongly disagree; 5 = strongly agree <i>Recoded: 0 = strongly disagree to neutral; 1 = agree to strongly agree</i>
Health belief, external control	Agreement with statement, "care received in ED will help problem" 5-point scale: 1 = strongly disagree; 5 = strongly agree <i>Recoded: 0 = strongly disagree to neutral; 1 = agree to strongly agree</i>
<i>Continued on next page</i>	

Table 1 (<i>cont'd</i>)	
Enabling characteristics	Description and Coding
Household income	What was your total family income last year? <i>Coded: 0 = \$30,000 or less; 1 = \$30,001 to \$60,000; 2 = more than \$60,000</i>
Size, community of residence	How many people live in the community that you live in? <i>Coded: 0 = 1,000 or more residents; 1 = less than 1,000 residents</i>
Years lived in community	How many years have you been in the community that you live in? <i>Coded: 0 = 10 years or less; 1 = more than 10 years</i>
Distance from home to ED	How far do you live from this ED? <i>Coded: 0 = less than 20 kilometres; 1 = 20 kilometres or more</i>
Activity space	How often do you visit community in which this ED is located? <i>Coded: 0 = live in or daily visit; 1 = less frequent visits</i>
Have a family doctor	Do you have a family doctor? <i>Dichotomous variable</i>
<i>Note: All dichotomous variables are coded as 0 = no and 1 = yes.</i>	

(age, sex, problem for self), three measures of social structure (marital status, family composition, level of education), and two indicators of health beliefs (ability to control problem oneself and belief that care received in emergency department would help). Six variables were treated as enablers of health-care utilization (income, size of community, years of residence in community, distance to emergency department, activity space, and have a family doctor).

Location of the emergency department (urban vs. rural) was used as a grouping variable to investigate the effect of place. The two emergency departments defined as urban were located in regional tertiary-care facilities offering specialized consultative services in cities with more than 50,000 people. The two emergency departments defined as rural were located in community health centres situated in communities with fewer than 5,000 people.

Method

Prior to commencement of the study, approval was obtained from the research ethics boards of the university and two regional hospital corporations. In the interests of data quality and security, the Entryware® palm-pocket data-entry program was used. Data collectors were registered nurses who lived in the participating communities. Prior to the start of data collection, training sessions were held to familiarize the research assistants with the research process and the interview guide. Also, team meetings were held every 3 months to monitor the consistency and quality of the data-collection process. Issues or concerns that arose between these meetings were addressed via e-mail communication.

Participant recruitment took place by convenience during periods when a research assistant was present in the emergency department. Although research assistants were able to self-select their hours of data collection, they were instructed to vary their schedules to cover all the days of the week and the hours between 7 a.m. and midnight. Data collectors were not in the emergency department between midnight and 7 a.m., but they did recruit people who presented during these hours and were still waiting for treatment. Of the participants, 64% presented to the emergency department during regular working hours (i.e., Monday to Friday between 9 a.m. and 5 p.m.). Research assistants approached people who were triaged to the waiting area, as this was deemed to be an indicator of a less urgent health problem based on the evaluation of a health-care professional (i.e., evaluated need). Of the people approached by the research assistants, 90% agreed to participate in the study.

Between December 2003 and December 2004, data were collected from a convenience sample of 1,612 New Brunswickers who accessed one of the emergency departments for a less urgent health problem experienced by themselves or a dependant. Participants answered questions while waiting for treatment. On average, this interview took 14 minutes to complete ($SD = 5.2$). Information pertaining to the initial triage code, times of arrival and discharge, and final diagnosis and disposition was obtained from the emergency patient record.

Characteristics of Sample

The typical participant was a middle-aged ($mean = 43$ years; $range = 16$ to 93) woman (61%) who accessed the emergency department for a problem experienced by self (84%). Over half of the participants had resided in the same community for over 10 years (60%) and reported no postsecondary education (53%). As evidenced in Table 2, participants

recruited in the rural emergency departments tended to be older, to report lower levels of education and income, and to be less likely to have a family physician. Interestingly, although urban residents are generally considered to be more transient, no significant difference was observed in the percentage of people who had resided in the community for 10 or more years by location of the emergency department.

Table 2 Sample Characteristics by Emergency Department Location

	Total (N = 1,612) (%)	Urban (N = 731) (%)	Rural (N = 881) (%)
Age less than 40 years*	793 (49.3)	460 (63.1)	333 (37.9)
Male	631 (39.1)	283 (38.7)	348 (39.5)
Has partner (married/common-law)*	924 (57.4)	268 (50.3)	556 (63.3)
Children in household (< 18 yrs)	712 (44.3)	341 (46.6)	371 (42.3)
No postsecondary education*	854 (53.0)	315 (43.1)	539 (61.3)
Household income ≤ \$30,000*	989 (61.4)	395 (54.0)	594 (67.4)
Resided in community 10+ years	942 (59.7)	416 (57.0)	546 (62.0)
Travel 20+ kilometres to ED*	551 (34.3)	216 (29.6)	335 (38.3)
Frequent visit to location of ED*	1,045 (64.9)	621 (85.0)	424 (48.2)
Have a family doctor*	1,384 (85.9)	664 (90.8)	720 (81.7)
Presented with problem for self	1,358 (84.2)	621 (85.0)	737 (83.7)
* Statistically significant difference by location of emergency department using chi-square analyses ($p < .05$).			

Data Analysis

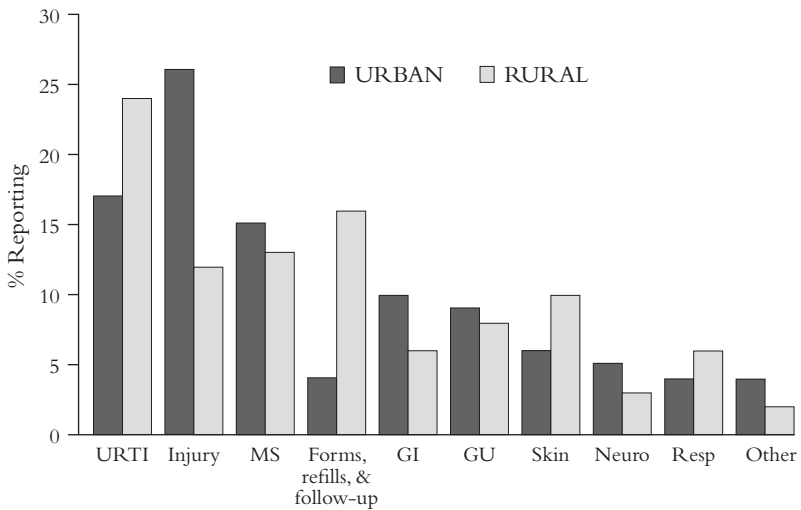
Data analysis was conducted using SPSS® version 14. Preliminary descriptive statistics were examined to evaluate data accuracy, identify potential outliers, and assess for violations in assumptions underlying regression analysis. Descriptive statistics were also generated to provide a general description of the sample. Two separate logistic regression analyses with block entry of variables were conducted to explain participants' health-care behaviours. The same sequence was used for each analysis. In the first block, the variables pertaining to need for care were entered. These variables were entered first, as Andersen views need as the most immediate determinant of health-care use. The eight predisposing variables were entered in the second block after partialling out the effects of the need characteristics. Finally, the six enabling characteristics were entered into the analysis to determine whether they affected health-care behaviours beyond that attributable to need and predisposing characteristics. Separate analyses were conducted by location of the emergency department (urban vs. rural). Level of significance for the analyses was set at less than .05.

Results

Although participants accessed an emergency department for a variety of health problems, the main groupings were problems involving the upper respiratory tract (21%), injuries (18%), and non-injury-related musculoskeletal complaints (12%). Differences were observed in the percentage of participants presenting at urban and rural emergency departments by type of health problem (Figure 1). For example, injuries were a more common presenting problem for those accessing an urban emergency department, while forms, prescription refills, and follow-ups were more common among those presenting at rural emergency departments.

During the interview, participants were asked to rate the importance of 16 predetermined items in their decision to access the emergency department. These items were ranked based on the mean scores computed for the total sample and by location of the emergency department. No difference was observed in the ranking of the top seven items by location. The two items with the highest mean scores reflected participants' perceptions of need ("severity of symptoms" and "concern problem will get worse"), while the next two items dealt with characteristics of the context within which health care was sought ("no other option" and "availability of family physician"). The next three highest rankings were, respectively, "convenience of service," "needed service only available at emergency department," and "advice from family or friends."

Figure 1 Nature of Health Problem by Emergency Department Location (N = 1,612)



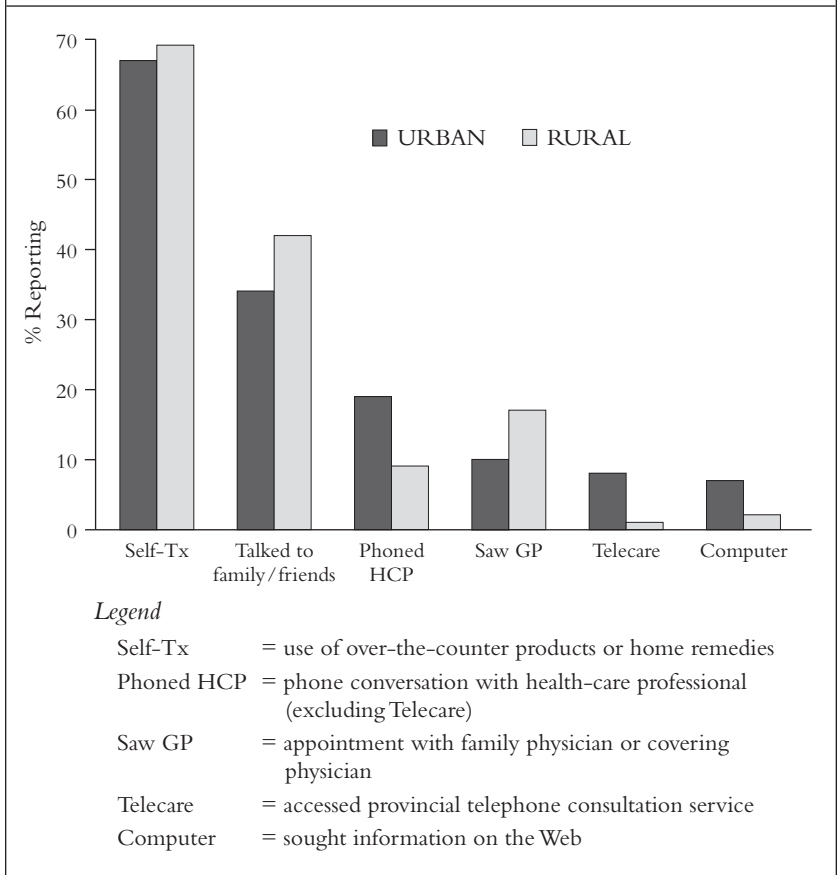
Legend

- URTI = problem involving upper respiratory tract (ears, nose, throat)
- Injury = problem resulting from a traumatic injury
- MS = non-traumatic musculoskeletal problems
- GI = gastrointestinal complaints
- GU = gynecological and urinary complaints
- Neuro = neurological complaints (e.g., headaches, dizziness, weakness)
- Resp = problems involving lower respiratory tract
- Other = miscellaneous: dental problems, emotional distress, etc.

Self-Care Measures

Figure 2 summarizes the actions initiated by participants prior to their presentation at the emergency department. Of the sample, 68% reported use of over-the-counter or home remedies (i.e., self-treatment), with no significant difference in the percentages by location. In general, participants were more likely to seek advice from a family member or friend than from a health-care professional. Overall, use of the provincial telephone consultation service (Telecare) was low, especially among those presenting at a rural emergency department. In addition, few participants reported accessing information on how to deal with their health problem from a Web site.

Figure 2 *Actions Taken in Response to Health Problem by Emergency Department Location (N = 1,612)*



Attempted Self-Treatment

Results of the logistic regression for reported use of self-treatment are presented in Table 3. For both urban and rural groups, only two of the five indicators of need, entered in the first block, made statistically significant contributions to predicting use of self-treatment: ratings of “how bad” and “how afraid.” Participants who rated the health problem as worse were almost twice as likely to report the use of self-treatment. Those who indicated that they were “afraid” were less likely to self-treat. After partialling out the effect of the need characteristics, the eight predisposing variables were entered. Differences based on the location of the emergency department were evident in the variables that made statisti-

Table 3 *Logistic Regression Model: Attempt to Self-Treat by Emergency Department Location*

Characteristic	Urban (n = 723) Odds Ratio (95% CI)	Rural (n = 844) Odds Ratio (95% CI)
Block 1: Need factors		
“How bad”		
1–4	1.00 (R)	1.00 (R)
5–7	2.51* (1.56–4.04)	2.34* (1.57–3.50)
8+	2.15* (1.33–3.47)	3.10* (2.01–4.78)
Worried/very worried	1.21 (0.84–1.75)	0.89 (0.63–1.25)
An injury	0.90 (0.62–1.32)	0.75 (0.48–1.18)
A disturbing symptom	0.87 (0.51–1.47)	0.94 (0.63–1.40)
Afraid about problem	0.69* (0.48–0.98)	0.60* (0.43–0.86)
<i>Step summary</i>	Chi-square 18.76, <i>df</i> 6, <i>p</i> = .005 (~R ² = 3.6%)	Chi-square 36.35, <i>df</i> 6, <i>p</i> < .001 (~R ² = 6.0%)
Block 2: Predisposing factors		
Age (years)		
Less than 25	1.00 (R)	1.00 (R)
25–39	0.92 (0.58–1.45)	0.87 (0.48–1.61)
40–64	0.99 (0.60–1.63)	0.75 (0.42–1.34)
65+	0.48 (0.21–1.14)	0.58 (0.30–1.12)
Problem for self	1.13 (0.67–1.91)	0.72 (0.43–1.20)
Male	0.44* (0.30–0.62)	1.07 (0.77–1.49)
Has partner	1.16 (0.78–1.71)	1.26 (0.90–1.76)
Children in household	0.93 (0.63–1.36)	1.14 (0.76–1.70)
Education		
Less than high school	1.00 (R)	1.00 (R)
High school diploma	1.30 (0.78–2.18)	0.90 (0.59–1.36)
Postsecondary	1.29 (0.81–2.05)	1.16 (0.78–1.72)
Believe can control	1.43 (0.99–2.09)	1.43* (1.01–2.04)
Believe ED will help	2.01* (1.26–3.19)	1.38 (0.86–2.22)
<i>Step summary</i>	Chi-square 37.67, <i>df</i> 11, <i>p</i> < .001 (~R ² = 6.9%)	Chi-square 20.59, <i>df</i> 11, <i>p</i> = .04 (~R ² = 3.3%)

Block 3: Enabling factors		
Household income		
\$30,000 or less	1.00 (R)	1.00 (R)
\$30,001–\$60,000	0.93 (0.62–1.41)	1.06 (0.70–1.60)
\$60,001 or more	1.03 (0.63–1.69)	1.11 (0.63–1.96)
Community size < 1,000	1.17 (0.75–1.82)	0.88 (0.60–1.30)
In residence > 10 yrs	1.04 (0.72–1.50)	1.34 (0.95–1.87)
Distance to ED 20+ km	0.78 (0.51–1.20)	1.40 (0.96–2.04)
ED community daily	1.29 (0.74–2.25)	1.06 (0.73–1.55)
Have a family doctor	1.54 (0.87–2.71)	1.50 (0.99–2.26)
<i>Step summary</i>	Chi-square 4.38, <i>df</i> 7, <i>p</i> = .74 (~R ² = 0.7%)	Chi-square 10.87, <i>df</i> 7, <i>p</i> = .14 (~R ² = 1.7%)
<i>Summary, total model</i>	Chi-square 60.81, <i>df</i> 24, <i>p</i> < .001 (~R ² = 11.2%) H&L: Chi-square 17.05; <i>p</i> = .03	Chi-square 67.82, <i>df</i> 24, <i>p</i> < .001 (~R ² = 11.0%) H&L: Chi-square 6.05; <i>p</i> = .64
<i>Overall predictive value</i>	65.2%	65.4%
<p>* ~R² = Nagelkerke R-square. H&L = Hosmer and Lemeshow Goodness of Fit Test (desired <i>p</i> > .05). * Statistically significant at <i>p</i> < .05. (R) = Reference category.</p>		

cally significant contributions. In the urban emergency departments, men were less likely than women to report use of self-treatment, while no such sex difference was evident for the rural group. Although health beliefs made a significant contribution in both groups, the actual variable making the contribution differed. In the rural emergency departments, those who believed they could control the health problem were more likely to report self-treatment, while those in the urban emergency department were more likely to report self-treatment if they believed the emergency treatment would help. After partialling out the effects of the need and predisposing variables, entry of the six enabling characteristics did not improve the predictive capabilities in either group. Overall, the predictive capabilities of the models were limited, as evidenced by the pseudo R² of 11% and an overall predictive value (correctly classified cases) of 65% for both groups.

Table 4 *Logistic Regression Model:Willingness to Wait by Emergency Department Location*

Characteristic	Urban (n = 722) Odds Ratio (95% CI)	Rural (n = 841) Odds Ratio (95% CI)
Block 1: Need factors		
“How bad”		
1–4	1.00 (R)	1.00 (R)
5–7	0.49* (0.30–0.81)	0.64* (0.43–0.94)
8+	0.33* (0.20–0.57)	0.50* (0.33–0.75)
Worried/very worried	0.89 (0.58–1.35)	0.78 (0.57–1.08)
An injury	0.58* (0.37–0.93)	0.38* (0.23–0.61)
A disturbing symptom	1.26 (0.69–2.32)	0.66* (0.46–0.95)
Afraid about problem	0.97 (0.64–1.46)	0.94 (0.67–1.31)
<i>Step summary</i>	Chi-square 21.44, <i>df</i> 6, <i>p</i> = .002 (~R ² = 4.5%)	Chi-square 48.46, <i>df</i> 6, <i>p</i> < .001 (~R ² = 7.5%)
Block 2: Predisposing factors		
Age (years)		
Less than 25	1.00 (R)	1.00 (R)
25–39	0.76 (0.45–1.28)	1.10 (0.62–1.94)
40–64	0.72 (0.41–1.26)	1.31 (0.76–2.26)
65+	0.90 (0.35–2.29)	1.54 (0.83–2.85)
Problem for self	6.64* (2.30–19.19)	1.55 (0.97–2.48)
Male	0.79 (0.53–1.19)	0.91 (0.67–1.23)
Has partner	1.42 (0.89–2.25)	0.92 (0.67–1.27)
Children in household	0.65 (0.42–1.01)	0.67* (0.46–0.98)
Education		
Less than high school	1.00 (R)	1.00 (R)
High school diploma	0.79 (0.45–1.39)	1.09 (0.73–1.61)
Postsecondary	0.51* (0.30–0.87)	1.02 (0.70–1.48)
Believe can control	1.33 (0.88–2.02)	1.08 (0.78–1.49)
Believe ED will help	0.82 (0.48–1.38)	0.56* (0.35–0.88)
<i>Step summary</i>	Chi-square 45.17, <i>df</i> 11, <i>p</i> < .001 (~R ² = 9.2%)	Chi-square 33.07, <i>df</i> 11, <i>p</i> < .001 (~R ² = 4.9%)

Block 3: Enabling factors		
Household income		
\$30,000 or less	1.00 (R)	1.00 (R)
\$30,001–\$60,000	1.18 (0.73–1.91)	0.88 (0.59–1.30)
\$60,001 or more	1.16 (0.66–2.05)	1.40 (0.83–2.36)
Community size < 1,000	0.96 (0.56–1.64)	1.20 (0.82–1.75)
In residence > 10 yrs	0.96 (0.63–1.47)	1.22 (0.88–1.69)
Distance to ED 20+ km	0.95 (0.56–1.59)	1.04 (0.73–1.48)
ED community daily	1.00 (0.52–1.93)	0.94 (0.65–1.34)
Have a family doctor	0.46* (0.25–0.82)	0.23* (0.15–0.36)
<i>Step summary</i>	Chi-square 7.51, <i>df</i> 7, <i>p</i> = .38 (~R ² = 1.4%)	Chi-square 50.76, <i>df</i> 7, <i>p</i> < .001 (~R ² = 7.1%)
<i>Summary, total model</i>	Chi-square 74.13, <i>df</i> 24, <i>p</i> < .001 (~R ² = 15.1%); H&L: Chi-square 3.78; <i>p</i> = .88	Chi-square 132.30, <i>df</i> 24, <i>p</i> < .001 (~R ² = 19.5%); H&L: Chi-square 10.37; <i>p</i> = .24
<i>Overall predictive value</i>	63.6%	67.1%
<p>* ~R² = Nagelkerke R-square. H&L = Hosmer and Lemeshow Goodness of Fit Test (desired <i>p</i> > .05). * Statistically significant at <i>p</i> < .05. R = Reference category (1.00).</p>		

Willingness to Wait

Approximately one third of the participants (34%) indicated a willingness to wait 2 days for an appointment with a medical doctor or nurse practitioner; however, this percentage was significantly higher for participants who accessed a rural emergency department (44% vs. 21%; chi-square = 92.94; *df* = 1; *p* < .001). Similarities were evident in the two groups in terms of the need characteristics that made significant contributions to the first block of the logistic regression (Table 4). Participants who rated the severity of the health problem as worse and presented with an injury were less willing to wait for treatment. In addition, those who went to a rural emergency department were less willing to wait if the health problem was associated with a disturbing symptom, such as pain. Once again, differences were evident in the role of the predisposing characteristics by place. In the urban emergency departments, those who presented with a problem for self were more willing to wait for treatment. A second predictor for the urban group was level of education, as those with post-

secondary education tended to be less willing to wait. For the rural group, conversely, willingness to wait was affected by the presence of children in the household and the belief that the emergency care would help. Participants who did not have children and those who did not believe the emergency treatment would help were more willing to wait. After partialling out the effect of need and predisposing characteristics, the effect of the enabling factors was examined. One enabling characteristic — have a family doctor — was significant for both groups. Because the odds ratio was less than 1, this suggests that participants who did not have a family doctor were more willing to wait for treatment. However, the actual value of the odds ratio suggests that the effect of this variable was much stronger in the rural group. This is also evidenced by the fact that the predictive capability of the model for the urban group was not improved by entry of the enabling variables (i.e., chi-square for this step was not statistically significant). Once again, the regression models for both groups had limited predictive capability, as evidenced by the pseudo R^2 (15% urban; 20% rural) and the percentage of correctly classified cases (64% urban; 67% rural).

Discussion

The findings offer some evidence to support the assertion by Beland and colleagues (1998) that the roles and functions of an emergency department are shaped in part by its location. Differences were noted not only in the demographic characteristics of the people who presented to urban and rural emergency departments but also in their presenting problems. Rural emergency departments dealt with a potentially more vulnerable clientele in that they tended to be older and to have lower levels of education and income. They also dealt with a higher percentage of cases requiring routine or primary care (i.e., forms, prescription refills, and follow-up). Interestingly, the factors contributing to this usage differed for the two rural sites. In one of the rural emergency departments, a large proportion of physician coverage was provided by family physicians. Consequently, a number of participants saw the emergency department as an extension of their physician's office; they reported that they presented at the emergency department because they knew their physician was working there. However, in the second rural emergency department, which was staffed primarily by emergency physicians, almost 30% of participants did not have a family physician. Thus, many people viewed the emergency department as their only venue for obtaining routine care, such as prescription refills or required follow-up. Although Williams (1993) argues that this usage of rural emergency departments not only may be cost-effective but may increase the satisfaction of health-

care professionals working in these areas, it does raise questions as to continuity of care.

The findings reveal some differences in the health-care behaviours of people accessing emergency departments in urban and rural communities. Differences were not observed in the percentage of participants who self-treated with over-the-counter products or home remedies. However, those who accessed a rural emergency department were more likely to seek advice from a family member or friend and less likely to use the provincial Telecare service, which is noteworthy given the substantial investment that has been made in this resource. Although telephone consultation is a relatively new treatment option, it is frequently promoted as a means of equalizing the service availability in rural and urban areas and in reducing the burden on general practitioners and emergency departments (Hogenbirk, Pong, & Lemieux, 2005; Noorani, Fisher, Robinson, Joyce, & Pong, 2003). Limited information is available on the effectiveness of telephone consultation services in reducing access inequalities and the demand for other health-care services (Bunn, Byrne, & Kendall, 2006; Munro, Nicoll, O’Cathain, & Knowles, 2000). Because this was a study with people who had accessed the emergency department, we cannot speculate on the number of these visits that might have been prevented had Telecare been used.

Differences were also observed in the factors affecting participants’ health-care behaviours (i.e., use of self-treatment and willingness to wait) based on the location of the emergency department. Interestingly, these differences were more evident in terms of predisposing and enabling characteristics than in terms of the perception of need for care. In fact, the enabling factors made a statistically significant contribution to the predictive capabilities of the regression model only for those who accessed a rural emergency department. According to Andersen’s model, this finding may reflect inequities in the availability of health-care services for Canadians residing in rural communities. Andersen hypothesizes that access to services is equitable when the primary determinants of health-care utilization are need and predisposing characteristics and not enabling characteristics (Aday & Awe, 1997).

Given the extensive use of Andersen’s model, we were surprised by its limited ability to predict health-care behaviours. This finding may be due to the inclusion of irrelevant variables in the analysis; however, variable selection was based on a review of previous investigations of emergency department use that were guided by Andersen’s model. A second possible explanation is that Andersen’s theory, which was conceptualized to explain use of the American health-care system, may not be generalizable to the Canadian context. It is also possible that the findings indicate that use of the emergency department for less urgent health

problems is due more to contextual factors relating to the structure and delivery of current health-care services in urban and rural areas than to determinants specific to the individuals seeking care. In a recent publication (Brown et al., 2004), Andersen and colleagues note that individual characteristics tend to account for only 20 to 25% of the variance in access and propose that a significant proportion of the unexplained variance is attributable to geographic variation in access to health-care services. Establishing the validity of this statement will require more sophisticated methods of operationalizing geographic location than the conventional rural/urban dichotomy.

A possible limitation of this study is the fact that the findings are based on a convenience sample of English-speaking Canadians living in a predominantly rural eastern province with little ethnic diversity. Replication is needed to determine whether the findings hold over time and place. Future investigations would also be enriched by more comprehensive operationalization of the context in which health-care services are sought.

Implications for Nurses Working in Rural and Urban Emergency Departments

People with less urgent health problems constitute a significant proportion of those treated in Canadian emergency departments. Therefore, it is important that strategies for responding effectively to the needs of this group be identified. The primary factor in the participants' decision to access the emergency department, regardless of its location, was a perceived need for immediate care precipitated by concerns about the severity of the health problem or its potential to worsen. Although these problems were triaged as less urgent, one must appreciate the fact that the ability to assess health problems and identify those that warrant immediate intervention is a skill acquired by health-care professionals over many years. Thus, the ongoing debate on the appropriateness of using emergency departments for less urgent health problems serves little purpose. It would be more effective to restructure and staff emergency departments to reflect the actual patient population being treated (Chinnis & White, 1999; Schull, 2005; Shapiro & O'Brien, 2000).

Traditionally, excellence in emergency nursing has been measured in terms of acquiring the knowledge and skills needed to manage patients with life-threatening conditions (e.g., advanced cardiac and trauma care). Although the importance of these skills is indisputable, emergency nurses require a broader knowledge and skill base if they are to respond to the health needs of all their patients. If emergency nurses are to deal effectively with patients who present with less urgent health problems, they must be given opportunities to develop comparable proficiency in

primary care and health promotion. Many of the strategies that have been implemented to deal with patients who present with less urgent problems have reduced the involvement of registered nurses in their care (e.g., fast-track programs). Although such strategies may address problems stemming from high patient volumes, they circumvent an opportunity to augment people's ability to self-manage their health problems through teaching and the reinforcement of positive self-care practices.

Nurses, through their interaction with people seeking help for their health problems, are ideally situated to identify how changes to the structure and delivery of care are affecting patterns of health-care use in their communities. As change agents and advocates, nurses have an opportunity and a responsibility to promote the development of health-care services that match the needs of their particular geographic location.

References

- Aday, L. A., & Andersen, R. (1974). A framework for the study of access to medical care. *Health Services Research, 9*, 208–220.
- Aday, L. A., & Awe, W. C. (1997). Health services utilization models. In D. S. Gochman (Ed.), *Handbook of health behavior research. I: Personal and social determinants* (pp. 153–172). New York: Plenum.
- Andersen, R. M. (1968). *A Behavioral model of families' use of health services*. Research series #25. Chicago: Center for Health Administration Studies, University of Chicago.
- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36*(1), 1–10.
- Andersen, R. M., & Davidson, P. L. (2001). Improving access to care in America: Individual and contextual indicators. In R. Andersen, T. Rice, & J. Kominski (Eds.), *Changing the US health care system: Key issues in health services, policy, and management* (2nd ed.) (pp. 3–30). San Francisco: Jossey-Bass.
- Andrews, G. J. (2006). Geography: Research and teaching in nurse education. *Nurse Education Today, 26*, 545–554.
- Arcury, T. A., Gesler, W. M., Preisser, J. S., Sherman, J., Spencer, J., & Perin, J. (2005). The effects of geography and spatial behavior on health care utilization among the residents of a rural region. *Health Services Research, 40*, 135–155.
- Beland, F., Lemay, A., & Boucher, M. (1998). Patterns of visits to hospital-based emergency rooms. *Social Science and Medicine, 47*, 165–179.
- Brown, E. R., Davidson, P., Yu, H., Wyn, R., Andersen, R. M., Becerra, L., et al. (2004). Effects of community factors on access to ambulatory care for lower income adults in large urban communities. *Inquiry, 41*(1), 39–56.
- Bunn, R., Byrne, G., & Kendall, S. (2006). Telephone consultation and triage: Effects on health care use and patient satisfaction. *Cochrane Database of Systematic Reviews, 3* (CD004180). Cochrane Collaboration. Bognor Regis, UK: John Wiley.

- Canadian Institute for Health Information. (2005). *Understanding emergency department wait times. Who is using emergency departments and how long are they waiting?* Ottawa: Author.
- Carolan, M., Andrews, G. J., & Hodnett, E. (2006). Writing place: A comparison of nursing research and health geography. *Nursing Inquiry*, 13, 203–219.
- Chinnis, A., & White, K. R. (1999). Challenging the dominant logic of emergency departments: Guidelines from Chaos Theory. *Journal of Emergency Medicine*, 17, 1049–1054.
- Davidson, P. L., Andersen, R. M., Wyn, R., & Brown, E. R. (2004). A framework for evaluating safety-net and other community level factors on access for low-income populations. *Inquiry*, 41(1), 21–38.
- Dean, K. (1989). Conceptual, theoretical, and methodological issues in self-care research. *Social Science and Medicine*, 29(2), 117–123.
- Dunne, M. O., & Martin, A. J. (1997). The appropriateness of A&E attendances: A prospective study. *Irish Medical Journal*, 90, 268–269.
- Fleming, G. V., Giachello, A. L., Andersen, R. M., & Andrade, P. (1984). Self-care: Substitute, supplement or stimulus for formal medical care services? *Medical Care*, 22, 950–966.
- Halfacree, K. H. (1993). Locality and social representation: Space, discourse and alternative definitions of the rural. *Journal of Rural Studies*, 9, 23–37.
- Halfon, N., Newacheck, P. W., Wood, D. L., & St. Peter, R. F. (1996). Routine emergency department use for sick care by children in the United States. *Pediatrics*, 98, 28–34.
- Hogenbirk, J. C., Pong, R. W., & Lemieux, S. K. (2005). Impact of telephone triage on medical service use: Implications for rural and remote areas. *Journal of Agricultural Safety and Health*, 11, 229–237.
- James, A. M. (1999). Closing rural hospitals in Saskatchewan: On the road to wellness? *Social Science and Medicine*, 49, 1021–1034.
- Kearns, R. A. (1993). Place and health: Towards a reformed medical geography. *Place and Health*, 45, 139–147.
- Kearns, R., & Moon, G. (2002). From medical to health geography: Novelty, place and theory after a decade of change. *Progress in Human Geography*, 26, 605–625.
- Lauver, D. (1992). A theory of care-seeking behavior. *Image: Journal of Nursing Scholarship*, 24, 281–287.
- Lee, A., Lau, F., Hazlett, C. B., Kam, C., Wong, P., Wong, T., et al. (1999). Measuring the inappropriate utilization of accident and emergency services? *International Journal of Health Care Quality Assurance*, 12, 287–292.
- Levin, L. S., & Idler, E. L. (1983). Self-care in health. *Annual Review of Public Health*, 4, 181–201.
- Litaker, D., Koroukian, S. M., & Love, T. E. (2005). Context and healthcare access: Looking beyond the individual. *Medical Care*, 43, 531–540.
- Long, K. A. (1993). The concept of health: Rural perspectives. *Nursing Clinics of North America*, 28(1), 123–130.
- Long, K. A., & Weinert, C. (1992). Descriptions and perceptions of health among rural and urban adults with multiple sclerosis. *Research in Nursing and Health*, 15, 335–342.

- Martin, A., Martin, C., Martin, P. B., Martin, P. A., Green, G., & Eldridge, S. (2002). "Inappropriate" attendance at an accident and emergency department by adults registered in local general practices: How is it related to their use of primary care? *Journal of Health Services Research and Policy*, 7(3), 160–165.
- Munro, J., Nicoll, J., O’Cathain, A., & Knowles, E. (2000). Impact of NHS Direct on Demand for immediate care: Observational study. *British Medical Journal*, 321, 150–153.
- Nemet, G. F., & Bailey, A. J. (2000). Distance and health care utilization among rural elderly. *Social Science and Medicine*, 50, 1197–1208.
- Noorani, S. D., Fisher, A., Robinson, D., Joyce, J., & Pong, R. W. (2003). *Telephone triage services: Systematic review and a survey of Canadian call centre programs*. Report #43. Ottawa: Canadian Coordinating Office for Health Technology Assessment.
- O’Brien, G. M., Stein, M. D., Zierler, S., Shapiro, M., O’Sullivan, P., & Woolard, R. (1997). Use of the ED as a regular source of care: Associated factors beyond lack of health insurance. *Annals of Emergency Medicine*, 30, 286–291.
- Racher, F. E., Vollman, A. R., & Annis, R. C. (2004). Conceptualizations of "rural": Challenges and implications for nursing research. *Online Journal of Rural Nursing and Health Care*, 4(2). Retrieved July 3, 2007, from http://www.rno.org/journal/issues/Vol-4/issue-2/Racher_article.htm.
- Schull, M. J. (2005). Rising utilization of US emergency departments: Maybe it is time to stop blaming patients. *Annals of Emergency Medicine*, 45(1), 13–14.
- Shapiro, M. J., & O’Brien, G. M. (2000). Deferral out of the emergency department: The wrong solution? *Annals of Emergency Medicine*, 36(1), 71–72.
- Sorofman, B., Tripp-Reimer, T., Lauer, G. M., & Martin, M. E. (1990). Symptom self-care. *Holistic Nursing Practice*, 4(2), 45–55.
- Vanderboom, C. P., & Madigan, E. A. (2007). Federal definitions of rurality and the impact on nursing research. *Research in Nursing and Health*, 30, 175–184.
- Weinert, C., & Burman, M. E. (1994). Rural health and health-seeking behaviors. In J. J. Fitzpatrick (Series Ed.), *Annual review of nursing research* (Vol. 12) (pp. 65–92). New York: Springer.
- Weinert, C., & Long, K. A. (1993). Support systems for the spouses of chronically ill persons in rural areas. *Family and Community Health*, 16, 46–54.
- Williams, R. M. (1993). Health care reforms and emergency department services. *Journal of Ambulatory Care Management*, 16(4), 20–26.
- Wolinsky, F. (1978). Assessing the effects of predisposing, enabling and illness-morbidity characteristics on health service utilization. *Journal of Health and Social Behavior*, 19, 384–396.
- Yantzi, N., Rosenberg, M. W., Burke, S. O., & Harrison, M. B. (2001). The impacts of distance to hospital on families with a child with a chronic condition. *Social Science and Medicine*, 52, 1777–1791.

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