

# Factors associated with choosing the emergency department as the primary access point to health care: a Canadian population cross-sectional study

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## ABSTRACT

**Objective:** Approximately 4.3 million Canadians are without a primary care physician, of which 13% choose the emergency department (ED) as their regular access point to health care. We sought to identify factors associated with preferential ED use over other health services. We hypothesized that socioeconomic barriers (i.e., employment, health status, education) to primary care would also prevent access to ED alternatives.

**Methods:** Data from the Canadian Community Health Survey, 2007 to 2008, were analysed ( $N = 134,073$ ; response rate 93.5%). Our study population comprised 14,091 individuals identified without a primary care physician. Socioeconomic variables included employment, health, and education. Covariates included chronic health conditions, immigrant status, gender, age, and mental health. Prevalence estimates and 95% confidence intervals (CIs) for each variable were calculated. Weighted logistic regression models were constructed to evaluate the importance of individual risk factors and their interactions after adjustment for relevant covariates.

**Results:** The sample comprised 57.2% males from across Canada. Employment (OR 0.73 [95% CI: 0.59-0.90]), good health (OR 0.73 [95% CI 0.57-0.88]), and post-secondary education (OR 0.68 [95% CI 0.53-0.88]) reduced respondents use of the ED. The reduced odds of ED use were independent of chronic conditions, mental health, gender, poor mobility, province, and age.

**Conclusions:** Low socioeconomic status dictates preferential ED use in those without a primary care physician. Specific policy and system development targeting this at-risk population are indicated to alter ED use patterns in this population.

## RÉSUMÉ

**Objectif:** Environ 4,3 millions de personnes au Canada n'ont pas de médecin de premiers recours, et 13 % d'entre elles utilisent les services des urgences (SU) comme principal point d'accès aux soins de santé. L'étude visait donc à cerner

des facteurs associés à l'utilisation des SU de préférence à d'autres points d'accès aux services de santé. Les auteurs ont émis l'hypothèse selon laquelle des facteurs socioéconomiques (emploi, état de santé, études) jugés défavorables aux soins primaires empêcheraient aussi l'accès à d'autres points de services que les SU.

**Méthode:** Il y a eu une analyse de données provenant de l'Enquête sur la santé dans les collectivités canadiennes, réalisée en 2007-2008 ( $n = 134\,073$ ; taux de réponse : 93,5 %). La population à l'étude comptait 14 091 personnes n'ayant pas de médecin de premiers recours. Les variables socio-économiques prises en considération étaient l'emploi, l'état de santé et les études. Les covariables comprenaient les affections chroniques, le statut d'immigrant, le sexe, l'âge et la santé mentale. Des estimations de la prévalence et des intervalles de confiance (ICs) à 95 % ont été calculés pour chacune des variables. Enfin, les auteurs ont conçu des modèles de régression logistique pondérée afin d'évaluer l'importance de chacun des facteurs de risque et les interactions après le rajustement de covariables pertinentes.

**Résultats:** L'échantillon se composait de 57,2 % d'hommes provenant de toutes les régions du Canada. D'après les réponses obtenues, le travail (risque relatif approché [RRA] : 0,73 [IC à 95 % : 0,59-0,90]), le fait d'être en bonne santé (RRA : 0,73 [IC à 95 % : 0,57-0,88]) et les études postsecondaires (RRA : 0,68 [IC à 95 % : 0,53-0,88]) étaient des facteurs qui avaient pour effet de diminuer l'utilisation des SU. Les cotes d'utilisation moindre des SU se sont révélées indépendantes des affections chroniques, de la santé mentale, du sexe, du manque de mobilité, de la province ou de l'âge.

**Conclusions:** Des facteurs liés à un faible statut socio-économique jouent un rôle important dans l'utilisation des SU de préférence à d'autres points de services chez les personnes n'ayant pas de médecin de premiers recours. L'élaboration de politiques et de systèmes qui ciblent tout particulièrement cette population à risque est donc indiquée afin de l'inciter à modifier ses habitudes d'utilisation des SU.

**Keywords:** emergency department, primary care, survey

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## INTRODUCTION

Approximately 4.3 million Canadians are without a primary care physician. In the 2008 Canadian Community Health Survey, 13% of those without a family physician were using the emergency department (ED) for their routine health care.<sup>1</sup> This is in spite of multiple alternatives available, such as walk-in clinics, appointment clinics, and community health centres.

Patients with higher socioeconomic status receive preferential access to primary care. In contrast, low socioeconomic status and poor health are barriers to primary care.<sup>2,3</sup> Stern et al. reports that patients with lower socioeconomic status are more likely than other patients to use the ED as their means of access to the hospital and that patients admitted via the ED use far more resources than patients in the same diagnosis-related group admitted by other means (i.e., community referral). These results are replicated in multiple studies.<sup>4-6</sup> Patients evaluated at EDs often present with nonemergency conditions. This is an expensive practice that contributes to overcrowding and decreased continuity of care.<sup>7-10</sup> Evidence suggests that ED overcrowding is associated with adverse clinical outcomes,<sup>10-12</sup> and proposed solutions have ranged from streamlining inpatient admissions to expanding primary care.<sup>13-15</sup> It is important to understand the current patterns of ED use if primary health care initiatives are to effectively reduce ED workloads and improve overall health. Jones et al. in a before/after study found that an after-hours urgent care clinic reduced the number of those seeking care in the ED.<sup>15</sup> However, if the same barriers to primary care also impede access to ED alternatives, these initiatives will be unsuccessful.

We hypothesized that socioeconomic barriers to primary care would also prevent access to ED alternatives, and an absence of these barriers would reduce the use of the ED for primary care – thus highlighting the importance of addressing social inequalities and not focusing on only the provision of services.

## METHODS

### Study population

The analyses for this study were based on data from the 2007/2008 Canadian Community Health Survey. This is a cross-sectional survey collecting information from those ages 12 years and older who were living in private

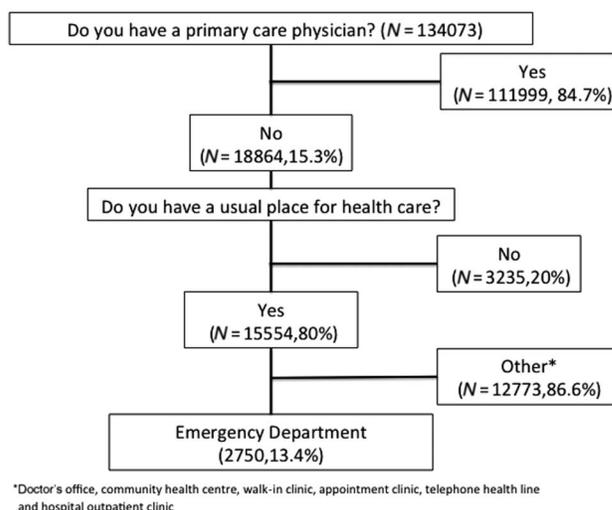
dwelling in Canada. Excluded from the study population were individuals who lived on First Nation reserves or crown lands, full-time members of the Canadian Armed Forces, people in institutions, homeless people, and people living in remote regions. The Canadian Community Health Survey covers approximately 98% of the Canadian population ages 12 and over.

A multistage, stratified sampling design was used, with each dwelling as the final sampling unit. Demographic data were obtained for 144,836 households, and one or two people per household were asked to complete an in-depth interview. From this sample, 134,073 individual responses were obtained, giving a national response rate of 93.5%. The survey included questions related to health status, health care use, and health determinants.

From the survey database, we identified people who reported having no primary care physician. We did not use age or province of residence as restrictions. In the health care utilization module, respondents were asked whether they had a primary care physician. If they said no, they were asked whether they had a usual location that they preferred for health care; if they answered yes, they were asked what kind of location it was; 14,091 individuals responded to this question, and this makes up our study population (Figure 1).

### Exposure and outcome variables

Our outcome was use of the ED as primary access point to health care. Exposure variables were education, self-reported health status, and employment. Covariates were previously reported factors that increased ED



**Figure 1.** Enrolment of study participants.

use—age, region, immigrant status, chronic disease, sex, self-reported mental health status, and difficulty attending medical appointments (defined as a mobility issue). Education was also dichotomized into those with education below secondary school level and those with above secondary school level education. Health status and mental health status were both self-reported on a scale of 5; these were collapsed into poor or good health. Employment status was dichotomized into full/part-time employment and unemployment. Age was collapsed into four categories: <18, 18–45, 46–65, >65 years. Immigrant was defined as “yes” or “no.” Chronic disease was a composite variable, “yes” was defined as any respondent reporting a history of asthma, arthritis, mood or anxiety disorder, diabetes, heart disease, emphysema, chronic obstructive pulmonary disease, or chronic bronchitis. Mobility issue; “yes” was defined as difficulty attending a medical appointment.

### Statistical analysis

Prevalence estimates and 95% confidence intervals (CIs) for each variable were calculated. Weighted logistic regression models were constructed to evaluate the importance of individual risk factors and their interactions after adjustment for relevant covariates. Model parameters were estimated by the method of maximum likelihood, and the Wald statistic was used to test the significance of individual variables or interaction terms in relation to ED choice.

The Canadian Community Health Survey 2007/2008 data were based on a complex survey design incorporating stratification, multiple stages of selection, and unequal probabilities of selection for respondents. Therefore, standard statistical methods may not be appropriate for the analysis of these data. The Canadian Community Health Survey microdata documentation provides guidelines stating that population sample weights (expansion weights) must be used to produce correct population estimates. This weighting takes into

account the patterns of missing data and the over-sampling of some strata. The Canadian Community Health Survey 2007/2008 public release data file provides these population weights.

In the models, records containing missing data for any of the explanatory covariates were deleted if they compromised greater than 10% of the available data.

### RESULTS

The study population included 14,091 survey respondents from across Canada. The sample comprised 57.2% males. The response rates to the provincial survey varied from 78.5% to 87.0%. Adjusting for complex survey design, 13.4% reported the ED as their primary access point to the health system. Figure 1 illustrates the selection of study population.

Being employed (OR 0.69 [95% CI: 0.59–0.82]), having greater than secondary school education (OR 0.56 [95% CI 0.46–0.68]), and of good health (OR 0.57 [95% CI 0.46–0.71]) demonstrated a reduction in the odds of ED choice as the primary access to health care (Table 1).

Adjusting for the presence of chronic health conditions, immigrant status, mental health status, sex, poor mobility, province of residence, and age did not significantly change these findings (Figure 2).

### DISCUSSION

The 1984 Canada Health Act (CHA) sets out the primary objective of health care: “to protect, promote and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services **without financial or other barriers.**”<sup>16</sup>

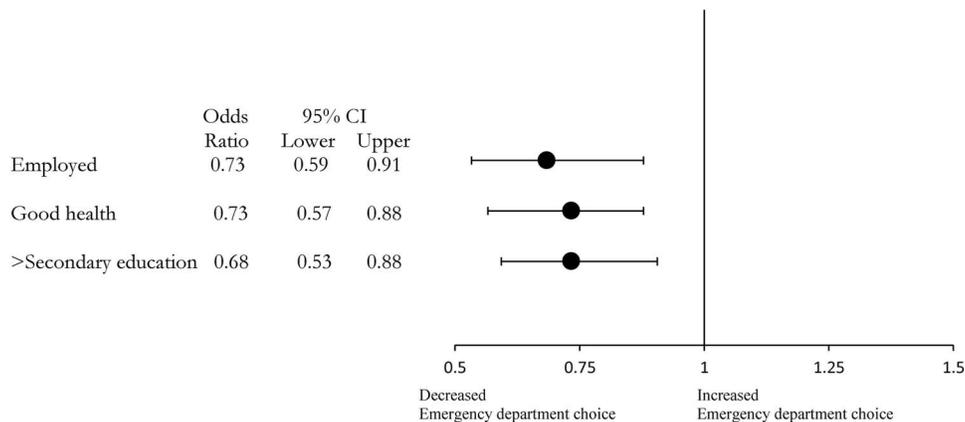
### Statement of principal findings

Our results show that low socioeconomic status, as defined by unemployment, less than secondary school

**Table 1. Odds of emergency department choice in those without a primary care physician. Decreased odds of emergency department use if employed, good health, and greater than secondary school education. Adjusted for the presence of chronic health conditions, immigrant status, mental health status, sex, poor mobility, province, and age.**

	Unadjusted odds ratio	Lower CI	Upper CI	Adjusted odds ratio	Lower CI	Upper CI
Employed	0.69	0.59	0.82	0.73	0.59	0.91
Good health	0.56	0.46	0.68	0.74	0.57	0.96
>Secondary education	0.57	0.46	0.71	0.69	0.53	0.88

CI = confidence interval



**Figure 2.** Odds of emergency department choice in those without a primary care physician. *Decreased odds of emergency department use if employed, good health, and greater than secondary school education. Adjusted for the presence of chronic health condition, immigrant status, mental health status, sex, poor mobility, province, and age.*

education, and poor health all increased the use of the ED for usual care. These findings are independent of other factors that increase a patient’s odds of using the ED for usual care (see Figure 2). Thus, socioeconomic barriers that prevent access to primary care also prevent access to alternatives to the ED.

**LIMITATIONS**

Our study has several limitations. One of our variables was based on self-reported health status. This may not inherently reflect actual health status. However, any bias introduced is largely nondifferential.

The variable education was collapsed into two categories. This could potentially lead to misclassification bias; however, analysing the larger number of categories with maximum likelihood testing did not add significantly to the model.

Strengths of our study include a large sample size giving us power to detect smaller effects. Our sampling error is reduced with our large sampling size with a complex survey and a high response rate. Our outcome measure is not subject to recall bias.

**In context of current literature**

Conditions that could be treated in a family practice setting account for one in five patients presenting to the ED. With approximately 17 million visits to EDs across the country in 2013-2014, Canadians are among the most frequent users of EDs worldwide.<sup>17</sup> Our results agree with numerous other studies reporting low

socioeconomic status contributing to an increased use of the ED.<sup>3,9,10,14,17,18</sup> However, what our study adds is that it also leads to a decrease in use of ED alternatives.

It has been argued that greater access to primary care and associated ED alternatives would decrease the burden of ED care.<sup>15,19</sup> In a study that focused on Medicaid patients, Lowe et al. found that modifiable access characteristics of primary care practices (such as longer evening hours and a lower ratio of the number of active patients per clinician-hour of practice time) were indeed associated with less ED use.<sup>20</sup> Sarver et al. attempted to evaluate this issue in 2002 using national data from the 1996 cohort of the Medical Expenditure Panel Survey (MEPS) and found that these barriers were associated with ED visits for non-urgent conditions.<sup>21</sup>

From a patient-centered point of view, Capp et al. interviewed 100 frequent ED users and performed a qualitative analysis, reporting three key themes leading to increased ED use: 1) negative personal experiences with the health care system, 2) challenges associated with having low socioeconomic status, and 3) significant chronic mental and physical disease burden. Patients described complex living situations ranging from homeless to being a single parent and not having food to feed their children. These situations took priority over their chronic/active health issues. In addition, due to the multiple active issues in their lives, they reported an inability to remember appointments or referrals given that they tended to be a significant time into the future.<sup>19</sup> In a 2011 observational study of 68 general practices in

the UK, Harris et al. found that avoidable ED attendance was driven primarily by underlying deprivation rather than the degree of access to primary care.<sup>14</sup>

### Implications

ED use for primary care is a multifactorial issue. It is associated with poor access to primary care through both physical (i.e., opening hours) and socioeconomic factors. ED physicians need to be aware of the impact that socioeconomic status has on access to primary care and ED alternatives when suggesting follow-up in the community.

Canadian health care expenditure has increased in excess of 11% of gross domestic product.<sup>22</sup> Increased spending has not reduced the number using the ED as their primary access point to health care.<sup>1,22</sup> With an ever-increasing portion of the budget allocated to health care, less is being spent on other social determinants of health such as education (6.7% in 2009, 5.3% in 2012) and employment.<sup>23</sup>

Our results highlight that health and the provision of its care are intricately linked with well-being and socioeconomic status. Ignoring social determinants of health will further increase the number seeking primary care in the ED.

In the Canadian population without a family physician, a high proportion uses the ED as their primary access to health care. By identifying socioeconomic status as a reason why they use the ED, it may be possible to direct system changes, allocate resources, and educate patients regarding the most appropriate options for care. Future research should focus on interventions targeting specific barriers to care found in a population of low socioeconomic status.

### CONCLUSION

Low socioeconomic status dictates preferential ED use in those without a primary care physician. Specific policy and system development targeting this at-risk population are required to change ED use patterns.

**Competing interests:** None declared.

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