

**TITLE: Immigrant Health Assessment: profiling health diversity in Canada**

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**ABSTRACT**

Migration, and the changing profile of health and health disparities are significant population health considerations in Canada, a major immigrant receiver. National projects on immigrant health assessment, in particular of non-communicable diseases, offer fundamental evidence on diverse patterns of health, healthcare utilization and social vulnerabilities for policy and system improvement.

Keywords: assessment, surveillance, immigration, health disparities

**INTRODUCTION**

Canada is a multi-cultural, -lingual, and -ethnic society with a long history of receiving immigrants. Approximately 250,000 immigrants land in the country annually from all parts of the world (particularly from Asia in recent years). Immigration is changing the national demographic portrait; especially considering that before 1980, most immigrants to Canada were from European countries. The 2001 census reported that foreign-born persons or first generation immigrants represent 18.4% of the Canadian population [1,2].

The available literature offers a broad and often cross-sectional picture of the health of immigrants in Canada. It suggests that the general health of immigrants, particularly immigrants who have landed in recent years, may be better than that of their Canadian-

born counterparts. This phenomenon, referred to as the “healthy migrant effect,” may be in part a result of the immigrant selection process that includes a medical examination [3-7]. The literature also suggests that immigrants overall use Western health services less frequently than other Canadians [3, 8].

While there is some research that contradicts this overall picture of good health including evidence of health deterioration among immigrants who have been in Canada for many years, comprehensive information on the health and health disparities in immigrant populations in Canada is lacking, especially for more vulnerable socio-demographic subpopulations and longer-term health outcomes [3, 5]. Some immigrant populations in North America and Europe may risk health problems such as dental caries, certain cancers, infectious and parasitic diseases and nutritional deficiencies [3, 4, 9-12]. Further some immigrant populations may face barriers with respect to accessing health services [3, 4]. In this context longitudinal research and surveillance on the health of the foreign born in Canada has been recognized as a priority [3].

This paper discusses and highlights findings from ongoing national surveillance research initiatives to assess the health of immigrants in Canada. The purpose of this research is the following:

- to describe patterns of morbidity, mortality, health service use and non-medical health determinants among immigrants;
- 
- to monitor trends over time; and
- to identify potential health risks and or health disparities among immigrant subgroups.

The goal is to produce a comprehensive picture of the health of immigrant populations in Canada, including persons who landed in Canada in 1980 and later, that can inform multilevel policies and programs. The research objectives are to develop immigrant health surveillance methodologies and systems, and determine whether health disparities exist in immigrant populations in Canada.

## **RESEARCH METHODS**

In addition to the fact that Canada is a major immigrant receiving country many factors make Canada an ideal place to do this type of immigrant health surveillance research. In Canada, data is collected by Citizenship and Immigration Canada on all landed immigrants for administrative purposes. This immigration data includes information on the immigrants’ landing date, personal characteristics (sex, age, etc.), and other determinants of health (marital status, intended occupation in Canada, etc.) [13]. Moreover the organization of the health system requires that administrative data, which can be used as surveillance tools, is collected on health care service use, as well as mortality and morbidity. The health databases used here include information collected on the death registration, by cancer registries, and through hospital and physician billing. To optimize the information available on the health of immigrants in Canada, this study linked core administrative health databases to the nationally collected immigrant data:

- 20% of the immigrants (369,972) landing in Canada between Jan 1, 1980 and December 31, 1990) were linked to the Canadian Mortality Database (1980-98) and the Canadian Cancer Incidence Database (1980-96); and

- 80% of all immigrant landings in Canada between January 1, 1985 and Dec 31, 2001 were linked to provincial Hospital Discharge Abstracts and the Physician Claims Databases for the same period.

Chronic or non-communicable diseases, infectious diseases, cancer, mental health and injury were examined by calculating comparative rates (standardized for age). The rates were used to make comparisons between immigrants and the Canadian population as well as between potentially vulnerable immigrant subgroups to determine whether immigrants present health equalities in regards to disease risks and how they use health care services. Immigrant subgroups are presented in the current paper by how long they have been in Canada, birthplace, and immigration landing category. Where possible the rates were adjusted to consider the fact that some immigrants may not remain in Canada after their landing date, using available indicators of residency (e.g., last tax filing date, emigration date, health card expiry date).

## **HIGHLIGHTS OF REASEARCH FINDINGS**

Findings on mortality, cancer incidence and partial/ preliminary findings on health service use in Canada and the provinces are highlighted below.

### **Mortality in immigrants**

Table I shows all-cause indirect standardized mortality ratios (SMR) for immigrants in Canada for the period of 1980-98. The immigrant subgroups (both refugees and non-refugees) present lower all-cause mortality rates than would be expected if the rate were the same as the Canadian general/ total population (indicated by an SMR of  $< 1$ ). Figure 1 shows all-cause mortality estimates for non-refugee immigrants from the top 10 immigration source countries represented in the linked dataset. This analysis is of particular interest considering that there is some evidence of health differentials among immigrants from different countries [3]. In respect to all-cause mortality, it was found that immigrants from the top 10 source countries present mortality rates below those of the Canadian general population. Mortality is also comparatively low for immigrants by disease chapter (Table II). However, other research from this study shows that immigrants may present elevated mortality rates for infectious diseases, circulatory diseases and cancers (data not shown).

### **Cancer incidence in immigrants**

In Table III are all-site indirect standardized cancer incidence ratios (SIR) for immigrants by landing category for the period of 1980-98. Immigrants in all of the landing categories present low incidence rates, compared to the Canadian general population. Figure 2 shows relative risk (RR) estimates for all-site cancer incidence in immigrants by time in Canada (adjusted for socio-demographic factors). This analysis is important as the literature suggests that immigrants who have been in Canada longer may experience deteriorated health outcomes compared to recently landed immigrants [3, 5, 6]. However, it was found that the risk of cancer incidence in immigrants is not different for those who have been in the country for less than 5 years compared to those who landed 5 to 9, or 10 or more years ago. It is important to note however that since cancer is a very long-term outcome changes in cancer patterns may not be apparent until many years following immigration to Canada.

## **Health service utilization**

The preliminary results in Figure 3 compare patterns of physician claims between immigrants in British Columbia and other provincial residents. It was found that the physician claim rates for the immigrants were overall low compared to the comparison provincial population. However, the refugee population in British Columbia claims physician services as often as their provincial counterparts.

Figure 4 presents information on when immigrants in Ontario make their first physician service claim. Most immigrants make their first claim about three months after their landing date. In Ontario, this date coincides with the date of health card eligibility, and thus, first access to the provincial health care system.

## **DISCUSSION**

While this surveillance research has some limitations such as the possibility of losses to follow-up (which was controlled for as much as possible using indicators of residency in Canada), the health assessment methods used here have many advantages over previously published research:

- record linkages optimize the available databases or tools for immigrant health surveillance;
- the immigrant data used in the study provides essential data on non-medical health determinants in immigrant subgroups, e.g., on geographical region of birth, immigrant landing category;
- the research methods provide the capacity for the analysis of health outcomes in immigrants over a period of time, e.g., all-site cancer incidence by how long the immigrant has been in Canada; and
- the study is not dependent on data from surveys or self reported health and disease experiences which may include cultural biases.

Moreover, current as well as future findings from this health surveillance research offer fundamental and up-to-date information on immigrant population health and health disparities in Canada. This detailed health information is key to inform those who work directly with immigrants, as well as researchers and policymakers. The findings presented here support the conclusion that the health status of immigrants is overall high and in general the population has low physician service use, but health disparities, which can be indicated through this project, may exist for some diseases and socio-demographic subgroups (e.g., refugees). The findings thus far also provide an example of how immigrant health surveillance research can directly inform policy. For example, policies such as waiting periods for health card eligibility (indicated by the peak in claims after 3 months in Canada) appear to effect how immigrants use health services. Future research from these ongoing initiatives will refine the findings presented here and address key knowledge gaps in immigrant health, including:

- expanding on the assessment of health and health service utilization in socio-demographic subgroups of immigrants such as immigrants who have been in Canada for many years, ethnic, cultural, and immigration subgroups (e.g., refugees); and
- considering other determinants of health at the individual (e.g. health behaviors) and community (e.g. availability of special health services for immigrants) levels.

## ACKNOWLEDGEMENTS

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## TABLES

**Table I** All-cause standardized mortality ratios (SMR) and 95% confidence intervals (CI) for all cause mortality in immigrants compared to the Canadian general population, 1980-98

Immigrant subgroup	Deaths (1980-98)	SMR <sup>a</sup>	CI <sup>a</sup>
Non-refugee males	3723	0.34	0.33-0.35
Non-refugee females	3540	0.40	0.39-0.41
Refugee males	1076	0.48	0.45-0.51
Refugee females	643	0.58	0.54-0.63

<sup>a</sup> The SMR and CI are <1 indicating that mortality is significantly lower in the immigrant subgroup compared to the Canadian reference population.

**Table II** Standardized mortality ratios (SMR) and 95% confidence intervals (CI) for mortality by ICD<sup>a</sup> chapter in immigrants compared to the Canadian general population, 1980-98

Cause of death (ICD) <sup>b</sup>	Non-refugees		Refugees	
	SMR <sup>a</sup>	CI <sup>a</sup>	SMR <sup>a</sup>	CI <sup>a</sup>
Infectious & parasitic disease (001-139) <sup>c</sup>	0.82	0.70-0.94	1.01	0.79-1.23
Neoplasms (140-239)	0.39	0.38-0.41	0.60	0.55-0.65
Endocrine/ Nutritional/ Metabolic disorders (240-279)	0.51	0.45-0.56	0.38	0.24-0.52
Nervous system or sensory disorders (320-389)	0.34	0.29-0.40	0.25	0.14-0.37
Circulatory disease (390-459)	0.35	0.33-0.36	0.46	0.41-0.50
Respiratory disease (460-519)	0.31	0.29-0.34	0.50	0.39-0.62
Digestive disease (520-579)	0.31	0.27-0.35	0.44	0.32-0.55
Genitourinary disease (580-629)	0.40	0.33-0.47	0.83	0.51-1.16
Accidents/ Poisoning/ Violence (800-999)	0.33	0.30-0.35	0.50	0.45-0.55

<sup>a</sup> ICD – International Classification of Disease Codes, 9th Edition. An SMR and CI <1 indicates that mortality is significantly lower in the immigrant subgroup compared to the Canadian reference population. An SMR >1 and CI that includes 1 indicates that the mortality rate for the immigrant subgroup and the Canadian reference population is not significantly different.

<sup>b</sup> Mental disorders (ICD 290-319) is not shown due to small counts among refugees. The sex combined SMR for mental disorders in non-refugees is 0.31 (0.25-0.37).

**Table III** All-site standardized cancer incidence ratios (SIR) and 95% confidence intervals (CI) for immigrants compared to the general Canadian population, 1980-98

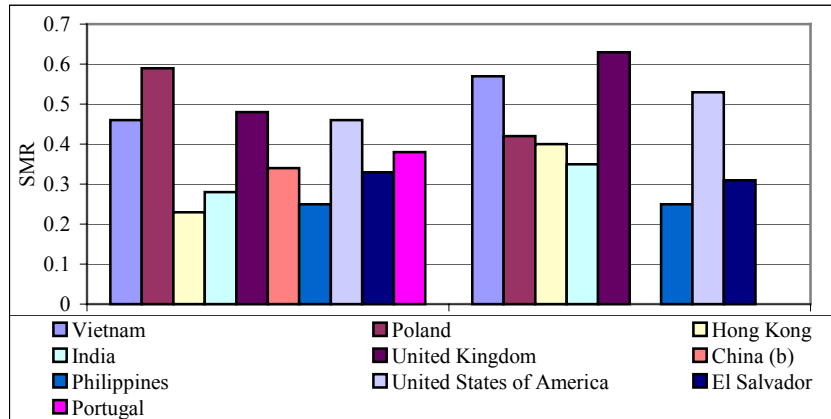
Sex	Immigration Category	Cases (1980-96)	SIR <sup>a</sup>	CI <sup>a</sup>
Males	Non-Refugee Economic	587	0.25	0.23-0.27
	Non-Refugee Family	1618	0.25	0.24-0.26
	Refugees	703	0.31	0.28-0.33
Females	Non-Refugee Economic	627	0.26	0.24-0.28
	Non-Refugee Family	1576	0.23	0.22-0.24

Refugees	641	0.31	0.29-0.34
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<sup>a</sup> The SIR and CI are <1 indicating that cancer incidence is significantly lower in the immigrant subgroup compared to the Canadian reference population.

## FIGURES

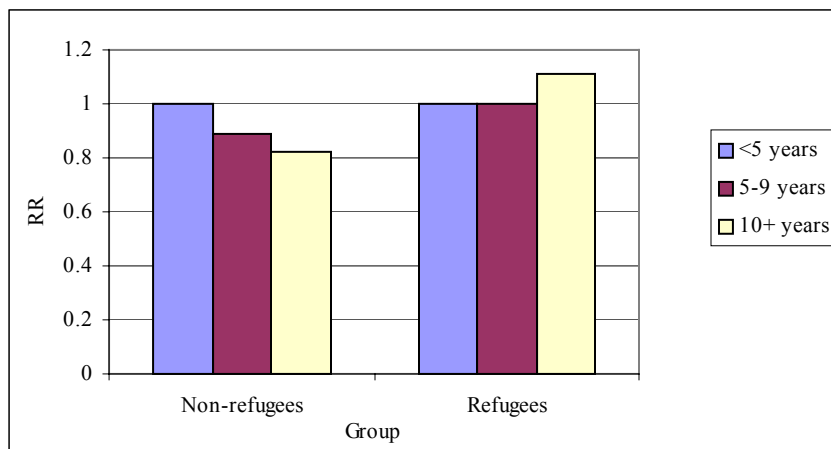
**Figure 1** All-cause standardized mortality ratios (SMR) for non-refugee immigrants from the top 10 source countries represented in the dataset, compared to the Canadian general population, 1980-98



<sup>a</sup> The SMR are <1 indicating that cancer incidence is significantly lower in the immigrant subgroup compared to the Canadian reference population.

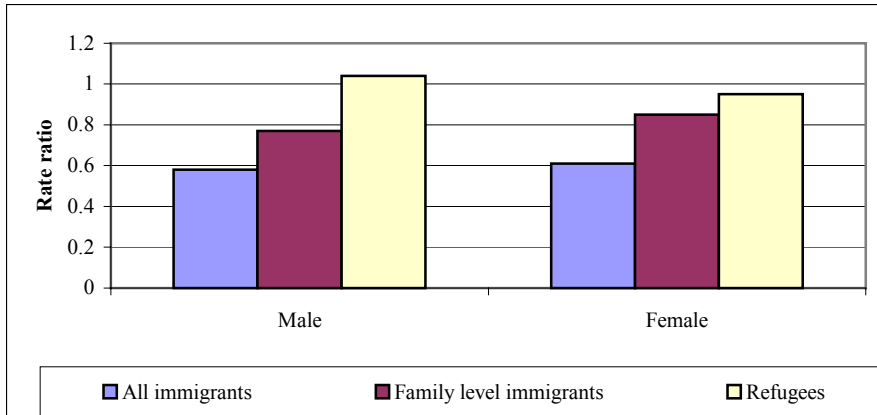
<sup>b</sup> The number of observed deaths in non-refugee females from china is <=15.

**Figure 2** The relative risk (RR)<sup>a</sup> of all-site cancer incidence among immigrants by time in Canada adjusted for socio-economic factors, 1980-98



<sup>a</sup> The RR estimates are not significantly different from 1 indicating that refugees and non-refugee respectively who have been in Canada for different time periods present a similar risk of cancer incidence.

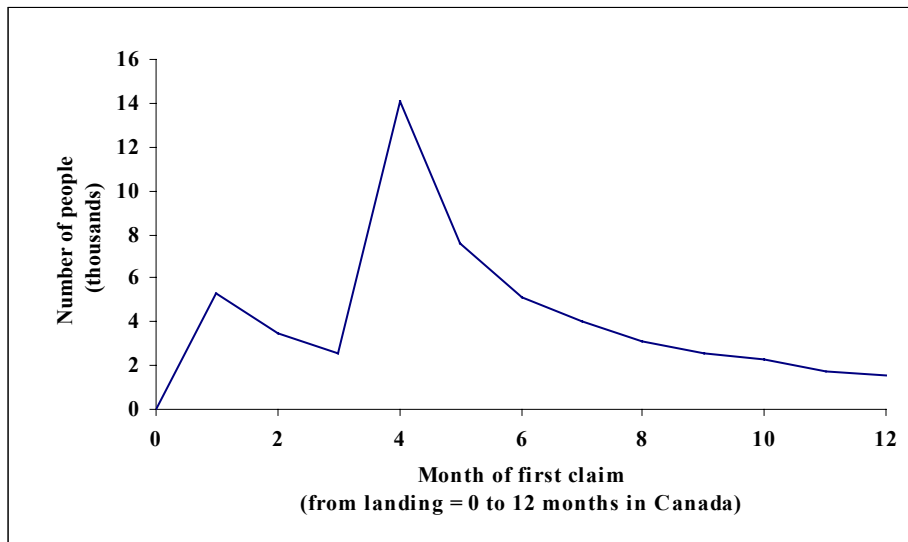
**Figure 3** Age standardized rate ratios for total physician visits among immigrants in British Columbia (1995/96) compared to the reference population (the population of British Columbia, excluding immigrants who landed in the province in 1995 and 1996)



<sup>a</sup> A rate ratio similar to 1 indicates that physician claims for the immigrant subgroup are similar to the Canadian reference. A rate ratio <1 indicates that physician claims for the subgroup are lower than the expected rate in the Canadian population.

Source: Kliever E, Kazanjian A. *The Health Status and Medical Services Utilization of Recent Immigrants to Manitoba and British Columbia: A Pilot Study. Report prepared for Citizenship and Immigration Canada. BCOHTA 2000:18. University of British Columbia, Centre for Health Services and Policy Research. Online at <http://www.chspr.ubc.ca/bcohta/pdf/bcohta18j.PDF>.*

**Figure 4** Time between landing (1992-2001) and first physician billing claim for immigrants in Ontario



Source: DesMeules M, Gold J, Kazanjian A, Manuel D, Payne J, Vissandjée B. *New Approaches to Immigrant Health Assessment. In National Symposium on Immigrant Health in Canada. In press 2003.*