

# Health and Mental Health Care Utilization by Clients of Resources for Homeless Persons in Quebec City and Montreal, Canada: A 5-Year Follow-Up Study

**Jean-Pierre Bonin, PhD**

**Louise Fournier, PhD**

**Régis Blais, PhD**

**Michel Perreault, PhD**

**Noé Djawn White, BSc**

## Abstract

*The objective of this cohort study is to describe the service utilization by clients of homeless resources in Quebec and Montreal (Canada) over a 5-year period. Participants (N=426) were recruited from a survey conducted in 1999 about clients' utilization of resources intended for homeless people in Montreal and Quebec. Data analyzed in this study were also drawn from three administrative databanks managed by the Quebec health care system. Results revealed that: (1) in general, mental health services are less used than physical health services; (2) generally, women, older persons, nonhomeless persons, and persons with mental health problems utilized proportionately more health services; and (3) participants involved in this study tend to continue using services over years in a system where health services are free. These findings are discussed in terms of long-term service utilization by clients of homeless resources.*

---

Address correspondence to Jean-Pierre Bonin, PhD, Faculty of Nursing Sciences, University of Montreal, C.P. 6128 Succ. Centre-Ville, Montreal QC, Canada, H3C 3J7. Phone: (514) 343-7403; Fax: (514)343-2306; E-mail: jean-pierre.bonin@umontreal.ca.

Louise Fournier, PhD, Institut National de Santé Publique du Québec (INSPQ), Montreal QC, Canada. Phone: (514) 864-1600 #3623; Fax: (514) 864-1616; E-mail: louise.fournier@inspq.qc.ca.

Régis Blais, PhD, Faculty of Medicine, University of Montreal, C.P. 6128 Succ. Centre-ville, Montreal QC, Canada, H3C 3J7. Phone: (514) 343-5907; Fax: (514) 343-2207; E-mail: regis.blais@umontreal.ca.

Michel Perreault, PhD, Douglas Mental Health University Institute, 6875 LaSalle Blvd., Borough of Verdun, Montreal QC, Canada, H4H 1R3.

Noé Djawn White, BSc, Agence de santé et de services sociaux de Montréal, 3725 rue St-Denis, Montréal (QC), Canada, H2X 3L9.

Louise Fournier, Régis Blais, Michel Perreault, and Noé Djawn White contributed equally to this work.

*Journal of Behavioral Health Services & Research*, 2009. © 2009 National Council for Community Behavioral Healthcare.

## Background

Over the past 10 years, many epidemiological studies have measured the extent of homelessness, mental health problems and substance abuse (which are chronically associated), and the utilization of services by those affected. However, few of these studies have been carried out in Canada or Quebec, and even fewer have characterized service utilization over a longer period by persons with co-occurring mental health and substance abuse disorders. The main objective of the present cohort study was to describe the service utilization by clients of homeless resources in Quebec and Montreal, two cities located in the province of Quebec, Canada, over a 5-year follow-up period.

Although the exact extent remains a source of controversy because of methodological difficulties,<sup>1</sup> there are higher rates of physical and mental health problems and substance abuse among homeless persons.<sup>2</sup> According to Kushel, Vittinghoff, and Hass,<sup>3</sup> 75% of homeless persons presented chronic mental health or substance abuse problems, and a large proportion presented both.<sup>3</sup> Indeed, Herrman et al. have found that addiction problems were present in 40% of homeless men and 20% of homeless women.<sup>4</sup>

Studies on mental health service utilization show that a substantial proportion of users are homeless. Research has estimated that the proportion of homeless persons using emergency psychiatric services is between 15%<sup>5</sup> and 21%,<sup>6</sup> and seriously mentally ill persons using these services are usually very resistant to and noncompliant with the treatments provided.<sup>7</sup> Homeless persons experiencing serious mental health disorders also show higher rates of psychiatric hospital utilization,<sup>5,8</sup> and they entail higher costs for mental health treatment.<sup>9</sup> At the same time, they are less willing to seek medical help than the overall population.<sup>3</sup> This trend would be exacerbated in the United States, where factors such as lack of medical insurance come into play, even though a large percentage of this population is eligible for some form of coverage.<sup>3,10</sup> In general, homeless persons have more difficulty accessing services.<sup>4,11</sup> Thus, although addiction treatment has a positive impact on the overall health of homeless persons affected by co-occurring disorders,<sup>12</sup> access is more difficult for the homeless that are affected with relatively more serious mental disorders compared to other homeless people.<sup>13</sup> Grella and Stein<sup>14</sup> examined the outcomes of individuals (80% of whom had been homeless) with co-occurring disorders who received drug treatment in programs that varied in their integration of mental health services. They found that those treated in programs with specific dual diagnosis services (such as residential substance abuse programs that provided on-site dual diagnosis groups) and more counselors trained in treating co-occurring disorders had higher rates of mental health service utilization over 6 months and significantly greater improvements in psychological functioning. A study by O'Toole et al. concludes that health service use among the homeless is substantial and independently associated with sheltering arrangement, comorbid illness, race, health insurance, and social support.<sup>15</sup> Housing programs like Housing First can also help reduce hospitalization and homelessness.<sup>16</sup> Lastly, Drake et al. said that comorbidity is very commonly associated with homelessness (50%) and that integrated services which include the critical components are thought to produce better outcomes.<sup>17</sup>

In Canada, studies conducted on homeless populations and the various problems they present estimate that 46% of those using homeless resources in Toronto have major depression and 5.6% have schizophrenia.<sup>18</sup> In addition, 62% are alcohol-dependent or abusive and 38.7% are drug-dependent or abusive. Other findings suggest that 75% of homeless persons with mental disorders have co-occurring problems related to substance abuse.<sup>19</sup> In Quebec, in 1991 and 2001, respectively, Louise Fournier estimated that 9% and 13.8% of persons using homeless resources suffered from schizophrenia, 25% and 32.8% had major depression, and 74.2% and 66% had substance abuse-related problems.

### Longitudinal studies

In the last 20 years, few longitudinal studies have been undertaken with homeless persons due to problems of cohort follow-up and population accessibility.<sup>20</sup> Several authors have suggested

conducting such longitudinal population studies in order to gain a better knowledge and deeper understanding of the usage trajectory of these services.<sup>21–23</sup> However, some long-term follow-up studies examining the utilization of services by different types of cohorts (i.e., not necessarily homeless people) have been published. For instance, research has been conducted on Americans using general health and mental health services over a 12-month period,<sup>24</sup> among persons presenting psychiatric disorders and using these services over 1 year,<sup>25</sup> and among users of emergency psychiatric services over 5 years.<sup>6</sup> Other studies have followed urban and nonurban populations affected by schizophrenic disorders over a 25-year period,<sup>26</sup> adolescents released from psychiatric residential treatment over 5 years,<sup>27</sup> and persons admitted to a detoxification facility, the majority of whom were homeless persons, over 2 years.<sup>28</sup>

Some studies have also surveyed homeless persons with mental health disorders, in non-community settings, such as a psychiatric facility. For instance, Folsom et al.<sup>5</sup> reported that the rate of homelessness among 10,340 patients treated in psychiatric services in San Diego over 1 year was 15%. Diagnoses varied from schizophrenia (54.8%), major depression (25.2%), and bipolar disorders (19.8%) to substance-related problems (60.5%). With the exception of major depression, homeless persons showed a higher prevalence of all these disorders compared to nonhomeless persons. They were also four times more likely to be hospitalized and use emergency psychiatric services than persons with a fixed address. Also, over a 5-year period, Lipton, Siegel, Hannigan, Samuels, and Baker followed 2,937 homeless persons with severe mental health problems who were living at municipal shelters and in various public spaces.<sup>29</sup> The sample, which was 67% male, with an average age of 40 years, presented with schizophrenia (50%), psychotic disorders (7%), bipolar and other mood disorders (37%), and substance abuse problems (56%). After 5 years, 50% of the sample were still living in shelters or transitional housing programs, and a multivariate analysis demonstrated that a history of substance abuse and referral from a state psychiatric center were the two most important factors for shorter tenure.

Another study<sup>11</sup> analyzed the intensity of service utilization over 18 months (structured interview at admission and at 3, 12, and 18 months) of homeless persons with serious mental illness who had received *assertive community treatment* ( $N=1917$ ). Results showed that 61.1% were male; 49% were diagnosed with major depression, 33% with schizophrenia, 31% with other psychotic disorders, and 22% with bipolar disorder; 42% had alcohol-related problems; and 39% had illicit drug problems. At 3 months, 64% had used mental health services, 42% had used medical services, and 15% had used services for substance abuse problems. The authors concluded that homelessness appears to impact the utilization rate of health care and psychiatric services.

Finally, Herman and colleagues<sup>30</sup> conducted a 2-year follow-up study on consequent episodes of homelessness in patients admitted to New York psychiatric institutions for psychosis. Of the 237 persons surveyed, 55% were men, 46% presented with schizophrenia or related disorders, 25% were bipolar, 17% had major depression, and 12% had other disorders. The sample was divided into three groups according to duration of homelessness as a function of follow-up: homeless prior to hospitalization (11%), homeless after hospitalization (7%), and both (15%). They found that 33% of the cohort had one or more episodes of homelessness prior to, during, or after the follow-up. No significant differences were found between the homeless categories in terms of sex (18% male vs. 12% female), but the types of homeless persons differed significantly in terms of whether they were African American (33%) or not (13%).

## The present study

In sum, the research presented above reveals that episodes of homelessness and the utilization of services among persons with no fixed address are closely linked to, and even exacerbated, by the presence of more complex conditions such as co-occurring disorders. However, there appear to be few cohort studies on homeless persons and their use of services. Indeed, although some scientific

studies have been published in the United States and in Canada, no research has analyzed the long-term utilization of services by homeless persons. The aim of this study is to provide some information on this latter issue by means of analyzing the utilization of services by clients of resources for homeless persons in Montreal and Quebec, two cities located in the province of Quebec, Canada, over a 5-year follow-up period. More precisely, the objective is to describe and characterize the utilization of services by a cohort of clients of resources for homeless persons at various time points over a 5-year period, rather than examining change in participants' utilization of services at each point in time.

## Methods

### Participants

Participants were recruited from a survey conducted in 1999 on client utilization of resources intended for homeless persons in the areas served by the *Régie Régionale de Montréal-Centre* (Montreal) and the *Communauté Urbaine de Québec* (Quebec), respectively.<sup>31</sup> This 9-month investigation measured resource utilization in terms of "person-days" defined as the use of at least one resource for homeless people by one person on a given day, including shelters ( $N=17$ ), soup kitchens ( $N=7$ ), and day centers ( $N=12$ ). A stratified random sample of clients using these resources was drawn from a previous census. This census had shown that these resources had received 28,214 and 11,295 clients in Montreal and Quebec, respectively, and that only 10% of homeless persons were using no services in these cities.<sup>32</sup> The data were weighted by the *Institut de la Statistique du Québec* to obtain an unbiased estimate compared to the sampling scheme and in the absence of respondents on certain days.<sup>31</sup>

Participants ( $N=757$ ) were recruited by research assistants who went to the resource centers and surveyed clientele to identify those who met the research criteria. A small fee of \$25 (CDN) was offered to those who volunteered to participate in the survey. Eligible subjects were then invited to take part in the study following an interview, and a total of 426 people agreed to participate (response rate=56.3%). The sample was mainly male (87.4%), and almost half were between the ages of 30 and 44 (46.6%) with 34.5% aged 45 and over. More than three quarters (79.2%,  $N=338$ ) had been without a fixed address at some time in their life (homeless), and 56.3% had mental health problems. Therefore, it is important to note that, although the investigation was about the utilization of resources *intended* for homeless people, not all participants were homeless at the time of the interview, and some participants had never been without a fixed address.

In the 12 preceding months, 17% had presented with personality disorders and 14.9% had experienced at least one such disorder in their lifetime. No significant differences were found between the study's participants ( $N=426$ ) and those who refused to participate, were excluded, or who did not complete the questionnaires ( $N=331$ ) with respect to gender ( $\chi^2=1,122$ ;  $df=1$ ;  $p>0.289$ ), age ( $\chi^2=1,756$ ;  $df=2$ ;  $p>0.416$ ), homelessness ( $\chi^2=0,827$ ;  $df=1$ ;  $p>0.363$ ), having a mental health disorder ( $\chi^2=0,367$ ;  $df=1$ ;  $p>0.545$ ), or presenting a diagnosis of antisocial personality disorder ( $\chi^2=0,407$ ;  $df=2$ ;  $p>0.816$ ). A total of 35 subjects delivered incomplete responses. Thus, overall, the service utilization rate of 391 participants was examined and described at different points in time over a 5-year period.

### Procedure

Since the procedure for the present study has been described in a prior paper,<sup>31</sup> it will only be briefly outlined here. The interviews were conducted by 16 interviewers recruited on the basis of their professional experience or education. A consent form was introduced towards the end of the interview process. Respondents signed this form to authorize the researchers to use their medical

and social insurance numbers, in order to access their health care and social services records, as well as shelter registers for the 5-year study period. In addition to the data drawn from the above-mentioned survey,<sup>31</sup> data analyzed in this study were also drawn from three administrative databanks managed by the Quebec health care system, i.e., Med-Écho, RAMQ-MED, and RAMQ-MOD.

*MED-ECHO databank* The *Maintenance et Exploitation des Données pour l'Étude de la Clientèle Hospitalière* (MED-ECHO) is an officially administered database that clusters clinical and administrative data from hospital records in the province of Quebec. It contains 229 variables related to hospitalization management, reason for the hospitalization, as well as services and treatments associated with the hospitalization. The variables used in this study were: (1) date of hospital admission (“dat\_adm”) and (2) reasons for the hospitalization (“dx\_princ”), based on ICD-9, for the period between December 3, 1997 and November 29, 2002.

*RAMQ (MED–MOD) databanks* The *Régime d'Assurance Maladie du Québec* (RAMQ) retains a system of databanks that indexes procedures carried out by physicians and health care professionals (MOD) and medications (MED) consumed. With respect to the RAMQ-MOD, the variables used were: (1) date of services (“Date\_Acte”) and (2) diagnosis for the visit (“Cod\_Diag”), based on the ICD-9. With respect to the RAMQ-MED, date of services (“Date\_Serv”) and medications consumed (“Classe\_AHF,” “SClasse\_AHF,” and “SSClasse\_AHF”) were retained. The data range analyzed in this study is the period from December 1, 1997 to December 1, 2002. Previous research using these RAMQ-MOD data has demonstrated their validity.<sup>33,34</sup>

## Instruments

*Mental health* The National Institute of Mental Health Diagnostic Interview Schedule (DIS-IV) was used to identify mental health problems.<sup>35</sup> The DIS-IV has been used in a 20,000-subject study by Robins et al.<sup>35</sup> as well as other studies on homeless persons.<sup>36–38</sup> Tests of validity have yielded significant agreement between DIS and psychiatrists’ assessments of a disorder, but found that DIS underestimated antisocial personality disorders and overestimated major depressive disorders.<sup>39</sup>

*Substance abuse* The Composite International Diagnostic Interview Simplified (CIDIS) was used to evaluate substance abuse problems.<sup>40</sup> It is a simplified version of the Composite International Diagnostic Interview for which psychometric properties are known. Interrater agreement between the CIDIS and a group of clinicians was found to be high for alcohol-related problems (kappa=0.70) and fair for substance-related problems (kappa=0.43). However, with regards to the latter finding, few persons in the sample presented this type of problem.

## Variables

Aside from the usual variables describing individual characteristics, i.e., *gender* (1=male; 2=female) and *age* (1=18–29 years; 2=30–44 years; 3=45 years and over), *domiciliary status* was categorized as follows: 1=homeless (i.e., no fixed address at the time of the interview or previously) and 2=nonhomeless (i.e., never without a fixed address).

*Types of personal problems* Variables used to describe types of problems presented were as follows: *mental health disorders* (0=no disorder, 1=at least one disorder as measured by the DIS-IV), *dual diagnosis* (0=no disorder, 1=diagnosis of mental health disorder or substance abuse, 2=

both problems), *triple diagnosis* (0=no triple diagnosis, 1=either pathological gambling or antisocial personality disorder and a double diagnosis), and *mental health disorder and homelessness* (0=no disorder, 1=mental health disorder only, 2=homelessness only, 3=both problems).

*Utilization of services* Utilization of services (all dichotomous: 0=absence, 1=presence) was categorized by: (1) different times in the study (in the “first year,” “second year,” “last year (fourth),” and over the entire “5 years”), all of which were calculated from the date of the initial interview; (2) type of services used (*professional consultation, hospitalization, and medications consumption*); and (3) type of problem for which the services were dispensed (*physical health problem or mental health problem*). These variables have been shown to be related to utilization of services in a multiple regression analysis and published elsewhere.<sup>41</sup>

## Results

Chi-square tests were used to assess differences in proportions. The precision of the estimates of proportions was determined by calculating coefficients of variation (CV) and their 99% confidence intervals. Confidence intervals were estimated for all proportions presented in this article. All the data with a CV of 15–25% are presented with the dagger sign and must be interpreted with caution. Those with a CV of 25% or more are marked with the double dagger sign and can be taken only as indicative. SPSS Version 12.0 for Windows has been used and the significance level was set at 95% ( $p < 0.05$ ).

### General portrait of service utilization

Overall, mental health services appear to be utilized less than physical health services. Indeed, the number of professional consultations for physical problems at different times in the study (first year=64.8%; second year=67.5%; fourth year=55.2%; 5 years=81.4%) exceeds the number of mental health consultations (first year=38.1%; second year=37.6%; fourth year=31.1%; 5 years=56.5%), as reported in Table 1. However, although the proportions of hospitalizations for both types of problems are very low (physical health: first year=8.8%, second year=7.3%, fourth year=4.7%, and 5 years=19.4% and mental health: first year=5.2%, second year=2.6%, fourth year=3.6%, and 5 years=9.4%), results revealed a similar pattern of utilization.

### Sociodemographic characteristics and service utilization

*Gender* Women utilized proportionally more mental and physical health services of all kinds and significantly more of these services compared to men in most cases (see Table 1). In fact, the most notable and continuously significant differences were related to the consumption of medications, whether for physical or mental health problems. In the first year, twice as many women consumed medications for psychiatric (48%) or physical health problems (58%) as the men (23% and 19%;  $p < 0.001$ ). Other significant differences were reported for other time periods measured.

It was apparent that proportionally more women were hospitalized for physical health problems, not only in the second year (21%), but also over the five study years for both physical (36%) and mental (21%) problems compared to the men (respectively, 5%, 17%, and 8%). As for consultations, during the first year, proportionally more women (56%) compared to men (35.5%) consulted a professional for problems related to mental health disorders. Most surprisingly, women had significantly more consultations for mental health disorders in the second year (56%), fourth year (50%), and throughout the entire study period (75%) compared to men (respectively, 35%,

**Table 1**  
Personal characteristics and service utilization in mental and physical health (N=391)

Personal characteristics	First year			Second year			Fourth year			During the 5 years		
	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>
Mental health service utilization												
Gender												
Male	35.5*	4.7†	22.5**	34.9*	1.2**†	29.0**	28.4*	3.0†	27.8**	53.8*	7.8**†	66.5*
Female	56.0*†	8.3†	48.0**†	56.0*†	—	58.3**†	50.0*†	8.3†	52.0**†	75.0*†	20.8**†	87.5*†
Age												
18 to 29	41.7†	—	30.6†	38.9†	—	33.3†	36.1†	—	33.3†	55.6†	13.9†	61.1†
30 to 44	36.0†	2.3†	21.3†	40.4†	4.6†	29.5†	25.8†	4.5†	24.7†	53.4	9.3†	72.4
45+	38.2†	8.8†	29.4†	33.8†	—	36.8†	35.3†	4.4†	38.2†	60.0	7.5†	70.1
Domiciliary status												
Homeless <sup>d</sup>	37.8	5.1†	25.6	40.4	3.6†	32.1	32.1	—	29.5	57.7	10.5†	68.2
Not homeless	39.5†	5.4†	26.3†	26.3†	—	35.1†	27.0†	2.7†	37.8†	50.0†	5.3†	73.7†
Total	38.1	5.2	37.6	37.6	2.6	32.6	31.1	3.6	31.1	56.5	9.4	69.1
Physical health service utilization												
Gender												
Male	63.3	7.7†	18.6***†	65.7 <sup>e</sup>	5.4**†	45.0**	52.7	4.7†	38.5**	80.5	16.9*†	51.5*
Female	76.0†	12.5†	58.3***†	83.3 <sup>te</sup>	20.8**†	75.0**†	72.0	—	68.0**†	88.0†	36.0**†	79.2†*
Age												
18 to 29	55.6*†	8.3†	22.2*†	69.4*†	5.4†	42.7	50.0*†	—	36.1**†	75.0†	13.9†	41.7†*
30 to 44	56.6*	6.7†	15.1*†	58.4*	8.1†	43.8†	48.3*	2.2†	33.7**†	77.3	17.4†	52.3*
45+	76.5*	11.8†	35.3*†	77.9*	7.4†	55.9	67.6*	7.4†	57.4**	89.7	25.0†	67.2*
Domiciliary status												
Homeless <sup>d</sup>	63.5	7.1 <sup>te</sup>	21.6†	69.2	5.8†	46.2	55.1†	4.5†	39.1	80.8	19.0†	52.9
Not homeless	70.3†	15.8†	32.4†	60.5†	13.2†	57.9	56.8	—	54.1†	83.8†	21.1†	63.2†
Total	64.8	8.8	23.6	67.5	7.3	48.5	55.2	4.7	42.5	81.4	19.4	55.0

— not enough subjects, † interpret with caution: coefficient of variation of 15–25%, ‡ estimation can be taken only as indicative: coefficient of variation of 25% or more  
\* $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$

<sup>a</sup>Professional consultation to mental/physical health services

<sup>b</sup>Hospitalization for mental/physical health problem

<sup>c</sup>Medication consumption for mental/physical health problems

<sup>d</sup>Homeless: no fixed address; Not homeless: fixed address; actual (in the last 12 months) and past (lifetime) problem

<sup>e</sup>Shows a tendency

28%, and 54%). However, this was not the case for physical health problems where no significant difference was noted between both genders, although women tended to consult professionals more than men did.

*Age* Results showed that the older the person, the more physical health services were used. Indeed, persons aged 45 years and older utilized significantly more consultation services in the first year (77% vs. 57% for the 30–44 age group and 56% for the 18–29 age group) and second year (78% vs. 59% for the 30–44 age group and 69% for the 18–29 age group). Moreover, they consumed more medications in the last year (57% vs. 34% for the 30–44 age group and 36% for the 18–29 age group) and over the course of the 5 years (67% vs. 52% for the 30–44 age group and 42% for the 18–29 age group). As for mental health services, no significant differences in utilization were noted between age groups.

*Homelessness* With very few exceptions, proportionally fewer numbers of homeless persons were willing to use the services than those that were not homeless, although no significant difference was found. Aside from more professional consultations for mental health disorders among the homeless (32% vs. 27% in the fourth year and 58% vs. 50% over 5 years), those that had never been homeless appeared to use more services than homeless persons.

### **Types of problems and service utilization**

*Mental health* Generally, persons with mental problems used more mental health (see Table 2) and physical health services (see Table 3) than those without such problems. Although most of the differences were statistically nonsignificant, certain notable differences between the two categories were found in the utilization of mental health services. For instance, persons with mental health problems consumed significantly more psychiatric medications in the second year (40%) and the last year (39%) than those who did not present mental problems (24% and 21%, respectively) and were proportionally more often hospitalized over the 5 years (13% vs. 5%, respectively).

*Dual diagnosis* The portrait of service utilization for participants with a double diagnosis is less uniform with respect to the type of service utilized. Indeed, more persons with a double diagnosis consumed psychiatric medications in the second (44%) and last year (39%) compared to others (one problem=29% and 29%; no problem=17% and 14%, respectively). They also consulted more mental health professionals in the first (46%) and second year (42%) than others (one problem=38% and 43%; no problem=14% and 10%, respectively). However, at the end of the 5-year study period, participants presenting only one problem apparently consulted significantly more professionals for mental health problems (64%) than those with a double diagnosis (58%) and those with no problem (28%).

*Triple diagnosis* The portrait of the utilization of physical and mental health services differs only slightly when it comes to a triple diagnosis. Although participants presenting no problem appeared to use more physical health services (and inversely, the others appeared more inclined to utilize mental health services), the utilization proportions for each service type are comparable, and no significant difference was found between the two groups.

*Mental health and homelessness* The utilization of physical and mental health services for participants with mental health problems and homelessness was not significantly different across the categories—with one exception. Speaking descriptively, those who did not have problems apparently used more physical health services, while those with mental health problems only or

**Table 2**  
Type of problems and physical health services utilization (N=391)

Type of disorders	First year			Second year			Fourth year			During the 5 years		
	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>
MHD	65.4	10.2 <sup>‡</sup>	27.4 <sup>†</sup>	68.5	5.7 <sup>‡</sup>	54.2 <sup>†d</sup>	51.9	5.6 <sup>‡</sup>	47.2	80.4	21.7 <sup>†</sup>	54.7
No disorder	64.0	7.0 <sup>‡</sup>	18.8 <sup>†</sup>	66.3	9.4 <sup>‡</sup>	41.9 <sup>d</sup>	59.3	3.5 <sup>‡</sup>	35.6 <sup>†</sup>	82.6	16.5 <sup>‡</sup>	55.3
One disorder and +	65.4	10.3 <sup>‡</sup>	25.4 <sup>†</sup>	65.4 <sup>*†</sup>	5.1 <sup>‡</sup>	55.1 <sup>‡</sup>	52.6	7.7 <sup>‡</sup>	47.4	79.5	22.8 <sup>†</sup>	55.7
Dual diagnosis <sup>e</sup>	64.0	5.9 <sup>‡</sup>	21.2 <sup>†</sup>	75.3 <sup>*</sup>	9.4 <sup>‡</sup>	45.3	61.6	3.5 <sup>‡</sup>	40.7 <sup>†</sup>	86.0	18.8 <sup>†</sup>	54.8
MHD or SA	65.5 <sup>†</sup>	10.0 <sup>‡</sup>	25.8 <sup>†</sup>	50.0 <sup>*</sup>	7.4 <sup>‡</sup>	40.0	44.8 <sup>‡</sup>	–	31.0 <sup>‡</sup>	75.9 <sup>†</sup>	11.1 <sup>‡</sup>	53.6 <sup>†</sup>
MHD + SA	64.1 <sup>†</sup>	12.8 <sup>‡</sup>	23.7 <sup>†</sup>	66.7 <sup>†</sup>	7.7 <sup>‡</sup>	47.4 <sup>†</sup>	50.0 <sup>†</sup>	7.9 <sup>‡</sup>	42.1	81.6 <sup>†</sup>	10.5 <sup>‡</sup>	50.0 <sup>†</sup>
Triple diagnosis <sup>e</sup>	65.2	7.7 <sup>‡</sup>	23.7 <sup>†</sup>	67.7	7.2 <sup>‡</sup>	49.0	56.4	3.9 <sup>‡</sup>	41.9 <sup>†</sup>	81.3	9.3 <sup>‡</sup>	56.3
One disorder + double diagnosis	64.0	8.0 <sup>‡</sup>	26.7 <sup>†</sup>	70.9	5.8 <sup>‡</sup>	52.3	52.3	2.5 <sup>‡</sup>	46.5	82.9	22.1 <sup>†</sup>	53.5
MHD and homelessness <sup>e</sup>	71.4 <sup>†</sup>	19.0 <sup>‡</sup>	30.0 <sup>†</sup>	59.1 <sup>†</sup>	–	61.9 <sup>‡</sup>	47.6 <sup>‡</sup>	–	50.0 <sup>‡</sup>	71.4 <sup>†</sup>	19.0 <sup>‡</sup>	57.1 <sup>†</sup>
MHD only <sup>e</sup>	63.8	5.7 <sup>‡</sup>	14.9 <sup>†</sup>	35.9	6.0 <sup>‡</sup>	40.0 <sup>†</sup>	57.1	4.3 <sup>‡</sup>	30.0 <sup>†</sup>	80.0	14.7 <sup>‡</sup>	51.5 <sup>†</sup>
Homelessness only <sup>e</sup>	68.8 <sup>†</sup>	11.8 <sup>‡</sup>	35.3 <sup>‡</sup>	62.5 <sup>‡</sup>	22.2 <sup>‡</sup>	50.0 <sup>‡</sup>	68.8 <sup>‡</sup>	–	56.3 <sup>‡</sup>	94.1	23.5 <sup>‡</sup>	70.6 <sup>‡</sup>
MHD + homelessness	64.8	8.8	23.6	67.5	7.3	48.5	55.2	4.7	42.5	81.4	19.4	55.0
Total												

MHD mental health disorder, SA substance abuse, – not enough subjects, † interpret with caution: coefficient of variation of 15–25%, ‡ estimation can be taken only as indicative: coefficient of variation of 25% or more

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

<sup>a</sup>Professional consultation to mental/physical health services

<sup>b</sup>Hospitalization for mental/physical health problem

<sup>c</sup>Medication consumption for mental/physical health problems

<sup>d</sup>Shows a tendency

<sup>e</sup>Actual (in the last 12 months) and past (lifetime) problem

**Table 3**  
Types of problems and mental health services utilization (N=391)

Type of disorders	First year			Second year			Fourth year			During the 5 years		
	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>	Consul. <sup>a</sup>	Hosp. <sup>b</sup>	Medic. <sup>c</sup>
MHD	42.1 <sup>†</sup>	6.5 <sup>‡</sup>	28.7 <sup>†</sup>	42.1 <sup>†</sup>	2.8 <sup>‡</sup>	40.2 <sup>*</sup>	33.6 <sup>†</sup>	4.6 <sup>‡</sup>	39.3 <sup>**†</sup>	60.7	13.2 <sup>**†</sup>	72.9
One disorder and +	32.6	3.5 <sup>‡</sup>	22.1 <sup>†</sup>	31.4	2.4 <sup>‡</sup>	24.4 <sup>*†</sup>	26.7 <sup>†</sup>	—	20.9 <sup>**†</sup>	50.0 <sup>†</sup>	4.8 <sup>**†</sup>	64.7
Dual diagnosis <sup>d</sup>	46.2 <sup>**†</sup>	7.7 <sup>‡</sup>	29.5 <sup>†</sup>	42.3 <sup>**†</sup>	3.8 <sup>‡</sup>	43.6 <sup>*†</sup>	34.6 <sup>†</sup>	2.6 <sup>‡</sup>	39.2 <sup>*†</sup>	58.2 <sup>**</sup>	9.0 <sup>‡</sup>	73.1
MHD or SA	38.4 <sup>**†</sup>	4.7 <sup>‡</sup>	25.6 <sup>†</sup>	43.0 <sup>**</sup>	2.4 <sup>‡</sup>	29.1 <sup>*†</sup>	33.7 <sup>†</sup>	5.8 <sup>‡</sup>	29.1 <sup>*†</sup>	64.0 <sup>**</sup>	12.9 <sup>‡</sup>	69.4
MHD + SA	13.8 <sup>**†</sup>	—	17.2 <sup>‡</sup>	10.0 <sup>**†</sup>	—	16.7 <sup>**†</sup>	13.8 <sup>‡</sup>	—	13.8 <sup>**†</sup>	27.6 <sup>**†</sup>	—	55.6 <sup>†</sup>
Triple diagnosis <sup>d</sup>	47.4 <sup>†</sup>	7.9 <sup>‡</sup>	21.1 <sup>‡</sup>	36.8 <sup>‡</sup>	5.3 <sup>‡</sup>	38.5 <sup>†</sup>	28.2 <sup>‡</sup>	—	34.2 <sup>†</sup>	57.9 <sup>†</sup>	10.5 <sup>‡</sup>	73.7 <sup>†</sup>
One disorder + double diagnosis	36.1	5.2 <sup>‡</sup>	26.9	37.4	2.0	31.6	31.6	3.6 <sup>‡</sup>	30.3	55.8	9.3 <sup>‡</sup>	67.8
MHD and homelessness <sup>d</sup>	41.4 <sup>†</sup>	8.1 <sup>‡</sup>	27.9 <sup>†</sup>	46.0	3.5 <sup>‡</sup>	39.5 <sup>†</sup>	34.9 <sup>†</sup>	3.5 <sup>‡</sup>	39.5 <sup>**†</sup>	62.8	14.0 <sup>‡</sup>	72.9
MHD only <sup>d</sup>	47.6 <sup>†</sup>	—	31.8 <sup>‡</sup>	28.6	—	38.1 <sup>‡</sup>	28.6 <sup>†</sup>	—	36.4 <sup>**†</sup>	52.4 <sup>‡</sup>	9.5 <sup>‡</sup>	71.4 <sup>†</sup>
Homelessness only <sup>d</sup>	33.3 <sup>†</sup>	2.9 <sup>‡</sup>	22.9 <sup>†</sup>	33.3	—	22.9 <sup>†</sup>	28.6 <sup>†</sup>	—	15.9 <sup>**†</sup>	51.4 <sup>†</sup>	6.0 <sup>‡</sup>	62.7
MHD + homelessness	29.4 <sup>‡</sup>	—	18.8 <sup>‡</sup>	23.5	—	31.3 <sup>‡</sup>	25.0 <sup>‡</sup>	—	41.2 <sup>**†</sup>	43.8 <sup>‡</sup>	—	72.2 <sup>‡</sup>
Total	38.1	5.2	37.6	37.6	2.6	32.6	31.1	3.6	31.1	56.5	9.4	69.1

MHD mental health disorder, SA substance abuse, — not enough subjects, <sup>†</sup> interpret with caution: coefficient of variation of 15–25%, <sup>‡</sup> estimation can be taken only as indicative: coefficient of variation of 25% or more

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

<sup>a</sup>Professional consultation to mental/physical health services

<sup>b</sup>Hospitalization for mental/physical health problem

<sup>c</sup>Medication consumption for mental/physical health problems

<sup>d</sup>Actual (in the last 12 months) and past (lifetime) problem

<sup>e</sup>Shows a tendency

mental health problems combined with homelessness used more mental health services. However, in one case and contradictory to the overall utilization pattern, the groups differed significantly with respect to the type of service used. In the fourth year, participants who presented with homelessness only (16%) consumed proportionally fewer psychiatric medications than those who had both homelessness and mental health problems (40%), those who had only mental health problems (36%), and those who presented no problems (41%).

## Discussion

The main objective of the present study was to describe the service utilization by clients of homeless resources in Quebec and Montreal, two cities located in the province of Quebec, Canada. Participants were recruited from a survey conducted in 1999 on client utilization of resources intended for homeless persons in the areas served by the *Régie Régionale de Montréal-Centre* (Montreal) and the *Communauté Urbaine de Québec* (Quebec), respectively.<sup>31</sup> They were followed up over 5 years and service use at four specific time periods was analyzed, namely, the first, second, and fourth years, as well as over the entire 5-year study period. Persons living only on the street without using any services were excluded from this study. The preliminary census showed that only 10% of homeless people are in this category, and it is not clear if they would be representative, since Toro et al.<sup>1</sup> considered this an important factor, but the Hannappel, Calsyn, and Morse study showed that those using services were not different from those on the streets.<sup>42</sup>

Results revealed that gender has an important impact on service utilization with regards to either mental or physical health. Indeed, in line with most prior findings,<sup>43–47</sup> the present study shows that women use significantly more services than men. Results also showed that age is another important determinant of service utilization. More specifically, the analysis of physical health services showed that older persons consulted more professionals and also consumed more medication than others. Although several researchers have reported similar findings, the proportion of persons using these services is smaller in the present study than in other research. For instance, Rotermann found that, in Canada, approximately 90% of the elderly had consulted a family or general practitioner over the past year, 92% had taken one type of medication over the past month, and 14% had been hospitalized over the past year.<sup>48</sup> Likewise, in the United States, Okoro et al.<sup>49</sup> found that, among persons aged 65 years and older, 93% had a regular care provider, 98% had a regular place of care, and 98% were able to obtain needed medical care. The categorization of age groups in these two studies might explain these differences. Nevertheless, future longitudinal research should cautiously examine how some characteristics of the Quebec health care system, which are particular to services for homeless persons (e.g., staff make-up) can potentially influence women's and elderly persons' greater use of services. Most notably, although the funding mechanisms of the Quebec health care system (i.e., free accessibility) was not a central issue in this study and its findings, subsequent studies should look at how a free health care system might influence service utilization by clients of homeless resources. Finally and in a similar vein, future research should also examine how demographic factors such as poverty and unemployment can influence homelessness and service utilization.

According to some researchers,<sup>43,50,51</sup> the severity of psychiatric symptoms predicts a greater utilization of mental health services. Although the severity of mental health symptoms has not been examined in the present study because of the nature of the variables, a multiplicity of problems within a single person appears to have an influence on the utilization of health services. Indeed, when concomitant problems or troubles are analyzed, a more frequent use of services is observed within persons who present two diagnoses, which has also been reported in several prior studies.<sup>52</sup> Nevertheless, the presence of only one mental health problem seems to have an impact on the utilization of mental health services. It is thus possible to think that this category (i.e., presence of

only one mental health problem) mainly includes persons with a substance abuse diagnosis, which has been found to be associated with more frequent utilization of mental health services.<sup>46,50,53</sup> Nevertheless, the current descriptive findings reveal that, in general, participants who present only one mental health problem are using more physical health services. This result might be explained by the fact that this category includes mainly persons with a substance abuse diagnosis. Injection drug users engage in risky behaviors which highly compromises their health, making them more inclined to consult with physical health services.

In this study, the utilization of services has been examined from a perspective of individual characteristics of participants. However, service utilization rates also depend on accessibility. Indeed, several factors can influence health services accessibility, such as the characteristics of the health system itself, of the society, and of the person.<sup>54</sup> Individual factors or characteristics have been categorized as: (a) predisposing factors (e.g., demographics and health beliefs); (b) enabling factors (e.g., family and community resources); and (c) need (e.g., symptoms and functioning).<sup>21</sup> Among homeless persons, identity could also have an impact on the utilization of services, in addition to individual characteristics. According to Osborne,<sup>55</sup> people who possess a strong homeless identity should be less inclined to use services. This would explain why homeless people do not use services; it allows them to protect their personal identity, which is supported by prior findings.<sup>56</sup>

One of the strengths of this study is that participants were followed up over a long time period. In fact, the services used seem to change very slightly from one year to another. However, some mental health problems tend to extend over long periods, namely, schizophrenia and personality disorders. This partial but stable use of services over the years raises several questions. On one hand, the stability of service utilization can indicate that, within a health system where there is a lack of doctors, there is a maximal quantity of services that can be offered and that follow-up is done (at least periodically) by other health professionals such as nurses or social workers whose services are not recorded by the RAMQ.

On the other hand, it is also possible that service utilization by clients of homeless resources is slightly inaccurate. Well-known studies on this issue have reported mistrust among these clients,<sup>57,58</sup> as well as a lack of enthusiasm among professionals who are taking care of them.<sup>59</sup> These circumstances might lead to compliance problems, which are reflected within the results described above. Finally, it is also possible that problems such as depression or physical health difficulties are only sporadic and may decrease over time.

## **Limitations**

Because the findings reported in this study are based on half of the initial survey sample, some limitations should be taken into consideration when interpreting them. First, one might expect that people who refuse to participate, who were not contacted, or who were excluded because of problematic behaviors such as intoxication could have more serious mental health problems than others. In addition, it is also possible that participants who did not complete the overall questionnaire or certain sections of it (and were thus excluded from the analysis) were psychologically more unstable than the others. Given these possibilities, the service utilization rates reported in this study could be higher than they are in reality.

With regards to the instruments that were used to assess mental health (DIS-IV) and substance abuse (CIDIS), some limitations should also be taken into consideration when interpreting the findings. For example, the DIS-IV has been shown to underdiagnose antisocial personality disorder and overdiagnose major depression when used for homeless people in mental health clinics.<sup>39</sup> In addition, social desirability may have influenced the reporting of alcohol use and alcohol-related problems. Indeed, clients of homeless resources may be inclined to minimize their alcohol problems to avoid costly or unwanted treatment.

Another important limitation of this study pertains to data sources. As Tamblyn et al.<sup>34</sup> reported regarding the use of the prescriptions claims databases, the data collected in the RAMQ databases are accurate and valid. However, although there is a growing scientific literature using the hospital (MED-ÉCHO)<sup>60–65</sup> and prescriptions claims (RAMQ)<sup>60–62,66–72</sup> databases in Canada, some limitations are inherent to these kinds of data.<sup>73</sup> For instance, since the purposes of the databases are administrative, the nature and the precision of the information contained in them do not necessarily meet the needs of a service utilization study. Moreover, according to Blais et al.,<sup>73</sup> the validity of the data remains uncertain since the quality of the information (e.g., dual diagnosis) might be problematic just like the codification procedure might vary from one service provider to another.

## **Conclusion**

To date, very little research has examined service utilization by homeless persons with co-occurring mental health and substance abuse disorders, especially in Quebec, Canada. The present research contributes to prior studies on service utilization by homeless persons in showing that women, older people, and persons with mental health problems used these services more frequently. Results also showed that while the rate of service utilization remains steady over a 5-year period, different people are using the services over these 5 years. Nevertheless, the service utilization portrait of persons with concomitant problems remains a complex issue and certainly requires further investigation.

## **Implications for Behavioral Health**

The results of the present study have a number of implications that are outlined below. First, homeless persons with comorbid mental health disorders need special consideration. Health teams should be equipped to help and intervene among homeless persons with personality and/or substance abuse disorders. As Minkoff and Drake have underscored, homeless persons should not be considered a homogenous group, but rather subdivided according to their concomitant problems.<sup>74</sup> Too often, persons with concomitant mental health and substance abuse disorders do not conform to the usual norms in drug treatment and psychiatric facilities, and therefore, they require new approaches and treatments.

Nevertheless, an overspecialized approach toward homeless persons would have to be regarded cautiously.<sup>75</sup> Indeed, over the last few years, there has been an increase in programs designed to respond quickly to more typical clients' needs (e.g., children within homeless families, persons with mental health disorders, or elderly homeless persons). However, more atypical clients, such as younger women and men or persons with drug or alcohol disorders, are less targeted by these programs. It is, therefore, important to think about solutions that will take into consideration the heterogeneity of homeless persons without using criteria to exclude some clients. If they are well planned, these solutions could fill the gaps that currently exist in the health system for persons who present multiple or concomitant problems.

## **Acknowledgements**

Written consent was obtained from the persons or their relatives for publication of the study. The authors wish to thank the persons who agreed to participate in this research and the Centre d'Accès aux Données de Recherches de l'Institut de la Statistique du Québec (CADRISQ) who provided help throughout the process. This study was supported by grants from the Institut de la Statistique du Québec (LF) for the data collection and by Fonds de Recherche en Santé du Québec (FRSQ) for the writing of the manuscript.

## References

1. Toro PA, Wolfe SM, Bellava CW, et al. Obtaining representative samples of homeless persons: A two-city study. *Journal of Community Psychology*. 1999;27:157–178.
2. Hwang SW, Tolomiczenko G, Kouyoumdjian FG, et al. Interventions to improve the health of the homeless: A systematic review. *American Journal of Preventive Medicine*. 2005;29:311–319.
3. Kushel MB, Vittinghoff E, Haas JS. Factors associated with the health care utilization of homeless persons. *Journal of American Medical Association*. 2001;285:200–206.
4. Herrman H, Evert H, Harvey C, et al. Disability and service use among homeless people living with psychotic disorders. *Australian and New Zealand Journal of Psychiatry*. 2004;38:965–974.
5. Folsom DP, Hawthorne W, Lindamer L, et al. Prevalence and risk factors for homelessness and utilization of mental health services among 10,340 patients with serious mental illness in a large public mental health system. *American Journal of Psychiatry*. 2005;162:370–376.
6. Young AS, Chinman MJ, Cradock-O’Leary JA, et al. Characteristics of individuals with severe mental illness who use emergency services. *Community Mental Health Journal*. 2005;41:159–168.
7. Brown JF. Psychiatric emergency services: A review of the literature and a proposed research agenda. *Psychiatric Quarterly*. 2005;76:139–165.
8. Koegel P, Sullivan G, Burnam A, et al. Utilization of mental health and substance abuse services among homeless adults in Los Angeles. *Medical Care*. 1999;37:306–317.
9. Rosenheck R, Seibyl CL. Homelessness: Health service use and related costs. *Medical Care*. 1998;36:1256–1264.
10. Kreider B, Nicholson S. Health insurance and the homeless. *Health Economics*. 1997;6:31–41.
11. Rosenheck RA, Dennis D. Time-limited assertive community treatment for homeless persons with severe mental illness. *Archives of General Psychiatry*. 2001;58:1073–1080.
12. Gonzalez G, Rosenheck RA. Outcomes and service use among homeless persons with serious mental illness and substance abuse. *Psychiatric Services*. 2002;53:437–446.
13. Wenzel SL, Audrey Burnam M, Koegel P, et al. Access to inpatient or residential substance abuse treatment among homeless adults with alcohol or other drug use disorders. *Medical Care*. 2001;39:1158–1169.
14. Grella CE, Stein JA. Impact of program services on treatment outcomes of patients with comorbid mental and substance use disorders. *Psychiatric Services*. 2006;57:1007–1015.
15. O’Toole TP, Gibbon JL, Hanusa BH, et al. Utilization of health care services among subgroups of urban homeless and housed poor. *Journal of Health Politics, Policy and Law*. 1999;24:91–114.
16. Gulcur L, Stefancic A, Shinn M, et al. Housing, hospitalization, and cost outcomes for homeless individuals with psychiatric disabilities participating in continuum of care and housing first programmes. *Journal of Community & Applied Social Psychology*. 2003;13:171–186.
17. Drake RE, Mueser KT, Brunette MF, et al. A review of treatments for people with severe mental illnesses and co-occurring substance use disorders. *Psychiatric Rehabilitation Journal*. 2004;27:360–374.
18. Goering, P. Health care for the homeless: What are our options? Paper presented at The Canadian Conference on Homelessness; May 18, 2005; York University, Toronto.
19. Mood Disorders Society of Canada. Understanding mood disorders. Available at <http://www.mooddisorderscanada.ca>. Accessed July 3, 2005.
20. Pollio DE, Thompson SJ, North CS. Agency-based tracking of difficult-to-follow populations: Runaway and homeless youth programs in St. Louis, Missouri. *Community Mental Health Journal*. 2000;36:247–258.
21. Anderson I. Synthesizing homelessness research: Trends, lessons and prospects. *Journal of Community & Applied Social Psychology*. 2003;13:197–205.
22. Anderson IC, Christian J. Causes of homelessness in UK: A dynamic analysis. *Journal of Community and Applied Social Psychology*. 2003;13:105–118.
23. Clapham D. Pathways approaches to homelessness research. *Journal of Community and Applied Social Psychology*. 2003;13:119–127.
24. Wang PS, Lane M, Olfson M, et al. Twelve-month use of mental health services in the United States. *Archives of General Psychiatry*. 2005;62:629–640.
25. Kessler RC, Zhao S, Katz SJ, et al. Past-year use of outpatient services for psychiatric problems in the National Comorbidity Survey. *American Journal of Psychiatry*. 1999;156:115–123.
26. Löffler W, Hafner H. Ecological pattern of first admitted schizophrenics in two German cities over 25 years. *Social Science and Medicine*. 1999;49:93–108.
27. Embry LE, Vander Stoep AV, Evens C, et al. Risk factors for homelessness in adolescents released from psychiatric residential treatment. *Journal of American Academy of Child and Adolescent Psychiatry*. 2000;39:1293–1299.
28. Kertesz SG, Larson MJ, Horton NJ, et al. Homeless chronicity and health-related quality of life trajectories among adults with addictions. *Medical Care*. 2005;43:574–585.
29. Lipton FR, Siegel C, Hannigan A, et al. Tenure in supportive housing for homeless persons with severe mental illness. *Psychiatric Services*. 2000;51:479–486.
30. Herman DB, Susser ES, Jandorf L, et al. Homelessness among individuals with psychotic disorders hospitalized for the first time: Findings from the Suffolk County Mental Health Project. *American Journal of Psychiatry*. 1998;155:109–113.
31. Fournier L. *Enquête auprès de la clientèle des ressources pour personnes itinérantes des régions de Montréal-Centre et de Québec, 1998–1999*. Québec: Institut de la statistique du Québec; 2001.
32. Fournier L, Chevalier S. *Dénombrement de la clientèle itinérante dans les centres d’hébergement, les soupes populaires et les centres de jour des villes de Montréal et de Québec 1996–1997*. Québec: Santé Québec; 1998.
33. Cooper D, Moisan J, Gaudet M, et al. Ambulatory use of olanzapine and risperidone: A population-based study on persistence and the use of concomitant therapy in the treatment of schizophrenia. *Canadian Journal of Psychiatry*. 2005;50:901–908.

34. Tambllyn R, Lavoie G, Petrella L, et al. The use of prescription claims databases in pharmacoepidemiological research: The accuracy and comprehensiveness of the prescription claims database in Quebec. *Journal of Clinical Epidemiology*. 1995;48:999–1009.
35. Robins LN, Helzer JE, Croughan J, et al. National institute of mental health diagnostic interview schedule. Its history, characteristics, and validity. *Archives of General Psychiatry*. 1981;38:381–389.
36. Farr RK, Koegel P, Burnam A. *A Study of Homelessness and Mental Illness in the Skid Row Area of Los Angeles*. Los Angeles, CA: Department of Mental Health; 1986.
37. Fischer PJ, Breakey WR. Homelessness and mental health: An overview. *International Journal of Mental Health Homeless and Mentally Ill*. 1985;14:6–41.
38. Fournier L. *Itinérance et santé mentale à Montréal. Étude descriptive de la clientèle des missions et refuges*. Verdun, Québec: Unité de Recherche Psychosociale, Centre de Recherche de l'Hôpital Douglas; 1991.
39. North CS, Pollio DE, Thompson SJ, et al. A comparison of clinical and structured interview diagnoses in a homeless mental health clinic. *Community Mental Health Journal*. 1997;33:531–543.
40. Kovess V, Fournier L. The DISSA: An abridged self-administered version of the DIS. Approach by episode. *Social Psychiatry and Psychiatric Epidemiology*. 1990;25:179–186.
41. Bonin JP, Fournier L, Blais R. Who uses mental health services for the homeless? *Psychiatric Services*. 2007;5:936–941.
42. Hannappel M, Calsyn RJ, Morse GA. Mental illness in homeless men: A comparison of shelter and street samples. *Journal of Community Psychology*. 1989;17:304–310.
43. Bovier PA, Chamot E, Eytan A, et al. Patterns of use of ambulatory mental health services in a universal care setting. *Psychiatric Services*. 2001;52:1515–1520.
44. Green-Hennessy S. Factors associated with receipt of behavioral health services among persons with substance dependence. *Psychiatric Services*. 2002;53:1592–1598.
45. Lin E, Goering P, Offord DR, et al. The use of mental health services in Ontario: Epidemiologic findings. *Canadian Journal of Psychiatry*. 1996;41:572–577.
46. Narrow WE, Regier DA, Norquist G, et al. Mental health service use by Americans with severe mental illnesses. *Social Psychiatry and Psychiatric Epidemiology*. 2000;35:147–155.
47. Watkins KE, Burnam A, Kung FY, et al. A national survey of care for persons with co-occurring mental and substance use disorders. *Psychiatric Services*. 2001;52:1062–1068.
48. Rotermann M. *Seniors Health Care Use. How Healthy Are Canadians? Pub. No. 82-003-SPE, Supplement to Vol. 16*. Ottawa: Statistics Canada; 2006.
49. Okoro CA, Strine TW, Young SL, et al. Access to health care among older adults and receipt of preventive services. Results from the behavioral risk factor surveillance system, 2002. *Preventive Medicine*. 2005;40:337–343.
50. Parslow RA, Jorm AF. Who uses mental health services in Australia? An analysis of data from the National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry*. 2000;34:997–1008.
51. Ross HE, Lin E, Cunningham J. Mental health service use: A comparison of treated and untreated individuals with substance use disorders in Ontario. *Canadian Journal of Psychiatry*. 1999;44:570–577.
52. Bland RC, Newman SC, Orn H. Help-seeking for psychiatric disorders. *Canadian Journal of Psychiatry*. 1997;42:935–942.
53. Wu LT, Kouzis AC, Leaf PJ. Influence of comorbid alcohol and psychiatric disorders on utilization of mental health services in the National Comorbidity Survey. *American Journal of Psychiatry*. 1999;156:1230–1236.
54. Andersen RM, Davidson PL. Improving access to care in America: Individual and contextual indicators. In: Andersen RM, Rice TH, Kominski GF, eds. *Changing the US Health Care System*. San Francisco, CA: Jossey-Bass; 2001:3–30.
55. Osborne RE. 'I may be homeless, but I'm not helpless': Costs and benefits of identifying with homelessness. *Self and Identity*. 2002;1:43–52.
56. Osborne RE, Karlin J, Baumann DJ, et al. Social comparisons and treatment seeking by the homeless. *Journal of Social Distress and the Homeless*. 1993;2:20–29.
57. Breakey WR. Mental health services for homeless people. In: Robertson MJ, Greenblatt M, eds. *Homelessness: A National Perspective*. New York: Plenum; 1992:101–107.
58. Chafetz L. Withdrawal from the homeless mentally ill. *Community Mental Health Journal*. 1990;26:449–461.
59. Lamb HR. Deinstitutionalization in the nineties. In: Lamb HR, Bachrach L, Kass F, eds. *Treating the Homeless Mentally Ill*. Washington: American Psychiatric Association; 1992:41–54.
60. Blais R, Boyle P, Pineault R, et al. *Facteurs associés à l'utilisation de la chirurgie d'un jour dans les hôpitaux de courte durée du Québec. Rapport du GRIS 97-07*. Montréal: Université de Montréal; 1997.
61. Champagne F, Trabut I, Perron M, et al. *Impact de la fermeture des hôpitaux à Montréal sur la mobilité de la clientèle. Rapport final. Rapport du GRIS R00-01*. Montréal: Université de Montréal; 2000.
62. Dupont MA, Lavoie G, Poirier LR, et al. *Évaluation de l'impact de la reconfiguration du réseau sur la santé et le bien-être de la population de Montréal-Centre*. Montréal: Direction de la Santé Publique de Montréal-Centre; 1999.
63. Goldman G, Pineault R, Bilodeau J, et al. Effects of patient, physician and hospital characteristics of the likelihood of vaginal birth after previous caesarean section in Quebec. *Canadian Medical Association Journal*. 1990;143:1017–1024.
64. Lemay A. *Analyse économique de l'utilisation des services d'urgences hospitaliers. Thèse de doctorat*. Montréal: Département de l'Administration de la Santé, Faculté de Médecine, Université de Montréal; 1994.
65. Roberge D, Pineault R, Tousignant P, et al. *Les effets du réseau sur l'engorgement des salles d'urgence. Report of the Canadian Health Service Research Foundation*. Montréal: Chum; 2001.
66. Beaudoin C, Beaulieu MD, Bêland F, et al. *La présence de médecins omnipraticiens à l'hôpital favorise-t-elle la continuité des soins. Rapport du GRIS R93-03*. Montréal: Université de Montréal; 1993.
67. Blais R, Maïga A. Do ethnic group use health services like the majority of the population? A study from Quebec, Canada. *Social Science and Medicine*. 1999;48:1237–1245.

68. Contandriopoulos AP, Tessier G, Larouche , et al. *Les services d'aide à domicile et l'utilisation des ressources du système de soins. Rapport du GRIS R84-02*. Montréal: Université de Montréal; 1984.
69. Contandriopoulos AP, Lemay A, Potvin L, et al. *L'impact de la rarification sur le comportement clinique des omnipraticiens. Rapport méthodologique. Rapport du GRIS R90-15*. Montréal: Université de Montréal; 1990.
70. Emarad JF, Thouez JP, Blais R, et al. La vasectomie au Québec: 1977–1997. *Cahier de Sociologie Démographique Médicale*. 1999;30:41–58.
71. Haggerty J, Tamblyn R, Abrahamowick M, et al. Screening mammography referral rates for women ages 50 to 69 years by recently-licensed family physicians: Physician and practice environment correlates. *Preventive Medicine*. 1999;29:391–404.
72. Potvin L, Camirand J, Béland F. *Les déterminants de l'utilisation des moyens de détection précoce du cancer du sein et du cancer du col utérin. Rapport du GRIS R94-03*. Montréal: Université de Montréal; 1994.
73. Blais R, Haddad S, Fournier M. *Répertoire d'instruments de mesure et de bases de données pour l'étude de l'utilisation des services de santé. Rapport de recherche effectué par le Groupe de recherche interdisciplinaire en santé (GRIS) #R01-04*. Montréal: Université de Montréal; 2001.
74. Minkoff K, Drake RE. Homelessness and dual diagnosis. In: Lamb HR, Bachrach L, Kass F, eds. *Treating the Homeless Mentally Ill*. Washington: American Psychiatric Association; 1992:221–248.
75. Robertson MJ, Greenblatt M. Homeless: A national perspective. In: Robertson MJ, Greenblatt M, eds. *Homeless: A National Perspective*. New York: Plenum; 1992:339–349.