The Gatekeeper System and Disparities in Use of Psychiatric Care by Neighbourhood Education Level: Results of a Nine-Year Cohort Study in Toronto

Système de contrôle d'accès et disparités dans l'utilisation des soins psychiatriques selon le niveau de scolarité : résultats d'une étude menée sur une cohorte, à Toronto

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Abstract

Background: In Ontario, psychiatric care is fully covered by provincial health insurance without co-payments or deductibles. The provincial fee schedule supports a "gatekeeper" system for psychiatric care by paying psychiatrists more for consultations with patients who have a physician referral. In this context, we sought to explore socio-economic differences in patterns of mental health service delivery.

Method: We employed a retrospective cohort design using administrative and census data from 1995 to 2004. Subjects were 1,448,820 adults in Toronto with no physician mental healthcare in the previous three years. We determined time-dependent differences by sex and neighbourhood education quintile for the time to first mental health visit, time to the first mental health visit with a family physician or general practitioner (FP/GP), referral time from the FP/GP to a psychiatrist and the time to the first mental health visit with a psychiatrist.

Results: Relative to the lowest neighbourhood education group, individuals in the highest neighbourhood education groups were less likely, and took longer, to have a first visit to a FP/GP, but once seen were more likely, and took less time, to be referred to a psychiatrist. The highest education group was more than twice as likely to see a psychiatrist without a FP/GP referral and took less time to do so than the lowest education group.

Conclusions/Discussion: The patterns of care we found suggest three major conclusions: (1) that a significant portion of psychiatric service users in our setting bypass the gatekeeper function of the FP/GP; (2) that social inequities are particularly marked when the gatekeeper role of the FP/GP is bypassed; and (3) that even within the gatekeeper system there is evidence of inequity in referral patterns and referral times. New models of mental healthcare delivery or adjustment of the current model may be needed to redress these disparities.

Résumé

Contexte : Les soins psychiatriques en Ontario sont entièrement couverts par le régime d'assurance maladie de la province, et ce, sans franchise ou participation aux coûts. La grille tarifaire prévoit un système de contrôle pour les soins psychiatriques en versant une somme plus élevée aux psychiatres dont les visites des patients ont été recommandées par un médecin. Dans ce contexte, nous avons étudié les différences socioéconomiques dans les modèles de prestations de services de santé mentale.

Méthodologie : Nous avons employé un modèle de cohorte rétrospective en consultant des données administratives et des données issues de recensements, de 1995 à 2004. Les sujets étaient 1 448 820 adultes de Toronto qui n'avaient pas eu recours à des services de santé mentale au cours des trois années précédentes. Nous avons déterminé les différences chronologiques, en fonction du sexe et des quintiles du niveau de scolarité du quartier, pour le temps d'une première consultation en santé mentale, pour le temps de la première consultation en santé mentale auprès d'un médecin ou omnipraticien, pour le temps entre la recommandation par l'omnipraticien et la consultation auprès du psychiatre, et pour le temps d'une première visite chez le psychiatre.

Résultats : En comparaison au groupe le moins scolarisé, les individus appartenant au groupe le plus scolarisé sont moins susceptibles d'avoir une première visite chez l'omnipraticien et prennent plus de temps avant de le faire. Cependant, une fois qu'ils ont effectué la visite, ils ont plus de probabilités d'obtenir une recommandation pour le psychiatre, et ce, plus rapidement. Le groupe le plus scolarisé est deux fois plus susceptible de visiter un psychiatre sans recommandation de l'omnipraticien, et ce, plus rapidement que le groupe le moins scolarisé.

Conclusions/Discussion : Le modèle de soins que nous avons dégagé nous porte à tirer trois conclusions principales : a) une grande partie des utilisateurs de services psychiatriques de notre étude contournent la fonction de contrôle exercée par le médecin ou l'omnipraticien; b) les iniquités sociales sont particulièrement marquées quand la fonction de contrôle de l'omnipraticien est contournée; et c) même dans le cadre du système de contrôle, on observe une iniquité dans les modèles et les temps associés aux recommandations. Afin de réduire ces disparités, il faudrait penser à ajuster les modèles actuels ou concevoir de nouveaux modèles de prestation pour les services de santé mentale.

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Recent Canadian data have shown that almost 8% of adult Canadians have met the diagnostic criteria for a mental disorder in the past 12 months (Tempier et al. 2008). Effective treatments for many mental disorders exist and are widely available under universal healthcare coverage. For example,

in Ontario mental health services provided by physicians are fully covered by the provincial single-payer health insurance plan without user fees or limitations in the frequency or numbers of visits. However, despite the lack of financial barriers in this setting, socio-economic inequities in mental health service use still exist. Individuals who have higher education levels (and are less likely to suffer from mental illness) also have higher rates of outpatient psychiatric service use than individuals who have lower education levels (Starkes et al. 2005; Steele et al. 2006; Vasiliadis et al. 2005; Wang et al. 2000). The root cause of this disparity is still not well established. Both patient-related factors (such as differences in attitudes towards psychiatric care between socio-economic status groups) and provider-related factors (such as increased referral rates to psychiatrists) could contribute. There is a large social epidemiologic literature addressing the complex relationship between socio-economic status (SES) and mental disorders. Interested readers might find Muntaner and colleagues' (2004) review on this subject a good introduction to this field.

In agreement with the conceptual framework posited by Goldberg and Huxley (1992), in Ontario there exists a "gatekeeper" system in which specialists are accessed primarily via referral from family physicians and general practitioners (FPs/GPs) (Goering et al. 2000). The majority of adult referrals to psychiatrists come from FPs/GPs in our system and not from general internists or other specialists, who have mostly referral practices. While there is no explicit regulation prohibiting direct access to specialty care, the fee-for-service system encourages the gate-keeping function of the FP/GP by requiring a written consultation and billing number from the referring physician before specialists can bill a consultation fee, which for psychiatrists is significantly higher than the fee that can be billed without a referral (OMHLTC 2006).

The current study explored socio-economic disparities in the processes of care for mental health in Ontario. Specifically, we explored whether there were socio-economic differences in the pathways that individuals followed when seeking mental health services and in the length of time it took to see a FP/GP or a psychiatrist for mental health services. These questions are important to clinicians in the mental health field and for program planners who seek to improve equity in mental health service delivery by targeting interventions to the point of care where the majority of the inequity resides.

Methods
Setting

The study area consisted of the city of Toronto, Ontario. This urban setting is an economically and culturally diverse area that in 1996 contained 2,365,719 people and spread across 3,401 census enumeration areas. Enumeration areas are the smallest unit of Canadian census geography for which socio-economic data are available.

Identifying mental health services

We obtained healthcare utilization data through a research agreement with Ontario's Ministry of Health and Long-Term Care. Reimbursement, diagnostic and demographic information were derived from the Physician Claims Database and the Ontario Registered Persons Database (RPDB) from 1992 to 2004. These databases contain comprehensive individual-level data representing expenditures paid to fee-for-service physicians from the Ontario Health Insurance Plan (OHIP). Only 5% of physician services in the province are not captured in the claims database (Lin et al. 1998). Examples of services missed include those provided by salaried physicians and by physicians using certain alternative payment plans. Hospitalization information was obtained from the Canadian Institutes of Health Information Discharge Abstract Database, which contains demographic, administrative and clinical data for hospital discharges and day surgeries in Canada.

   We defined ambulatory mental health claims by family physicians, general practitioners and psychiatrists using a combination of service and diagnostic codes (see Appendix A). For psychiatrists, we considered all ambulatory claims as mental health claims. For FPs/GPs, we used all ambulatory claims that were associated with a mental health diagnostic code. This measure has a sensitivity of 81% and a specificity of 97% for identifying mental health visits to FPs/GPs (Steele et al. 2004). We defined a mental health hospitalization as any hospitalization that reported an International Classification of Diseases diagnostic code related to mental health as one of 15 discharge diagnoses. Only 0.6% of individuals had a diagnosis related to a psychotic disorder at their first FP/GP visit, and 1.7% of individuals had a diagnosis related to a psychotic disorder at their first psychiatric visit. Because these proportions were small, and because research shows the direction of socio-economic gradients in mental health and service use to be in the same direction across diagnostic groups (Muntaner et al. 2004), we did not stratify by diagnostic group but kept all mental health diagnoses together.

Cohort assembly

To assemble the study cohort we used the Registered Persons Database to define the eligible population as individuals who (a) lived in Toronto during 1995, (b) were age 18 or over on January 1, 1995 and (c) were eligible for OHIP between January 1, 1992 and December 31, 1994. We linked this population with the OHIP and CIHI files for 1992 to 1994 and excluded any individuals who did not have any healthcare contact for any reason during that time frame. Our assumption was that persons without any healthcare contacts in the previous three years had probably moved out of the study setting without advising OHIP of their address change and were therefore not eligible. Our eligible population comprised 1,784,476 individuals. Of these, we excluded 258,729 (14.4%) who had at least one mental health visit or a hospitalization with

a mental health diagnosis between January 1992 and December 1994. While individuals who had used mental health services prior to 1992 (but not between 1992 and 1994) were included in our cohort, we assumed that any new mental health service after a three-year hiatus could reasonably be assumed to be an engagement with mental health services for either a new problem or a new recurrence of a previous problem. We also excluded 65,662 individuals who had no ambulatory OHIP claim between January 1995 and December 2004, again, because persons without any healthcare contacts for nine years had probably died or moved out of the study area and were therefore not eligible. Finally, we excluded 11,265 individuals who were residents of enumeration areas for which education information was missing, leaving 1,448,820 individuals for further analysis.

Assigning socio-economic status

In each enumeration area, we derived the proportion of individuals over the age of 15 with no high school education using data from the 1996 Canada census. Education information is collected on the long census questionnaire that is received by one in five households in Canada. We chose this socio-economic indicator because education has demonstrated usefulness as a single indicator of SES at the neighbourhood level, information about education tends to be more accurate than income information, and education is the most complete socio-economic variable in our database (Krieger et al. 1997). Also, neighbourhood education has been demonstrated to have a strong association with the use of specialty mental health services in our universal healthcare setting (Steele et al. 2006). In a separate study, we checked the accuracy of RPDB addresses for assigning SES, and found that significant misclassification of SES was relatively uncommon and did not affect rate ratios for health service use outcomes (Glazier et al. 2003). Since other socio-economic indicators, such as neighbourhood income, are highly correlated with neighbourhood education level, we did not include income in our model. However, neighbourhood levels of recent immigration show a different pattern than neighbourhood education levels. Consequently, we adjusted our analyses for the proportion of immigrants who have been in Canada for less than five years.

We assigned claimants' postal codes on January 1, 1995 to enumeration areas using Statistics Canada's Postal Code Conversion File Plus (Statistics Canada 2002). We ordered enumeration areas by the proportion of individuals with no high school education and then sorted them into education quintiles (Q1–Q5) by dividing them into five ordered groups with roughly the same number of claimants in each group.

Analysis

To understand socio-economic differences for service users within the gatekeeper

system in our setting, we calculated the proportion of mental health users in each education quintile who first saw a FP/GP for mental health services and the proportion referred from a FP/GP to a psychiatrist. We defined "referral" as having a psychiatric visit that followed a FP/GP mental health visit over any time frame. To understand socio-economic differences among those service users who bypass the gatekeeper system, we reported the proportion of psychiatric care users who saw a psychiatrist without a referral from a FP/GP. For time-dependent differences in the processes of care, we reported the median length of time by sex and education quintile for four analyses: (1) from the study start until the first mental health visit with either a FP/GP or psychiatrist; (2) from the study start until the first mental health visit when it was with a FP/GP; (3) from the first FP/GP mental health visit to the first psychiatric visit for those whose first visit was with a FP/GP; and (4) from the study start until the first mental health visit when it was with a psychiatrist.

Finally, we used Cox proportional hazards to determine whether there were significant differences by neighbourhood education level for all four analyses. All survival analyses were stratified by sex and adjusted for age and recent immigration. Participants were censored at their last date of OHIP eligibility or at the end of the study date, December 31, 2004. For the second analysis, participants with a first psychiatric mental health visit were censored at that time. For the fourth analysis, participants with a first FP/GP mental health visit were censored at that time. To explore potential age effects, we repeated all four analyses after stratifying individuals into three age groups: 20–44, 45–64 and 65 and over.

A Cox proportional hazard model is a semi-parametric model. This model assumes that the underlying hazard rate is a function of the independent variables but makes no assumptions about the nature or shape of the hazard function (Allison 1995). To assess the proportional hazards assumption that the hazard ratios of two groups are constant over time, we plotted the log of the negative-log of the Kaplan-Meier estimates of the survival function against the log of time. We found that plots had parallel lines, supporting the proportional hazards assumption.

As a consequence of our definition of "referral" (i.e., a psychiatric visit that followed a FP/GP mental health visit over any time frame), we may have missed referrals made by FPs/GPs who did not code the initial visit as a mental health visit (e.g., where a patient seen for a blood pressure check also requests referral to a psychiatrist), as well as referrals made by physicians who were not FPs/GPs (e.g., an internist or surgeon). Further, we may have included some psychiatric visits as referrals where in fact the FP/GP who provided a mental health visit did not coordinate the subsequent appointment to psychiatry. To address this issue, we ran sensitivity analyses in two ways. First, we excluded all claims that had a physician referring number recorded in the database from our "direct to psychiatry" analysis. Second, we excluded from the "direct to psychiatry" analysis those claims with consultation service codes, which are

meant to require a physician referral for billing. Neither of these sensitivity analyses changed the direction or significance of our conclusions.

Results

Table 1 presents the demographic characteristics by neighbourhood education quintile for the 1,448,820 individuals in the cohort as well as comparative data for the province of Ontario. Trends for income, immigration, unemployment and visible minority status support the assumption that low education areas share other markers of low socioeconomic status.

TABLE 1. Toronto demographic characteristics, by neighbourhood education quintile[a]

	Quintile 1 (lowest education)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (highest education)	Toronto	Province of Ontario[c]
Number in cohort[b]	286,323	290,732	290,723	291,723	289,650	1,448,820	—
Age (mean with SD)[b]	44.4 (18.0)	44.6 (17.5)	45.0 (17.4)	45.3 (17.3)	46.0 (17.4)	45.1 (17.6)	35.8
Sex (% female)[b]	50.7	50.7	51.0	51.4	52.2	51.2	51.0
No high school education (average % with SD)[a,c]	55.5 (9.5)	39.7 (2.6)	31.9 (2.0)	24.1 (2.6)	13.1 (4.4)	32.6 (16.1)	32.6
Mean household income (mean $ with SD)[c]	36,994 (13,758)	43,171 (13,347)	49,428 (15,472)	55,924 (21,366)	73,505 (41,741)	52,236 (27,695)	54,291
Recent immigration (mean % with SD)[c]	14.3 (12.3)	14.6 (11.9)	14.6 (12.2)	13.5 (12.4)	10.7 (12.4)	13.5 (12.4)	5.0
Unemployed (mean % with SD)[c]	16.6 (13.0)	13.2 (8.0)	11.3 (6.8)	9.9 (6.7)	6.9 (5.4)	11.5 (9.2)	9.1
Visible minority[c] (mean % with SD)[c]	42.8 (26.9)	41.6 (25.1)	39.6 (26.5)	36.3 (25.9)	22.8 (20.4)	36.3 (26.1)	15.8

[a] Based on proportion of individuals in an enumeration area who are over age 15 and who do not have a high school diploma.
[b] Toronto statistics derived from individual level health insurance data.
[c] Derived from 1996 Canadian census data (unweighted mean using non-missing, non-suppressed enumeration areas).

Time to first mental health visit, either FP/GP or psychiatrist

There were 746,618 women and 702,202 men in the cohort, among whom 59.7% and 47.1%, respectively, had a mental health visit with a FP/GP, a psychiatrist or both within the nine-year follow-up period. Table 2 demonstrates that individuals in the highest neighbourhood education quintile were slightly less likely to have a mental health visit than individuals in the lowest neighbourhood education quintile (Q5:

Q1 ratios = 0.95 for women and 0.99 for men). The median times to the first mental health visit by neighbourhood education quintile appear in Table 3. For individuals who had a mental health visit, the median time to the first mental health visit was 1.6 months longer for women and 1.0 month longer for men in the highest neighbourhood education quintile relative to the lowest neighbourhood education quintile. The adjusted survival analysis confirmed significant differences across the quintiles for time to first mental health visit. The hazard ratios for Q5 relative to Q1 were 0.92 (95% confidence interval [CI]: 0.91 to 0.93) for women and 0.98 (95% CI: 0.97 to 0.99) for men. This means that at any time, a woman in the highest neighbourhood education quintile was 8% less likely to see a FP/GP or psychiatrist for a first mental health visit than a woman in the lowest neighbourhood education quintile. Figure 1 shows the survival curves for all the analyses.

TABLE 2. Use of the gatekeeper system for psychiatric care, by neighbourhood education quintile

| | | | First contact | |
| | Cohort population by sex and quintile | | % of quintile with any mental health visit | |
	F (n=746,618)	M (n=702,202)	F (n=446,129)	M (n=330,596)
Q1	147,765	141,885	61.7	47.9
Q2	148,767	142,625	60.2	47.4
Q3	149,099	141,624	59.0	46.2
Q4	150,454	140,278	59.0	46.6
Q5	150,533	135,790	58.9	47.3
Q5:Q1 ratio			**0.95**	**0.99**

| | Within the gatekeeper system | | | | Bypassing the gatekeeper system | | All psychiatric care | |
| | % of mental health users with first visit to FP/GP | | % of FP/GP users referred to psychiatry | | % of mental health users with first visit to psychiatrist | | % of mental health users with a psychiatry visit | |
	F (n=420,918)	M (n=308,104)	F (n=52,267)	M (n=36,968)	F (n=25,210)	M (n=22,491)	F (n=77,395)	M (n=59,414)
Q1	95.8	95.0	11.8	11.1	4.2	5.0	15.4	15.9
Q2	95.5	94.3	11.9	11.5	4.5	5.7	15.9	16.2
Q3	95.3	94.4	11.8	11.5	4.7	5.6	15.9	16.5
Q4	94.4	93.1	12.4	12.1	5.6	6.9	17.2	18.0
Q5	90.7	89.0	14.3	14.0	9.3	11.0	22.4	23.5
Q5: Q1	**0.95**	**0.94**	**1.2**	**1.3**	**2.2**	**2.2**	**1.5**	**1.5**

TABLE 3. Median time to visit by provider type and neighbourhood education quintile, in months

	First contact		Within the gatekeeper system				Bypassing the gatekeeper	
	Median time to any first mental health visit (FP/GP or psychiatrist) Median no. months (IQR)*		Median time to 1st visit (when first visit is FP/GP)		Median referral time from FP/GP to psychiatrist		Median time to 1st visit (when first visit is psychiatrist)	
	F (n=446,129)	M (n=330,596)	F (n=420,918)	M (n=308,104)	F (n=52,267)	M (n=36,968)	F (n=25,210)	M (n=22,491)
Q1	21.8 (41.3)	28.3 (46.7)	22.3 (41.5)	29.1 (46.9)	20.5 (43.3)	14.3 (37.8)	15.8 (44.0)	24.0 (51.4)
Q2	22.7 (42.1)	29.0 (47.1)	23.3 (42.1)	29.8 (47.3)	19.1 (41.6)	12.6 (36.9)	12.1 (41.7)	22.6 (51.3)
Q3	23.1 (42.6)	29.1 (47.0)	24.0 (42.9)	30.0 (47.1)	18.6 (42.4)	12.9 (36.6)	13.0 (41.2)	20.6 (48.8)
Q4	23.3 (42.5)	29.6 (46.9)	24.3 (42.9)	30.8 (46.9)	18.4 (40.6)	13.0 (35.9)	12.3 (40.0)	20.3 (48.6)
Q5	23.4 (42.7)	29.3 (46.9)	25.2 (43.2)	31.0 (47.1)	17.6 (39.9)	14.0 (36.1)	13.0 (41.2)	17.8 (45.6)
Q5– Q1	1.6	1.0	2.9	1.9	–2.9	–0.3	–2.8	–6.2

* Interquartile range

Within the gatekeeper system

TIME TO FIRST MENTAL HEALTH VISIT, FP/GP

Fifty-six point four per cent of women and 43.9% of men saw a FP/GP at the first mental health visit. Individuals in the highest neighbourhood education quintile were slightly less likely to have a first mental health visit with a FP/GP than individuals in the lowest neighbourhood education quintile (Q5:Q1 ratios = 0.95 for women and 0.94 for men) (Table 2). For individuals who had a first mental health visit with a FP/GP, the median time to this visit was 2.9 months longer for women and 1.9 months longer for men in the highest neighbourhood education quintile relative to the lowest neighbourhood education quintile (Table 3). The adjusted survival analysis confirmed significant differences across the quintiles for time to first FP/GP mental health visit. The hazard ratios for Q5 relative to Q1 were 0.87 (95% CI: 0.87 to 0.88) for women and 0.93 (95% CI: 0.91 to 0.94) for men. This means that at any time, a woman in the highest neighbourhood education quintile was 13% less likely to see a FP/GP for a first mental health visit than a woman in the lowest neighbourhood education quintile.

REFERRAL TIME FROM FIRST FP/GP MENTAL HEALTH VISIT TO FIRST PSYCHIATRIC VISIT

Of the individuals who saw a FP/GP at their first mental health visit, 12.4% of women and 12.0% of men also saw a psychiatrist at a later date. Individuals in the highest neighbourhood education quintile were more likely to be referred to a psychiatrist than individuals in the lowest neighbourhood education quintile (Q5:Q1 ratios

= 1.2 for women and 1.3 for men) (Table 2). For individuals who were referred for psychiatric care, the median time from the first FP/GP mental health visit to the first psychiatric visit was 2.9 months shorter for women and 0.3 months shorter for men in the highest neighbourhood education quintile relative to the lowest neighbourhood education quintile (Table 3). The adjusted survival analysis confirmed significant differences across the quintiles for referral time to psychiatry. The hazard ratios for Q5 relative to Q1 were 1.25 (95% CI: 1.21 to 1.28) for women and 1.30 (95% CI: 1.26 to 1.35) for men. This means that at any time, a woman in the highest neighbourhood education quintile was 25% more likely see a psychiatrist following a GP/FP referral than a woman in the lowest neighbourhood education quintile.

Bypassing the gatekeeper system

TIME TO FIRST MENTAL HEALTH VISIT, PSYCHIATRIST

Of individuals who saw a psychiatrist, 32.5% of women (5.6% of mental health users) and 37.8% of men (6.8% of mental health users) did so without a prior mental health visit to a FP/GP. Individuals in the highest neighbourhood education quintile were over twice more likely to have a first mental health visit to a psychiatrist than those in the lowest neighbourhood education quintile (Q5:Q1 ratios = 2.2 for both women and men) (Table 2). For individuals who had a first visit with a psychiatrist, the median time to this visit was 2.8 months shorter for women and 6.2 months shorter for men in the highest neighbourhood education quintile relative to the lowest neighbourhood education quintile (Table 3). The adjusted survival analysis confirmed significant differences across the quintiles for first visit to psychiatry. The hazard ratios for Q5 relative to Q1 were 2.01 (95% CI: 1.94 to 2.10) for women and 1.99 (95% CI: 1.91 to 2.07) for men. This means that at any time a woman in the highest neighbourhood education quintile was more than twice as likely to see a psychiatrist for a first mental health visit than a woman in the lowest neighbourhood education quintile.

DIFFERENCES BY AGE GROUP

We found an effect modification by age (see Table 4). For visits within the gatekeeper system, education gradients were slightly higher for the youngest (20–44) and eldest (65+) age groups than they were for the middle age group (45–64). For example, for men who had a psychiatric visit following a GP/FP visit, the hazard ratio from the highest neighbourhood education quintile to the lowest neighbourhood education quintile was 1.35 for the youngest age group, 1.22 for the middle age group and 1.31 for the eldest age group. This pattern was the same for women and men in the analyses of time to first mental health visit, time to first visit to a FP/GP and time for referral from FP/GP to psychiatry. Interestingly, however, we found a different pattern for men and

women who bypassed the gatekeeper system and had their first visit with a psychiatrist. For these analyses, the neighbourhood education gradients were highest for the youngest age group and lowest for the eldest age group. For example, for men whose first visit was to a psychiatrist, the hazard ratio from the highest neighbourhood education quintile to the lowest neighbourhood education quintile was 2.26 for the youngest age group, 1.96 for the middle age group and 1.50 for the eldest age group.

FIGURE 1. Time-to-visit curves (1-survival function) by sex, provider type and neighbourhood education quintile
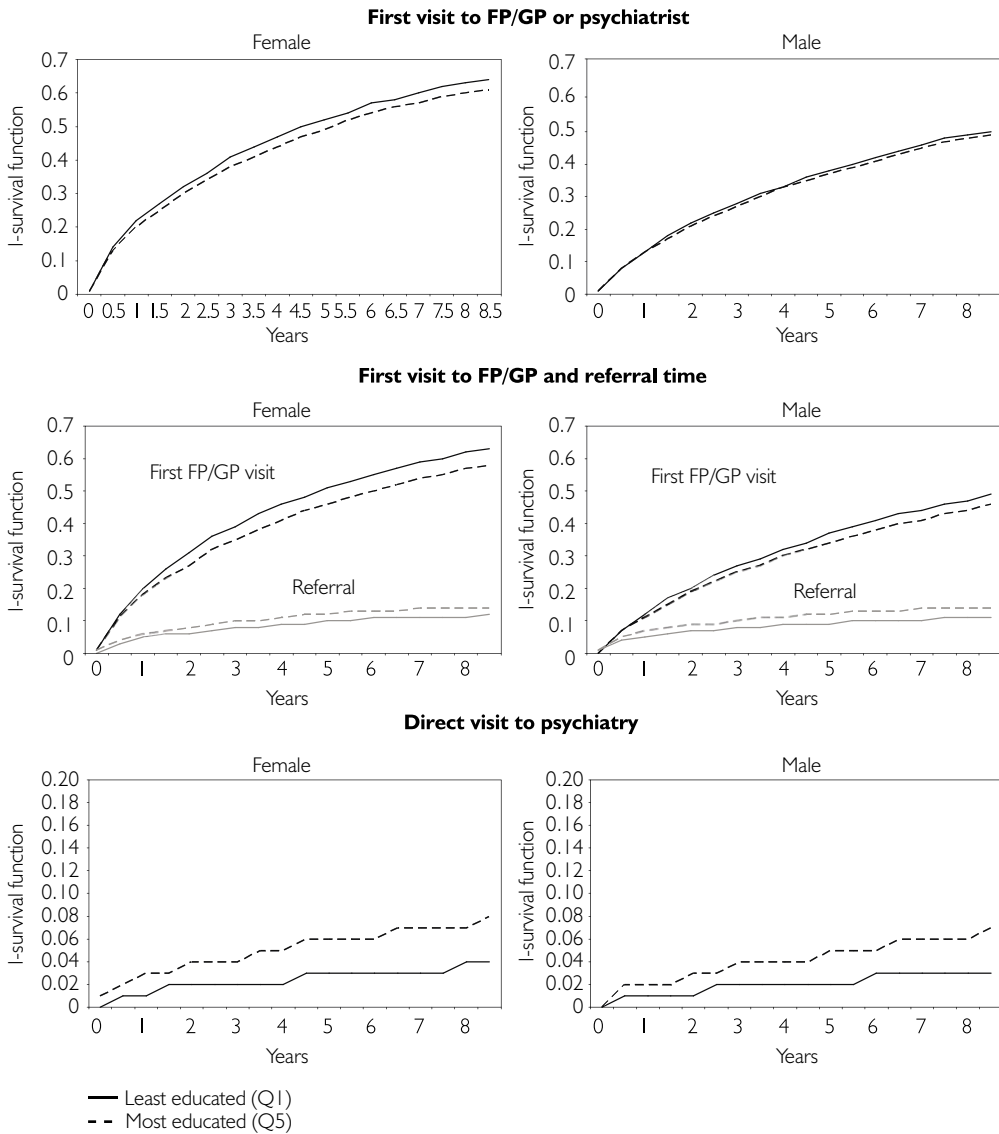
TABLE 4. Hazard ratio (95% CI) for time to visit by provider type and neighbourhood education quintile, by age group*

| | | Q5:Q1 ratio | | | | | |
| | | Women | | | Men | | |
Process	Analysis	20–44	45–64	65+	20–44	45–64	65+
First contact	Hazard ratio time to first mental health visit (FP/GP or psychiatrist)	0.92	0.89	0.99	0.99	0.92	0.98
Within the gatekeeper system	Hazard ratio time to 1st visit (when first visit is FP/GP)	0.86	0.84	0.96	0.93	0.87	0.95
	Hazard ratio time from FP/GP to psychiatrist	1.25	1.14	1.30	1.35	1.22	1.31
Bypassing the gatekeeper	Hazard ratio time to 1st visit (when first visit is with a psychiatrist)	2.38	2.08	1.43	2.26	1.96	1.50

*Age adjusted within age strata.

Discussion

These results demonstrate socio-economic disparities that could reflect inequity in the process of mental health service delivery in Ontario. There is good evidence that individuals from lower education areas have higher rates of mental health problems and so have a greater need for mental health services than individuals from higher education areas (Lorant et al. 2003; Muntaner et al. 2004; Wang et al. 2000). While individuals from lower education areas are more likely to see a FP/GP for mental health services and see a FP/GP sooner, those who do see a FP/GP are less likely to be referred to a specialist, and are referred to specialists less promptly, than individuals from high education areas. Moreover, mental health users from the highest education areas are more than twice as likely to bypass the gatekeeper role of the family physician and be seen directly by a psychiatrist. This gradient is most pronounced in the youngest age group. The patterns of care we see suggest three major conclusions: (1) that a significant portion of psychiatric service users in our setting bypass the gatekeeper function of the FP/GP; (2) that social inequities are particularly marked when the gatekeeper role of the FP/GP; is bypassed; and (3) that even within the gatekeeper system there remains serious inequity in referral patterns and referral times.

Previously reported data have found differences in access to psychiatric care and differences in the number of psychiatric visits by education level in a universal healthcare setting (Starkes et al. 2005; Steele et al. 2006; Vasiliadis et al. 2005; Wang et al. 2000). The cohort design of the current study, which followed individual patients over nine years using administrative data, allowed us to comment on other processes of

care that have not been explored (Commander et al. 1997; Gallo et al. 1995; Linden et al. 2003; Oiesvold et al. 1998; Wang et al. 2000). While lower rates of referral and delayed referral times have been identified in other settings (Commander et al. 1997; Gallo et al. 1995), our study design enabled us to calculate referral times and to identi-fy patient-initiated visits to psychiatrists as important contributors to social disparities in health service rates in our setting.

Limitations

Our study has several limitations. Education level in this study was attributed by area rather than at the individual level. The areas used, however, were small and homogene-ous, making it unlikely that a few low education individuals residing in high education areas were responsible for the patterns we found. Moreover, education gradients in service use at the neighbourhood level have importance, above and beyond individual-level gradients; for example, area-level data are particularly useful for understanding and planning health services delivery and for health policy (Krieger et al. 1997). We may have missed some mental healthcare by lower education groups because the most marginalized groups may be involved in community programs that provide counsel-ling from social workers, nurses, psychologists or complementary/alternative types of care. However, most community non-physician mental health workers charge patients directly for their services or are paid privately through employees' health insurance plans, and consequently individuals using these services tend to have above-average income and education levels (Hunsley et al. 1999).

We defined "referral" in this paper as having a psychiatric visit that followed a FP/GP mental health visit over any time frame. While we addressed some of the limitations with this definition using sensitivity analyses, some additional limitations of this defini-tion should be mentioned. We may have identified some visits as direct to psychiatrists that were in fact outpatient visits coordinated after a mental health hospitalization or a visit to the emergency room. Because there is evidence that lower SES groups are more likely to be hospitalized (Rhodes et al. 2004), this limitation would bias our results for direct access to psychiatrists towards the null hypothesis. Our analysis does not include those FP/GP visits in which a psychiatric referral was made but the patient did not attend. It is possible that low neighbourhood education groups are less likely to attend a psychiatric appointment after referral. This could bias our results away from the null hypothesis, and our results should be viewed with this limitation in mind.

We cannot ascertain whether the gradients within the FP/GP gatekeeping system are patient-driven (with higher education area residents more likely to request refer-ral to or self-refer to specialty care) or whether they are provider-driven with higher education area residents being considered more suitable for mental healthcare, indeed, the causes of inequity are likely to be multi-faceted. Patients from lower SES neigh-

bourhoods may be less likely to request referral to a psychiatrist owing to differences in attitudes or perceived stigma associated with seeing a mental health specialist. In a growing literature on mental health literacy, education has been identified as a significant factor associated with insight into symptoms of mental disorders and attitudes towards treatment (Yen et al. 2005). Lower levels of insight into the significance of emotional symptoms may make lower education individuals less likely than educated individuals to request referral for mental health issues from their family physicians. Second, family physicians may believe that lower SES patients will not benefit as much from psychiatric referral. For example, family physicians may question the benefit of counselling therapies for patients with limited verbal communication and language skills or who do not demonstrate a high level of insight into the nature of their problems. Finally, it might also be the case that family physicians have difficulty finding appropriate psychiatric care for certain marginalized groups, such as those without a high school education (Craven et al. 1997). Research on the mechanisms through which education level mediates help-seeking and service use might illuminate the best approach for improving the dissemination of effective treatments.

Conclusion

We conclude that a significant number of psychiatric service users in our setting bypass the gatekeeper function of the FP/GP and that social inequities are particularly marked when the gatekeeper role is bypassed. Moreover, within the gatekeeper system there is inequity in referral patterns and referral times. The existing system, which provides unlimited fee-for-service mental healthcare under universal coverage and financial incentives to specialists to see only referred patients, is not sufficient to address socio-economic disparities in service use. This finding provides a strong argument for strengthening the gatekeeper function of the FP/GP through regulation or incentives while also targeting the family physician–patient interaction in an effort to reduce socio-economic inequity in mental health service provision. New collaborative models of mental healthcare delivery could play a significant role in redressing socio-economic disparities in this area.

or should be inferred. Drs. Steele and Glazier are supported as Research Scholars in the Department of Family and Community Medicine at the University of Toronto. Dr. Steele also holds a career scientist award from the Ontario Ministry of Health and Long-Term Care.

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APPENDIX A: MENTAL HEALTH DIAGNOSTIC CODES USED TO DEFINE MENTAL HEALTH VISITS TO FPS/GPS

295	schizophrenia
296	manic-depressive psychosis, involutional melancholia
297	other paranoid states
298	other psychoses
300	anxiety neurosis, hysteria, neurasthenia, obsessive-compulsive neurosis, reactive depression
301	personality disorders
302	sexual deviations
303	alcoholism
304	drug dependence
306	psychosomatic illness
309	adjustment reaction
311	depressive disorders
897	economic problems
898	marital difficulties
899	parent-child problems
900	problems with aged parents or in-laws
901	family disruption/divorce
902	education problems
904	social maladjustment
905	occupational problems
906	legal problems
909	other problems of social adjustment

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