Utilization of Hospital Services by Recent Immigrants in Toronto, Canada

Richard H. Glazier, MD, MPH, 1,2,3 Maria I. Creatore, MSc, 1 Andrea A. Cortinois, MPH, PhD(candidate) 4 Mohammad M. Agha, PhD, 1 Rahim Moineddin, PhD 1,2

1. Inner City Health Research Unit, St. Michael’s Hospital, Toronto, ON
2. Department of Family & Community Medicine, St. Michael’s Hospital and University of Toronto, Toronto, ON
3. Department of Public Health Sciences, University of Toronto, Toronto, ON
4. Centre for Global Health Innovation, University of Toronto and University Health Network, Toronto, ON

ABSTRACT

Recent immigrant communities face hardships that may create special health needs and barriers. This study explored the risk of hospitalization in high recent-immigration areas in Toronto compared to other Toronto neighbourhoods. The study used 1996 hospitalization and census data. Regression was used to examine the effects of recent immigration on hospitalization. Average household income was almost 60% lower ($36,122) in the highest versus the lowest immigration areas ($82,641). Most hospitalization categories showed significantly higher rates of admission as the proportion of recent immigrants increased. Income was significantly associated with all categories of hospitalization except surgical admissions. Higher recent-immigration areas exhibited higher risks for hospitalizations in contrast to the “healthy migrant effect.” These findings have important implications for health care planning, delivery, and policy.

Key Words: emigration and immigration, socioeconomic factors, hospital utilization, ambulatory care sensitive, health care planning
INTRODUCTION

Half of all new immigrants to Canada, approximately 100,000-125,000 annually, settle in or near Toronto.\textsuperscript{1,2} One in eight of Toronto’s residents are recent immigrants, having arrived in Canada in the last five years. Recent immigrants can face unique hardships associated with emigration, adjustment, and integration into society. Socioeconomic factors likely play a major role, but other aspects of migration may impact a newcomer’s health and create special needs for health services as well as barriers to accessing health care. The impact immigration has on health and the use of health services by both individuals and areas experiencing high levels of recent immigration are not fully understood.

Canadian studies have shown varying results regarding the health services utilization of recent immigrants – depending on the type of service used, circumstances of migration, country of origin, and socioeconomic status. Some report few differences between the health service utilization rates of immigrant and Canadian-born populations,\textsuperscript{3-8} while others report lower rates by recent immigrants.\textsuperscript{3,4,6-13} Most earlier studies, however, did not satisfactorily differentiate between recent and non-recent immigrants, and thus may not have captured the immediate health effects of recent immigration and resettlement. As well, many previous studies used self-reported use of the health care system which often makes use of proxy respondents.\textsuperscript{9,10} Only one study looked at general hospital discharge data for immigrants in British Columbia and Manitoba.\textsuperscript{11}

It is not clear if the reduced utilization observed in previous studies is due to better health (“healthy immigrant effect”) or whether it is due to decreased access to services. Hospitalization data are able to give an objective measure of health care use that is not associated with self-reported information or discretionary use of services. The purpose of this study is to examine the use of hospital inpatient services in high recent-immigration areas in Toronto, to more fully
understand the health care needs of these areas. The results are interpreted in the context of the sociodemographic characteristics of those neighbourhoods that may most influence health and health care utilization.

**AREA OF RESEARCH**

**Setting**

The geographic area covered by this study consists of the central southern portion of the amalgamated city of Toronto, Ontario, including the city’s downtown core. In 1996, the study area had a population of just under 800,000.

**Descriptive analysis**

To conduct the descriptive analyses on geographic areas relevant to community agencies and hospitals, we adopted the neighbourhoods defined by the city of Toronto Public Health Department. 14 1996 Canada Census data at the census tract level were aggregated into a total of 62 neighbourhoods which were then grouped into quintiles according to the proportion of recent immigrants in their population. Recent immigrants were defined as having immigrated between 1991 and 1996. The top three immigrant groups for each neighbourhood were determined and illustrated spatially on a map. Quintile five represented the highest percent of recent immigrants and the neighbourhoods comprising this quintile were described in a separate table. Neighbourhood quintiles were compared by socioeconomic status, immigration, and other factors.

To assess whether the incomes of recent immigrants are reflective of the incomes of the rest of the neighbourhood, we generated the percent difference in average total income earned by
recent immigrants compared to other residents in the same neighbourhood. This information on income disparity was obtained in custom cross-tabulations from Statistics Canada.

**Multivariate analyses**

Multivariate analyses were based on the enumeration area (EA) of residence, which is the smallest geographical area for which Canada Census socioeconomic data are available. Postal codes from the hospitalization data were converted to EAs using the Postal Code Conversion File available from Statistics Canada. Within each EA, the expected number of hospitalizations for males and females during the 1996 fiscal year was derived by applying the population age distribution of each EA to the age-specific rate of hospitalization for the entire study area. The observed/expected ratio of hospitalizations for each EA was then modelled using Poisson regression and odds ratios (ORs) were generated along with 95% confidence intervals (CIs). The baseline level of risk was the one experienced by the lowest recent immigration quintile.
Average individual income was modelled separately because it was highly collinear with recent immigration (Pearson correlation coefficient = -0.66).

KEY FINDINGS

Descriptive analysis

The study area included 88,440 recent immigrants. Recent immigrants comprised one-fifth of the highest recent-immigration quintile and only 3% of the lowest. In general, the neighbourhoods with the highest proportion of recent immigrants had lower incomes, higher proportions of visible minorities, higher proportions of people not speaking English at home, and the largest proportion of immigrants from all periods of immigration (Table 1). The range of values in the highest immigration neighbourhoods is described in Table 2. The top three source countries for recent immigrants are displayed by neighbourhood in Figure 1. The average household income for the highest recent-immigration quintile was almost 60% lower ($36,122) than the average household income of the lowest immigration quintile ($82,641). Recent immigrants earned 37.5% less than the rest of the neighbourhood population independent of neighbourhood income level. This difference was not affected by the immigrant/non-immigrant composition of the neighbourhood.

Statistical analysis

The findings of our regression analysis demonstrate that all of the categories of hospitalization, except for surgical and mental health conditions in males, show significantly higher rates of admission for both females and males as the proportion of recent immigrants increases (Table 3). The highest relative rates of hospital admission are seen for ACS conditions
where the highest quintile of recent immigration has rates of admission 1.5 times (95% CI = 1.3-1.8 for females and 1.3-1.7 for males) greater than the lowest quintile.

Income was significantly associated with all categories of hospitalization except for surgical admissions. With income already in the model, income disparity was not associated with hospitalization.

**DIRECTIONS FOR RESEARCH**

**Insights for future analyses, health care planning, policy, and delivery**

Our findings demonstrate considerably greater hospital use and potentially more serious morbidity in areas with high rates of recent immigration. Whether this reflects the actual utilization by recent immigrants or some other area-level risk factors such as low socioeconomic status is not known. If they do reflect use by recent immigrants, these findings then contradict the “healthy migrant effect” (i.e., self-selection of migrants who are healthier and younger) supported by previous Canadian research.\(^9,10,17\) As discussed earlier, however, previous research did not focus on hospitalization and was mostly limited to self-reported health care. Our findings also may differ from those of previous studies due to our focus on recent immigrants rather than all immigrants. Recent immigrants may face increased morbidity during the stressful years of initial adjustment rather than over the long term. In addition, immigration in the early 1990s may have been qualitatively different with respect to health status from earlier waves of immigration. Immigrants to Toronto’s inner city may also be unique with respect to health status compared with immigrants to suburban areas or other provinces.

If recent immigrants are indeed experiencing higher rates of hospitalization than the general population, there are various possible explanations. The most obvious may be higher
rates of morbidity in this population resulting from circumstances related to migration or their pre-immigration experiences. An alternative to the “higher morbidity” explanation may be differences in physician practice style.\textsuperscript{18} Providers may feel that recent immigrants are less able to manage their conditions as outpatients and therefore require hospital admission. Another possible explanation, as suggested by our results for ACS conditions, is that residents of high immigration neighbourhoods may not receive timely access to primary care and may not be aware of steps they can take to decrease the progression of an illness episode, thereby avoiding hospitalization. This may be a result of barriers to the appropriate use of health services.

Immigrants generally report significantly more barriers to health care than non-immigrants.\textsuperscript{7,13,19} Available health information and services are often not sensitive to cultural, faith, language, or literacy needs of diverse communities.\textsuperscript{7,20} Language barriers in particular may be affecting access to care for an increasing number of new immigrants. The most common countries of origin for recent immigrants in the past 10 years have been increasingly from non-English speaking countries. In 2001, 45.3\% of new immigrants to Toronto reported no knowledge of English or French.\textsuperscript{2}

Chen et al. found that immigrant status and length of time in Canada were not associated with unmet need, but that income was a significant predictor.\textsuperscript{3} In their research, poor immigrants reported double the unmet need than higher-income immigrant households, suggesting that socioeconomic status may be a significant driving force behind unmet need among immigrants. Socioeconomic gradients in hospital utilization may be based on similar explanations, and thus greater morbidity in low-income areas may explain the variation in rates.\textsuperscript{21} The results of our analyses support the conclusion that income is a significant predictor of hospitalization and should be considered in any analysis involving the health of recent immigrants. In previous
work, we found significant socioeconomic gradients in the use of hospital services in Toronto’s inner city. Since many high recent-immigration areas in Toronto’s inner city are also low-income areas, it is extremely difficult to disentangle the effects of immigration and income. Our income disparity findings suggest that the relationship may be even more complex given that recent immigrants not only settle in low-income areas, but regardless of where they settle, they earn considerably less than their non-immigrant neighbours. Thus, not only are recent immigrants exposed to neighbourhood poverty, but they also experience greater personal levels of poverty than their neighbours.

With area-level analyses we cannot determine who is being hospitalized, only that they are more likely to be from a high recent-immigration, low-income area. Individual-level analyses, preferably using hierarchical models that include neighbourhood effects, would be an important next step in this work. These neighbourhood-level results, however, form an important basis for health planning and resource allocation.

We conclude that neighbourhoods in Toronto’s inner city with high proportions of recent immigrants make greater use of inpatient hospital services than other neighbourhoods. These results are in contrast with much of the Canadian literature which has found decreased use of health services by recent immigrants. Although the causes underlying these effects are complex, multiple, and heavily influenced by socioeconomic status, increased morbidity and barriers to accessing care are likely to be among the contributing factors. These findings of greater utilization in high recent-immigration areas have important implications for health care planning, delivery, and policy.
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REFERENCES


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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Total Study Area</th>
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<td>39.7</td>
<td>37.4</td>
<td>36.6</td>
<td>35.6</td>
<td>35.7</td>
<td>36.9</td>
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<td>Mean Household Income (C$)</td>
<td>82,641</td>
<td>56,308</td>
<td>45,523</td>
<td>40,182</td>
<td>36,122</td>
<td>52,004</td>
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<td>3.6</td>
<td>7.2</td>
<td>10.7</td>
<td>13.2</td>
<td>20.4</td>
<td>11.2</td>
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<td>Total Immigrants (%)</td>
<td>28.2</td>
<td>37.7</td>
<td>46.9</td>
<td>51.2</td>
<td>53.3</td>
<td>43.8</td>
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<tr>
<td>Recent Immigrants/Total Immigrants (%)</td>
<td>12.8</td>
<td>19.2</td>
<td>22.9</td>
<td>25.8</td>
<td>38.3</td>
<td>25.7</td>
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<td>Knowledge of neither English nor French (%)</td>
<td>1.8</td>
<td>5.6</td>
<td>10.2</td>
<td>11.2</td>
<td>7.6</td>
<td>7.4</td>
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<td>11.0</td>
<td>22.0</td>
<td>34.0</td>
<td>37.5</td>
<td>36.7</td>
<td>28.7</td>
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<td>Visible Minority Population (%)</td>
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<td>27.2</td>
<td>36.2</td>
<td>49.9</td>
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<td>11.0</td>
<td>12.6</td>
<td>13.1</td>
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<td>Population without High School Education (%)</td>
<td>19.8</td>
<td>26.7</td>
<td>36.7</td>
<td>43.7</td>
<td>31.7</td>
<td>31.9</td>
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<td>Rental Housing (%)</td>
<td>44.1</td>
<td>58.5</td>
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<td>57.0</td>
<td>82.7</td>
<td>60.7</td>
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<td>Male: Female Ratio</td>
<td>0.9</td>
<td>0.9</td>
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<td>1.0</td>
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<td>% Difference in Average Income between Recent Immigrants and Others</td>
<td>-36.2</td>
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<td>-37.4</td>
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<td>-36.6</td>
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* Quintile 5 is highest % of recent immigration and quintile 1 is lowest %.
† One neighbourhood in this quintile had no recent immigrants and therefore was excluded from the disparity analysis.
‡ Single and multiple responses were used for this calculation.
**TABLE II**  
Recent Immigration to Toronto's Inner City: Characteristics of Neighbourhoods in the Highest Recent-immigration Quintile

<table>
<thead>
<tr>
<th>Neighbourhoods in the Highest Recent-immigration Quintile</th>
<th>Mean Age (years)</th>
<th>Mean Household Income ($C)</th>
<th>Mean Household Income Quintile</th>
<th>Recent Immigrants (%)</th>
<th>Total Immigrants (%)</th>
<th>Recent Immigration/Total Immigration (%)</th>
<th>Knowledge of neither English nor French (%)</th>
<th>Home language not usually English (%)</th>
<th>Visible Minority Population (%)</th>
<th>Percent Income Disparity *</th>
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<tbody>
<tr>
<td>A</td>
<td>36.2</td>
<td>32,712</td>
<td>1</td>
<td>27.7</td>
<td>56.7</td>
<td>48.9</td>
<td>6.4</td>
<td>41.7</td>
<td>58.8</td>
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<tr>
<td>B</td>
<td>35.5</td>
<td>34,257</td>
<td>1</td>
<td>25.9</td>
<td>55.8</td>
<td>46.3</td>
<td>5.1</td>
<td>35.5</td>
<td>55.4</td>
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<td>C</td>
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<td>37,390</td>
<td>1</td>
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<td>57.3</td>
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<td>D</td>
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<td>30,101</td>
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<td>37.0</td>
<td>10.9</td>
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<td>34,835</td>
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<td>49.3</td>
<td>25.7</td>
<td>-18.3</td>
</tr>
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</table>

* Percent income disparity is defined for each neighbourhood as:

\[
\text{Percent Income Disparity} = \left( \frac{\text{mean individual income of recent immigrants} - \text{mean individual income of all others}}{\text{mean individual income of all others}} \right) \times 100\%
\]
Figure 1. Top three recent-immigration groups (1991-1996), neighbourhood level, inner city, Toronto.
### TABLE III
**Odds Ratios (ORs) for Hospitalization Compared with the Lowest Recent-immigration Group Adjusted for Age by Sex and Recent Immigration Quintiles**

<table>
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<th>Mental Health (all)</th>
<th>Medical</th>
<th>Surgical</th>
<th>OB(^\dagger)</th>
<th>ACS(^\ddagger)</th>
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<tr>
<td>Quintile 1 (baseline – lowest recent immigration)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>1.22</td>
<td>1.15</td>
<td>1.10</td>
<td>1.20</td>
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<tr>
<td>Quintile 3</td>
<td>1.21</td>
<td>1.32</td>
<td>1.19</td>
<td>1.29</td>
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</table>

\* OR > 1 represents a higher risk than the baseline risk (in this case, quintile 1), OR < 1 represents a lower risk than baseline.

\dagger Statistically significant (p < 0.05) values are in bold.

\ddagger Obstetrical admissions, excluding normal deliveries.

\ddagger\ddagger Ambulatory care sensitive.