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ORIGINAL PAPER

Sociodemographic Variation in Increasing Needs for Mental Health Services among Canadian Adults from 2002 to 2012

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Abstract

Background Numerous countries have developed public health programs and restructured mental health service delivery to alleviate the growing burden of mental illness. These initiatives address increased needs for mental health services, as individuals become better-informed and more open-minded concerning psychiatric symptoms and mental health care. This study aimed to investigate how needs for mental health services have increased among Canadian adults in recent years, and how needs may differ across different sociodemographic groups.
Data and methods The study compared data from the Canadian Community Health Survey for 2002 (n = 31,744), and 2012 (n = 23,319), including respondents 18 years old and over. Needs for mental health services were defined in terms of major depression (MD), psychological distress (PD), consultations with various health professionals, and by objective and perceived unmet needs (PUNs). Odds ratios were estimated using hierarchical logistic regressions, controlling for sociodemographic variables.
Results Overall, needs for mental health services were higher in 2012 than in 2002, with increases affecting some sociodemographic groups more than others. MD and PD grew disproportionately among lower income individuals and women. Individuals hospitalized for psychiatric reasons, those unemployed, and men accounted for most of the increase in healthcare consultations. PUNs were more pronounced among unemployed individuals, and respondents born in Canada.
Conclusion Findings from this study confirm the increasing and need for mental health services in Canada, and suggest that public health campaigns should be geared to specific sociodemographic groups.

Keywords Sociodemographic factors · Major depression · Psychological distress · Health services · Unmet needs for care · Canada

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Introduction

Mental illness is a common and leading cause of disability worldwide [1]. The societal and economic burdens of mental illness have escalated considerably over the past few decades [2]. Faced with this situation, numerous countries have responded by launching public health campaigns to improve mental health literacy and reduce the stigma of mental illness, on one hand, and restructuring mental health service delivery to integrate mental health services into primary care and enhance community-based mental health services, on the other [3].

The evidence regarding recent increases in needs for mental health services appears conflicting at times, as findings vary across countries, and according to different indicators of need; also because increases in needs tend to occur in particular segments of populations [4–6]. For example, findings from studies based on pooled data from multiple Canadian surveys [7, 8] indicate that the prevalence of major depression has remained stable since the 1990's, at roughly 5.5% in Canada [8], and at 4.4% worldwide [9]. However, some studies have noted increased prevalence of major depression in specific groups, such as young men [9], women [10], especially middle-aged women [9], among economically deprived individuals [11] and immigrants [12]. Similarly, consultations with psychiatrists have increased in Australia [13] and Norway [13], but have remained stable in Canada [14]. By contrast, consultations with general practitioners for mental health problems have decreased in Australia [6], France [15] and Norway [13], but increased in Canada [14]. Among those with major depression in England, consultations with general practitioners have increased in women but not in men [16]. In France, consultations with psychologists have increased among women, individuals between 40 and 59 years old, and those with lower educational levels [15]. In Sweden, increased use of outpatient mental health services has been more pronounced in women than in men, and in the 18–24 age groups compared with older adults [17]. Finally, sociodemographic factors associated with perceived unmet for mental health care were: male gender [6], be younger age [6], having lower income [18], living in a rural area [19], being unimplemented [20], or an immigrant status [12], and having little lack of social support [20].

Evidence from previous research suggests that recent changes regarding needs for mental health services must be examined from several angles. In particular, the socioeconomic profile of individuals must be taken into account in order to better approximate the extent to which public health campaigns and the restructuring of mental health services are moving in the right direction; that is, toward meeting population needs. The objectives of this study were, first, to examine changes along several aspects of need for mental health services among Canadian adults between 2002 and 2012; and, second, to identify the sociodemographic profile of Canadian adults whose needs for mental health services have increased over this period. Three aspects of needs for mental health services were investigated: potential needs [21] (clinical variables i.e., major depression and psychological distress); expressed needs [21] (how people use services service utilization, .i.e., psychiatric hospitalizations and consultations of with various health professionals), and unmet needs for care [22] (Services may only partly fulfill needs, or no support is provided at all and needs are unmet). We hypothesized that needs for mental health services as measured with these three aspects would increase in Canada in the adult Canadian population (defined as 18 years of age or older) between 2002 and 2012, and that the changes would affect specific sociodemographic groups.

Methods

Study Sample

This study used data from the Canadian Community Health Survey (CCHS), an ongoing, repeated, cross-sectional population survey focused on specific topics, and conducted every 2 years. The 2002 and 2012 CCHS surveys involved mental health and the use of mental health services. The target population comprised individuals aged 15 years and over, residing in private households. Respondents were randomly selected using a multistage, stratified, cluster sampling design [23, 24]. Total samples were 36,984 for 2002, and 25,113 for 2012. Response rates for 2002, and 2012, were 77% [23] and 68% [24], respectively. Thus, the total sample in the present study for 2002 and 2012 combined was $N = 55{,}063$ respondents, 18 years old and over. Respondents 15 to 17 years of age were excluded, as their pathways to mental health care are known to differ from those of adults. The study was approved by the ethics review board of a mental health university institute in Montreal (approval number 2017–327), and also by Statistics Canada, which oversees the CCHS.

Variables

Major depression over the past 12 months was measured with the Composite International Diagnostic Interview-Short Form (CIDI-SF), [25] based on a positive response to the following question: "*In your lifetime, have you ever had 2 weeks or more when nearly every day you felt sad, blue, or depressed? Have there ever been 2 weeks or longer when you lost interest in most things, like work, or hobbies or things you usually like to do for fun?* [25]. The K6 asks respondents on about how they experienced symptoms of psychological distress (e.g. feeling so sad that nothing can cheer you up) over the past 30 days [26]. While construct validity for the K6 has been demonstrated for the Canadian population [27], reliability of the K6 for this study was assessed at αCronbach = .79. As recommended by Kessler et al., [26] scores of 13 or more on the K6 were coded as "high level" distress. Expressed needs for mental health services over the past 12 months were defined in terms of psychiatric hospitalizations, and consultations with general practitioners, psychologists, psychiatrists or other mental health professionals (i.e., social workers; counselors or therapists) for a mental health problem. Two facets of unmet needs were investigated: perceived unmet needs were based on a positive response to the question: "*During the past 12 months, was there ever a time when you felt that you needed help for your emotions, mental health or use of alcohol or drugs, but you didn't receive it?*" . Objective unmet needs were defined as the non-use of mental health services in the past 12 months among respondents meeting the criteria for major depression, or reporting a high level of psychological distress.

Eight sociodemographic covariates were included. Age was analyzed according to 5 subgroups: 18 to 29 years; 30 to 44 years; 45 to 59 years; 60 to 74 years; and 75 years or over. Dichotomous variables were used to measure: gender (male = 0; female = 1); employment status (unemployed = 0; salaried workers and self-employed workers = 1); marital status (single, divorced, separated and widowed = 0; with a common law spouse or legal spouse = 1); immigration status (Canadian-born = 0; immigrant = 1); and residential area (rural area = 0; urban area, (i.e., ≥ 400 residents per square kilometer) = 1). Education was defined by an ordinal variable (no diploma = 0; high school diploma = 1; technical school diploma = 2; university diploma = 3). Household income was measured in Canadian dollars (10 categories established by Statistics Canada).

Statistical Analyses

All analyses were based on weighted data provided by Statistics Canada24,25, whose estimates accounted for the complex CCHS sampling strategy.24,25 Survey year, coded 0 for 2002 and 1 for 2012, was the time variable. Adjusted odds ratios were estimated using hierarchical logistic regressions carried out separately for each type of mental health need. The first block contained the time variable only, which served to estimate the crude odds ratio for service needs in 2002 vs. 2012. The second block added sociodemographic covariates to verify whether the change (or lack of change) in needs for mental health services over time could be explained by differences in sample characteristics between the 2002 and 2012 cohorts. Statistically significant interactions ($p < 0.01$) between the two time points and covariates were entered in the third block to assess whether changes in needs for mental health services over time were larger in specific groups. A 3-way interaction between time, age and gender was also tested because several studies had shown that changes in needs for mental health services were bigger in specific age-gender groups. However, this interaction was not statistically significant for any type of need related to mental health services.

Results

The mean age was 46.1 years, with equal percentages of male and female respondents. Most had a high school diploma or more (82.5%), were salaried workers or self-employed (66.5%), born in Canada (75.4%), with a legal or common law spouse (64.8%) and residing in urban areas (81.9%). Differences in sample characteristics between 2002 and 2012 were small, with the largest differences recorded on mean household income (11.8% higher in 2012), immigration status (3.8% more immigrants in 2012), and marital status (3.5%) more without spouse in 2012).

At first glance, prevalence rates for major depression and psychological distress were equal in 2002 and 2012 (Table 1). However, after adjusting for sociodemographic covariates, the odds of major depression and of psychological distress were statistically higher in 2012

Table 1 Crude probabilities of needs for mental health services in 2002 and 2012

	2002 ($n = 31,744$)		2012 ($n = 23,319$)	
	%	95% CI	%	95% CI
Potential needs				
Major depression	4.6	(4.4–4.9)	4.6	(4.4–4.9)
Psychological distress	2.3	(2.1–2.4)	2.3	(2.1–2.5)
Expressed needs				
General practitioner	5.5	(5.2–5.7)	6.9	(6.6–7.2)
Psychiatric hospitalization	0.3	(0.2–0.3)	0.7	(0.6–0.8)
Psychiatrist	1.9	(1.8–2.1)	2.2	(2.1–2.4)
Psychologist	2.0	(1.8–2.2)	2.3	(2.2–2.6)
Other health professional* (social workers, counselors or therapists)	2.1	(1.9–2.2)	3.1	(2.9–3.3)
Any health professional (Self-help groups, Telephone Help)	8.1	(7.8–8.4)	10.3	(9.9–10.7)
Unmet needs				
In respondents with MD or PD†				
Objective unmet need	50.3	(48.2–52.5)	40.7	(38.3–43.2)
Perceived unmet need	26.8	(24.9–28.8)	36.1	(33.7–38.6)
In total sample				
Perceived unmet need	4.4	(4.1–4.6)	5.3	(5.0–5.6)

Table 2 Odds ratios (OR) from hierarchical logistic regressions, Potential needs for mental health services ($n = 55{,}063$)

	Major depression			Psychological distress		
	OR	95% CI	p*	OR	95% CI	p*
Bloc # 1						
Time†	1.00	(0.92–1.08)	.999	1.03	(0.92–1.15)	.612
Bloc # 2						
Time	1.12	(1.03–1.22)	.006	1.25	(1.11–1.41)	<.001
Age (ref. 17–28 ans)						
30 to 44	1.20	(1.08–1.34)	.001	1.46	(1.24–1.72)	<.001
45 to 59	1.02	(0.91–1.14)	.726	1.32	(1.12–1.56)	.001
60 to 74	0.33	(0.28–0.39)	<.001	0.35	(0.28–0.44)	<.001
≥ 75	0.14	(0.10–0.18)	<.001	0.24	(0.18–0.32)	<.001
Gender‡	1.43	(1.31–1.55)	<.001	1.12	(0.99–1.26)	.052
Education	0.98	(0.94–1.02)	.331	0.80	(0.75–0.84)	<.001
Employment status§	0.64	(0.58–0.71)	<.001	0.39	(0.34–0.45)	<.001
Household income	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	<.001
Immigration status‖	0.57	(0.51–0.64)	<.001	0.72	(0.62–0.83)	<.001
Marital status¶	0.55	(0.51–0.61)	<.001	0.68	(0.59–0.77)	<.001
Urban residence**	1.23	(1.09–1.37)	<.001	1.19	(1.02–1.40)	.026
Bloc # 3						
Time	1.39	(1.16–1.67)	<.001	1.04	(0.87–1.25)	.642
Age (ref. 17–28 ans)						
30 to 44	1.20	(1.08–1.34)	.001	1.45	(1.23–1.71)	<.001
45 to 59	1.02	(0.91–1.14)	.758	1.31	(1.11–1.55)	.001
60 to 74	0.33	(0.28–0.39)	<.001	0.35	(0.28–0.43)	<.001
≥ 75	0.14	(0.10–0.18)	<.001	0.24	(0.18–0.32)	<.001
Gender	1.43	(1.32–1.55)	<.001	0.98	(0.84–1.14)	.788
Education	0.98	(0.94–1.02)	.296	0.79	(0.75–0.84)	<.001
Employment status	0.64	(0.58–0.71)	<.001	0.39	(0.34–0.45)	<.001
Household income	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	<.001
Immigration status	0.56	(0.50–0.63)	<.001	0.72	(0.62–0.83)	<.001
Marital status	0.50	(0.44–0.56)	<.001	0.68	(0.59–0.77)	<.001
Urban residence	1.22	(1.09–1.37)	.001	1.19	(1.02–1.40)	.027
Interactions						
Time * Gender	-††	–	–	1.37	(1.09–1.73)	.007
Time * Household income	1.00	(1.00–1.00)	<.001	–	–	–
Time * Marital status	1.28	(1.08–1.53)	.005	–	–	–

* *P* value - Wald test for logistic regression coefficient; † 2002 = 0; 2012 = 1; ‡ Male = 0; female = 1; § Non-worker = 0; salaried worker or self-employed = 1; ‖ Canadian-born = 0; immigrant = 1; ¶ Single, divorced, separated or widowed = 0; with a legal or de facto spouse = 1; ** Rural = 0; urban = 1; †† Hyphens indicate that this interaction is not statistically significant for major depression or psychological distress

(Table 2 – Bloc 2). Statistically significant interactions indicated that the rise in major depression was higher among respondents with a spouse (predicted OR = 1.80) than without (predicted OR = 1.40); and that major depression decreased with increasing household income, cancelling out entirely in higher income brackets (Fig. 1). The interaction between time and gender revealed that women (predicted OR = 1.43) experienced a larger increase in psychological distress than men (predicted OR = 1.04) (Table 2 – Bloc 3).

General practitioners were the main providers of mental health services in both 2002 and 2012 (Table 1). The crude and adjusted odds of expressed needs for mental health services were higher in 2012 than in 2002 (Table 3). The largest increase was for psychiatric hospitalizations, followed by consultations with social workers, counselors or therapists (Table 3 – Bloc 2). The same three types of consultation increased more among unemployed

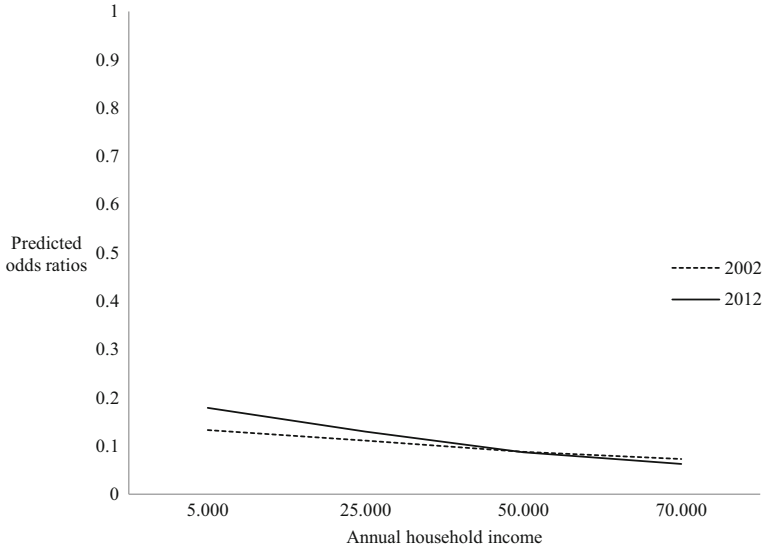

Fig. 1 Predicted odds of depression in 2002 and 2012 by annual household income

individuals than among workers (predicted ORs 2.96 vs. 1.96), whereas workers (predicted OR 0.77) were less likely to consult general practitioners in 2012 than in 2002, as opposed to unemployed individuals (predicted OR 1.04). Respondents with a spouse (predicted OR 1.27) experienced a larger increase than those without spouse (predicted OR 1.04) for consultations of general practitioners; while, and men (predicted OR 2.96) had a larger increase than women (predicted OR 1.85) for regarding consultations of social workers, counselors or therapists. There were no statistically significant interactions between time and the covariates for of psychiatric hospitalizations, and or for consultations of with psychiatrists and psychologists (Table 3).

Data on changes in objective vs. perceived unmet needs for mental health services over time were conflicting (Table 4). The odds of having objective unmet needs among respondents with major depression or high psychological distress were lower in 2012 as compared to 2002; whereas the odds of reporting perceived unmet needs for mental health services among the same respondents, and in the total sample, were higher in 2012. The increase in perceived unmet needs for the total sample was higher among Canadian-born respondents (predicted OR = 1.88) than immigrants (predicted OR = 1.34); and in unemployed individuals (predicted OR = 1.88) compared with workers (predicted OR = 1.29). There were no statistically significant interactions between time and any of the covariates in the sub-sample of respondents with major depression or high psychological distress.

Discussion

The findings of this study revealed changing needs for mental health services among Canadian adults between 2012 and 2002. Expressed needs in terms of psychiatric hospitalizations and consultations with various health professionals, potential needs (prevalence of major depression and psychological distress when adjusted for sociodemographic covariates), and

Table 3 Odds ratios (OR) from hierarchical logistic regressions - Expressed needs for mental health services ($n = 55{,}063$)

	General practitioner			Psychiatrist			Psychologist		
	OR	95% CI	p*	OR	95% CI	p*	OR	95% CI	p*
Bloc # 1									
Time†	1.28	(1.19–1.38)	<.001	1.15	(1.03–1.30)	.017	1.18	(1.05–1.33)	.005
Bloc # 2									
Time	1.41	(1.35–1.52)	<.001	1.22	(1.08–1.37)	.002	1.21	(1.07–1.36)	.002
Age (ref. 17–28 ans)									
30 to 44	1.61	(1.45–1.80)	<.001	1.74	(1.46–2.07)	<.001	1.63	(1.39–1.92)	<.001
45 to 59	1.63	(1.46–1.81)	<.001	1.60	(1.34–1.90)	<.001	1.23	(1.04–1.46)	.016
60 to 74	0.63	(0.54–0.72)	<.001	0.53	(0.42–0.67)	<.001	0.38	(0.29–0.50)	<.001
≥ 75	0.35	(0.28–0.43)	<.001	0.15	(0.09–0.23)	<.001	0.14	(0.08–0.25)	<.001
Gender‡	1.85	(1.72–2.00)	<.001	1.08	(0.95–1.21)	.231	1.75	(1.54–1.97)	<.001
Education	1.06	(1.02–1.10)	.003	1.14	(1.07–1.21)	<.001	1.34	(1.25–1.42)	<.001
Employment status§	0.62	(0.57–0.67)	<.001	0.35	(0.31–0.40)	<.001	0.64	(0.55–0.74)	<.001
Household income	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	.012
Immigration status‖	0.44	(0.40–0.49)	<.001	0.48	(0.40–0.56)	<.001	0.36	(0.30–0.43)	<.001
Marital status¶	0.71	(0.65–0.77)	<.001	0.48	(0.42–0.55)	<.001	0.53	(0.47–0.61)	<.001
Urban residence**	1.23	(1.12–1.35)	<.001	1.52	(1.27–1.81)	<.001	1.60	(1.34–1.92)	<.001
Bloc # 3									
Time	1.53	(1.33–1.76)	<.001	-††	–	–	–	–	–
Age (ref. 17–28 ans)									
30 to 44	1.61	(1.44–1.79)	<.001	–	–	–	–	–	–
45 to 59	1.63	(1.46–1.82)	<.001	–	–	–	–	–	–
60 to 74	0.62	(0.54–0.72)	<.001	–	–	–	–	–	–
≥ 75	0.35	(0.28–0.43)	<.001	–	–	–	–	–	–
Gender	1.86	(1.72–2.00)	<.001	–	–	–	–	–	–
Education	1.06	(1.02–1.10)	.004	–	–	–	–	–	–
Employment status	0.72	(0.64–0.80)	<.001	–	–	–	–	–	–
Household income	1.00	(1.00–1.00)	<.001	–	–	–	–	–	–
Immigration status	0.44	(0.40–0.49)	<.001	–	–	–	–	–	–
Marital status	0.65	(0.58–0.72)	<.001	–	–	–	–	–	–
Urban residence	1.23	(1.12–1.36)	<.001	–	–	–	–	–	–
Interactions									
Time * Employment status	0.73	(0.63–0.85)	<.001	–	–	–	–	–	–
Time * Marital status	1.21	(1.05–1.40)	.008	–	–	–	–	–	–
	Other health professional‡‡			Any health professional***			Psychiatric hospitalization		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Bloc # 1									
Time	1.51	(1.35–1.68)	<.001	1.30	(1.23–1.38)	<.001	2.43	(1.87–3.15)	<.001
Bloc # 2									
Time	1.68	(1.51–1.88)	<.001	1.42	(1.33–1.51)	<.001	2.80	(2.14–3.66)	<.001
Age (ref. 17–28 ans)									

Table 3 (continued)

	General practitioner			Psychiatrist			Psychologist		
30 to 44	1.56	(1.34–1.81)	<.001	1.58	(1.45–1.72)	<.001	1.48	(1.03–2.14)	.035
45 to 59	1.14	(0.98–1.34)	.094	1.40	(1.28–1.53)	<.001	1.15	(0.79–1.66)	.465
60 to 74	0.33	(0.26–0.42)	<.001	0.52	(0.46–0.58)	<.001	0.52	(0.33–0.80)	.003
≥ 75	0.06	(0.03–0.12)	<.001	0.24	(0.20–0.30)	<.001	0.42	(0.26–0.71)	.001
Gender	1.81	(1.61–2.03)	<.001	1.80	(1.69–1.92)	<.001	0.78	(0.61–1.01)	.062
Education	1.11	(1.04–1.17)	.001	1.11	(1.08–1.15)	<.001	0.77	(0.67–0.88)	<.001
Employment status	0.68	(0.60–0.77)	<.001	0.60	(0.56–0.65)	<.001	0.29	(0.22–0.40)	<.001
Household income	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	<.001
Immigration status	0.44	(0.37–0.51)	<.001	0.44	(0.40–0.48)	<.001	0.85	(0.63–1.17)	.321
Marital status	0.52	(0.46–0.59)	<.001	0.62	(0.58–0.66)	<.001	0.32	(0.23–0.43)	<.001
Urban residence	1.21	(1.04–1.41)	.014	1.24	(1.14–1.34)	<.001	1.55	(1.04–2.33)	.032
Bloc # 3									
Time	2.94	(2.28–3.79)	<.001	1.69	(1.53–1.87)	<.001	-[†††]	–	–
Age (ref. 17–28 ans)									
30 to 44	1.57	(1.35–1.82)	<.001	1.58	(1.44–1.72)	<.001	–	–	–
45 to 59	1.15	(0.98–1.34)	.078	1.40	(1.28–1.53)	<.001	–	–	–
60 to 74	0.34	(0.26–0.43)	<.001	0.52	(0.46–0.58)	<.001	–	–	–
≥ 75	0.06	(0.03–0.12)	<.001	0.24	(0.19–0.29)	<.001	–	–	–
Gender	2.32	(1.95–2.78)	<.001	1.81	(1.70–1.92)	<.001	–	–	–
Education	1.11	(1.05–1.18)	.001	1.11	(1.08–1.15)	<.001	–	–	–
Employment status	0.84	(0.70–1.00)	.051	0.69	(0.62–0.76)	<.001	–	–	–
Household income	1.00	(1.00–1.00)	<.001	1.00	(1.00–1.00)	<.001	–	–	–
Immigration status	0.43	(0.37–0.51)	<.001	0.44	(0.40–0.48)	<.001	–	–	–
Marital status	0.52	(0.46–0.59)	<.001	0.62	(0.58–0.66)	<.001	–	–	–
Urban residence	1.21	(1.04–1.42)	.014	1.24	(1.14–1.35)	<.001	–	–	–
Interactions									
Time * Gender	0.63	(0.50–0.79)	<.001	-[†††]	–	–	–	–	–
Time * Employment status	0.68	(0.54–0.86)	.001	0.76[c]	(0.67–0.86)	<.001	–	–	–

[*] *P* value - Wald test for logistic regression coefficient; [†] 2002 = 0; 2012 = 1; [‡] Male = 0; female = 1; [§] Non- worker = 0; salaried worker or self-employed = 1; [‖] Canadian-born = 0; immigrant = 1; [¶] Single, divorced, separated or widowed = 0; with a legal or de facto spouse = 1; [**] Rural = 0; urban = 1; [††] There are no statistically significant interactions for psychiatrist and psychologist, thus bloc # 2 is the final model; [‡‡] Social worker, counsellor or therapist; [***] General practitioner, psychiatrist, psychologist, social worker, counsellor or therapist; [†††] For any health professional, hyphens indicate that the interaction is not statistically significant. For psychiatric hospitalization, there are no statistically significant interactions thus bloc # 2 is the final model

Table 4 Odds ratio (OR) from hierarchical logistic regressions - Unmet needs for mental health services

	Respondents with MD or PD* (*n* = 3528)						Total sample (*n* = 55,063)		
	Objective unmet needs			Perceived unmet needs			Perceived unmet needs		
	OR	95% CI	p†	OR	95% CI	p†	OR	95% CI	p†
Bloc # 1									
Time‡	0.68	(0.59–0.78)	<.001	1.54	(1.33–1.78)	<.001	1.23	(1.13–1.37)	<.001
Bloc # 2									
Time	0.71	(0.61–0.81)	<.001	1.64	(1.41–1.90)	<.001	1.37	(1.27–1.49)	<.001
Age (ref. 17–28 ans)									
30 to 44	0.73	(0.60–0.87)	.001	0.82	(0.68–0.99)	.044	1.06	(0.96–1.18)	.241
45 to 59	0.59	(0.47–0.72)	<.001	0.57	(0.46–0.70)	<.001	0.65	(0.58–0.73)	<.001
60 to 74	1.27	(0.96–1.67)	.091	0.26	(0.18–0.36)	<.001	0.18	(0.15–0.21)	<.001
≥ 75	2.39	(1.51–3.78)	<.001	0.22	(0.12–0.40)	<.001	0.13	(0.10–0.17)	<.001
Gender§	0.84	(0.73–0.96)	.012	0.79	(0.68–0.92)	.002	1.36	(1.25–1.47)	<.001
Education	0.81	(0.75–0.87)	<.001	0.98	(0.90–1.06)	.539	1.00	(0.96–1.04)	.955
Employment status‖	1.63	(1.38–1.92)	<.001	0.91	(0.76–1.08)	.278	0.68	(0.61–0.75)	<.001
Household income	1.00	(1.00–1.00)	.135	1.00	(1.00–1.00)	.001	1.00	(1.00–1.00)	<.001
Immigration status¶	1.75	(1.45–2.11)	<.001	0.91	(0.74–1.11)	.343	0.60	(0.54–0.66)	<.001
Marital status**	1.35	(1.16–1.58)	<.001	1.17	(0.99–1.38)	.063	0.69	(0.63–0.76)	<.001
Urban residence††	0.63	(0.52–0.78)	<.001	0.95	(0.78–1.17)	.648	1.13	(1.01–1.27)	.027
Bloc # 3									
Time	-‡‡	–	–	–	–	–	1.89	(1.63–2.19)	<.001
Age (ref. 17–28 ans)									
30 to 44	–	–	–	–	–	–	1.06	(0.96–1.18)	.258
45 to 59	–	–	–	–	–	–	0.65	(0.58–0.73)	<.001
60 to 74	–	–	–	–	–	–	0.18	(0.15–0.21)	<.001
≥ 75	–	–	–	–	–	–	0.13	(0.09–0.17)	<.001
Gender	–	–	–	–	–	–	1.36	(1.26–1.48)	<.001
Education	–	–	–	–	–	–	1.00	(0.96–1.05)	.884
Employment status	–	–	–	–	–	–	0.82	(0.72–0.93)	.002
Household income	–	–	–	–	–	–	1.00	(1.00–1.00)	<.001
Immigration status	–	–	–	–	–	–	0.70	(0.61–0.81)	<.001
Marital status	–	–	–	–	–	–	0.70	(0.64–0.76)	<.001
Urban residence	–	–	–	–	–	–	1.14	(1.02–1.27)	.022
Interaction									
Time * Employment status	–	–	–	–	–	–	0.68	(0.57–0.81)	<.001
Time * Immigration status	–	–	–	–	–	–	0.71	(0.57–0.88)	.001

* Respondents with major depression or high psychological distress; † P value - Wald test for logistic regression coefficient; ‡ 2002 = 0; 2012 = 1; § Male = 0; female = 1; ‖ Non- worker = 0; salaried worker or self-employed = 1; ¶ Canadian-born = 0; immigrant = 1; ** Single, divorced, separated or widowed = 0; with a legal or de facto spouse = 1; †† Rural = 0; urban = 1; ‡‡ There are no statistically significant interactions for objective or perceived unmet needs in respondents with major depression or high psychological distress, thus bloc # 2 is the final model

perceived unmet needs were higher in 2012 compared with 2002, which supported our hypotheses. People with major depression and psychological distress were less likely to go without access to avoid using any mental health services. Changes in needs also varied among particular sociodemographic categories, including marital status, employment, household income and immigration status. These results suggest that Canadians were more likely to obtain professional help for mental health problems in 2012 than in 2002.

Simultaneous increases in major depression and psychological distress, perceived unmet needs, and psychiatric hospitalizations identified over this period are, however, somewhat

disconcert concerning, in that they may reflect increased use of mental health services at the expense of appropriated care. Significant interactions between time and specific sociodemographic variables may also imply that recent public health campaigns, and perhaps the restructuring of mental health service delivery itself, have not reached all sectors of the population equally. For instance, unemployed individuals experienced increased consultations with social workers, counselors or therapists, or any health professionals, as compared with their employed counterparts; this can be interpreted as suggests that unemployed individuals have more needs, despite the stable odds of experiencing major depression and psychological distress regardless of employment status in 2002 and 2012; Similar results were found for mental health service use among depressed adults, where the use of mental health services was significantly higher among the unemployed compared with those who were working [28]. How to interpret changes in other sociodemographic variables over time is more straightforward. For example, the greater increase in major depression among Canadian adults between 2002 and 2012, particularly rates of depression in married individuals, coincided with increased between 2002 and 2012, so have their increased access to mental health services, as also reported in; findings similar related international studies support this finding [29].

The stable crude prevalence of potential needs for mental health services, noted in this study, corresponds with the unchanging prevalence of major depression [6, 30] and of psychological distress [30] observed in two other Canadian studies and one international meta-analysis [7] In the present study, evidence regarding the growing prevalence of potential needs in 2012 emerged only after controlling for sociodemographic variables. Between 2002 and 2012, the Canadian population aged, became wealthier and better-educated, and the proportion of immigrants, retirees and individuals without a legal or common law spouse increased. The comparison of crude and age-standardised prevalence [30] over time may be misleading when changing disease prevalence is actually driven by sociodemographic changes at the population level.

The increased rates of major depression among Canadian adults in 2012 compared with 2002 did not vary by age group or gender. This finding contradicts the results of studies conducted in South Australia [9] and Denmark [11], which found increased depression rates among young men [9] and women [11], especially middle-aged women [9], in recent years. This discrepancy may have resulted from specific patterns of exposure to risk factors associated with depression in South Australia, Denmark and Canada. However, it may also reflect methodological differences across the studies; for instance, the South Australian sample included respondents aged 15 years and more, while the Danish sample consisted of respondents 40 or 50 years old at baseline. Moreover, both studies, the method for measuring depression however were used self-reported measures for determining rates of depression. In the present study, the rising prevalence of psychological distress was more pronounced in women than in men; this gender difference has not been examined in other studies.

The increased odds of consulting a health professional for a mental health problem identified in this study has been observed in other studies despite differences in definitions of health professionals, target populations and time periods under study [6, 14].

In Canadian adults, the largest increases, other than in psychiatric hospitalizations, were for consultations with social workers, counselors or therapists, and, to a lesser degree, consultations with general practitioners. This pattern is consistent with the restructuring of mental health services in Canada, which was oriented towards the strengthening of first-line services in collaboration with mental health providers specialized in treatment of severe mental illnesses. The fact that men experienced a larger increase than women in consultations with

social workers, counselors or therapists is encouraging, given that men are generally less likely to use mental health services than women. By contrast, the odds of psychiatric hospitalization almost tripled between 2002 and 2012. This is an unsettling finding, since hospitalization is viewed as a last resort in mental health services, and runs counter to the rationale for restructuring of mental health services in Canada. Part of this increase may have resulted from growing rates of perceived unmet needs, or severe psychiatric disorders, such as psychotic disorders, not documented by the CCHS.

Similar to other studies, this study demonstrated that the odds of experiencing perceived unmet needs have increased [8, 13]. Analyses focused on respondents with major depression or high psychological distress produced divergent results: that is, the odds of having objective unmet needs were lower in 2012 than in 2002; whereas the odds of having perceived unmet needs were higher. Taken together, these results suggest that consultations with health professionals for a mental health problem may not equally satisfy all possible needs for care, such as counselling, therapy and medication.

While CCHS samples are representative of the Canadian population for 2002 and 2012, the sociodemographic profiles for the two time points are slightly different. As such, this study provides valuable information on recent changes for different dimensions of need related to mental health services. Several countries have launched public health campaigns, and restructured mental health service delivery, aimed at alleviating the societal and financial burdens of mental illness. The efficacy of these initiatives cannot be directly estimated at the national level due to the complex interplay between individual, cultural and systemic factors affecting needs for mental health services. However, national surveys such as those provided by the CCHS may help approximate the extent to which public mental health systems are moving in the right direction in terms of restructuring services and improving population mental health.

Three concurrent mechanisms may explain the recent, and parallel, growth in major depression and psychological distress, as well as access to, and perceived unmet needs for, mental health services observed among Canadian adults. The first mechanism is a rise in the incidence of psychiatric disorders resulting from changes in risk, and protective, factors. In all likelihood, a rising incidence would be followed by an increased in access to mental health services, and, ideally, a decrease in perceived unmet needs for care. Canadian data on the incidence of major depression in adults points, instead, to stability on these indicators, at least for 2002 and 2006 [31]. Nevertheless, an overall stable incidence might hide temporal variation in specific sociodemographic groups. Data on the incidence of psychological distress are lacking.

The second mechanism is change in the pattern of mental health care, possibly resulting from the restructuring of mental health services. Inadequate implementation of service reforms could prolong the duration of potential needs, amplify perceived unmet needs for care, and lead to more hospitalizations. Rapid access to general practitioners, collaboration with mental health specialists, and integrated care are key elements in the restructuring of the Canadian mental health system [32]. While general practitioners were the main providers of mental health services in 2002 and 2012, they are often ill-prepared to treat mental illnesses [33, 34], unfortunately, which may not contribute to steady or with possible implications for increased patient perceptions of unmet needs.

The third mechanism is the effect of public health campaigns aimed at improving mental health literacy, and diminishing the stigma against of mental illness. Surveys conducted subsequent to these campaigns have indicated that As individuals tend to gain knowledge

from such campaigns with respect to about their symptoms and types of care needed, resulting from these campaigns, and that they are more likely to report symptoms and seek utilize mental health services as a result In subsequent surveys. Evidence exists that mental health literacy has increased since the 1990's, increasing, in turn, open-mindedness toward help-seeking for mental health problems [35]; yet fear of stigma remains one of the main reasons for delayed help seeking [36] The anti-stigma initiative "Opening Minds" was launched in Canada in 2009, including a contact-based education component targeting youth, health care providers, media, and workplaces which has shown promising results [37]. Given that general practitioners remain major providers of mental health services in Canada, they should be better trained regarding symptoms and treatments for mental illnesses.

Study Limitations

Findings for the current study should be interpreted with caution. First, some potential needs (e.g., anxiety disorders, bipolar disorder), expressed needs (e.g. alternative medicine) and unmet needs (e.g., specific unmet needs) were assessed solely in 2002, or in 2012, or may have been assessed differently across the two time points; these changes in the CCHS survey over time could not be investigated. Second, given that the CCHS is a repeated cross-sectional survey, the time sequence between needs for mental health services and sociodemographic variables cannot be established. Third, concerns around the stigma of mental illness may have led to the underreporting of psychiatric symptoms and utilization of mental health services. Assuming that public health campaigns were effective, have succeeded in diminishing stigma against mental illness, the effect of reduced stigma would presumably have been smaller in more apparent in 2012 than in 2002, which and may also explain the may have contributed to observed increased in needs for mental health services observed over the study at period.

Conclusion

This study provided some evidence that perceived unmet needs for mental health services have increased among Canadian adults between 2002 and 2012, despite a parallel rise in use of mental health services over the same period, suggesting that Canadians may not be using mental health services to the extent required. Thus, it would appear that "Opening Minds" does well to target health care providers and workplaces. By contrast, referrals from general practitioners to mental health specialists, and coordinated care, remain problematic in Canada [38] as evidenced in the greatly increased incidence of psychiatric hospitalization, and relatively little increase in consultations with psychiatrists and psychologists reported in this study. Implementation of mental health service reforms may need to be straightened to insure that Canadian adults have adequate access to mental health specialists outside of psychiatric hospitals.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no competing interests.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by the ethical review board of the centre de recherche of the Institut universitaire en santé mentale de Montreal with approval number 2017–327.

Informed Consent This study is based on a national population survey conducted by Statistics Canada. Consent to participate in this survey was obtained by Statistics Canada.

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