IMMIGRATION AND HEALTH: REVIEWING EVIDENCE OF THE HEALTHY IMMIGRANT EFFECT IN CANADA

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ABSTRACT

In 2001, a report was commissioned by Health Canada to review current state of knowledge on the health of Canadian immigrants. It provided strong evidence of a “healthy immigrant effect” in Canada in terms of overall health status and the prevalence of certain chronic diseases. This paper presents the results of a second literature review conducted 5 years later with a specific focus on chronic diseases. The literature review consisted of two Medline searches supplemented by a search of relevant Canadian websites and queries to Canadian researchers working in the field. Findings suggest that there continues to be evidence of a “healthy immigrant effect” in Canada, however, this effect is not equivalent for all immigrant groups. Certain immigrant sub-groups experienced a higher risk of cancers, diabetes and heart disease than others, highlighting the possible role of genetic predisposition, interacting with changing environmental or acculturative factors. There remain many unanswered questions about the relationship between immigration and health in Canada. More integrated research is needed to provide robust information on how and why health disparities persist, particularly with respect to sex, gender, ethnicity, and migration.

KEY WORDS: immigration, health status, chronic diseases, mental health, ethnicity

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LIST OF ACRONYMS

ASIR - age-standardized incidence rates
ASMR - age-standardized mortality rates
BMI - body mass index
CAD - coronary artery disease
CCHS - Canadian Community Health Survey
CHD - coronary heart disease or just use health disease
CRP - C-reactive protein
DOH - determinants of health
HUI - health utilities index
NCCYS - New Canadian Children and Youth Study
NLSCY - National Longitudinal Survey of Children and Youth
NPHS - National Population Health Survey
OR - odds ratio
PDA - poor development attainment
PTSD - post-traumatic stress disorder
SAH - self-assessed health
SES - socio-economic status
SF-36 - This refers to the short form (36-item) measure used to survey health status in the Medical Outcomes Study
SMR - standardized mortality ratios
Immigration and Health: Reviewing Evidence of the Healthy Immigrant Effect in Canada

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INTRODUCTION

The purpose of this report is to review research on the health of Canadian immigrants and to identify research gaps. Specific attention was placed on reviewing evidence of the “healthy immigrant effect,” the observation that immigrants (both male and female) are often in superior health to the Canadian-born population when they first arrive in Canada, but lose this health advantage over time. The healthy immigrant effect is believed to result, in part, from a self-selection process in which people who are able and motivated to move do so, and excludes those who are sick, disabled, and in institutions do not. It also is the result of immigration procedures that select the “best” immigrants on the basis of education, language ability, and job skills – characteristics that facilitate social and economic integration and go hand-in-hand with healthy lifestyles, and exclude immigrants with serious medical conditions. The report builds on an earlier report for Health Canada entitled Immigration and Health (Hyman 2001).

This report begins with an update of recent immigration trends. Study objectives, methods and findings organized by specific health outcomes (Mortality, Health Status, Cancer, Heart Disease, Mental Health, and Diabetes), are then presented. Each section ends with an identification of research gaps. Each section ends with an identification of research gaps. At the end of the report, study limitations, concluding thoughts, and recommendations for future research directions are provided.

IMMIGRATION TRENDS

Immigration is an increasingly important component of new population growth in Canada. In 2002, 229,091 immigrants made Canada their home. According to the 2001 census, first-generation immigrants represented 18.4 per cent of the total population, and, 39 per cent of the population were first- or second-generation immigrants. Recent immigrants – those arriving in Canada between 1991 and 2001 – represented 6.2 per cent of the total population. The most common country of birth was China, followed by India, the Philippines, Pakistan, and the US (CIC 2006).
The majority of immigrants to Canada settle in urban areas. During the 1991-2001 census period, 94 per cent of new immigrants were found to be living in Census Metropolitan Areas (CMAs). The proportion of foreign-born residents was 43.7 per cent in Toronto, 37.5 per cent in Vancouver, and 18.4 per cent in Montreal.

Immigrants to Canada fall into several categories, depending on their reasons for immigrating: independent class (skilled worker or business immigrant), family class, and refugees and others (caregivers, retirees, etcetera). Sometimes these categories get blurred, for example, when family members of refugees reunite. The five leading source countries for refugees to Canada in 2001 were Afghanistan (10.5 per cent), Sri Lanka (9.0 per cent), Pakistan (7.6 per cent), Yugoslavia (6.3 per cent), and Iran (5.3 per cent).

According to the 2001 census, Canada was home to almost 4 million individuals who identified themselves as members of visible-minority groups, accounting for 13.4 per cent of the total population. This proportion has increased steadily over the past 20 years. The three largest visible-minority groups in 2001 were Chinese, South Asians, and Blacks, who together accounted for two-thirds of the visible-minority population. They were followed by Filipinos, Arabs and West Asians, Latin Americans, Southeast Asians, Koreans, and Japanese. Of all immigrants who arrived during the 1990s, 73 per cent were visible minorities. About 30 per cent of visible-minority members were born in Canada (Statistics Canada 2003).

Despite the fact that immigrants arriving in the 1990s were the most highly educated cohort of immigrants to date, the wage gap relative to their Canadian-born counterparts has increased (McIsaac 2003). Poverty rates for recent immigrants have also increased substantially since 1980 (Statistics Canada 2003). Upon arrival in Canada, immigrants experience a transition period during which time they must establish self-sufficiency. Several reports have highlighted the fact that the length of this transition period has been increasing, and recent immigrants are not integrating into the labour market as effectively as did previous cohorts of immigrants (Lochhead 2003; McIsaac 2003; Simpson 2003). This has been attributed to racism, discrimination, the failure to recognize or appreciate academic credentials, and changes in source countries.

In summary, recent Canadian immigrants can be considered to be extremely heterogeneous with respect to source country, length of stay, category of migration, visible-minority status, and socioeconomic status. These factors affect both life circumstances and health.
OBJECTIVES

The objectives of this report are twofold:

1) to update 2001 research findings on the “healthy immigrant effect” in Canada, with a particular focus on chronic diseases, and

2) to identify research gaps and future research directions for the study of immigrant health.

METHODOLOGY

The literature search for this paper consisted of two Medline searches. This was supplemented by a search of relevant websites (Metropolis, Centres of Excellence in Women’s Health) and queries to Canadian researchers working in the field.

The first search used the following keywords: Emigration and immigration, Canada; cancer, heart disease, diabetes, mental health. It was limited to the years 2001–2006. The initial retrieval consisted of 266 articles. Articles examining determinants of health, health-care access and utilization, and reproductive health were excluded. Two articles could not be accessed through the University of Toronto library system. The final sample consisted of 64 articles in which health status of immigrants to Canada was examined.

The second search used the keywords: Ethnicity (including Medline subheadings), Canada; it, too, was limited to the period 2001–2006. The initial retrieval consisted of 331 articles. Again, articles examining determinants of health, health-care access and utilization, and reproductive health were excluded. The final sample consisted of 24 articles. An additional 17 articles were identified by key informants and/or relevant websites.

FINDINGS

This section reviews evidence published since 2001 on the “healthy immigrant effect” in Canada. The report is organized by specific health outcomes: Mortality, Health Status, Cancer, Heart Disease, Mental Health, and Diabetes. Since most of the mortality studies and population-based studies examined more than one health outcome, some results may appear in more than one section. Whenever available, relevant literature on immigrant subgroups (for example, refugees, seniors, women, children, and youth) is included. Although studies relating to the determinants of immigrant health were not included in this review, authors’ explanations for health disparities between immigrants and Canadian-born are included, whenever appropriate.
Mortality

Prior to 2001, some studies compared disease-specific mortality in immigrants and the general Canadian population, for example, cancer (Kliewer and Smith 1995; Sheth et al. 1999), heart disease (Sheth et al. 1999; Nair et al. 1990), and suicide (Kliewer and Ward 1988, Strachan et al. 1990). These studies generally suggested that age-adjusted mortality rates among immigrants were lower than in the general population, but converged with length of stay in the host country. Ethnic and gender differences were particularly apparent for heart disease mortality. However, no studies compared all cause mortality rates in Canadian immigrants and the Canadian population or examined differences between immigrant and refugee populations.

Since 2001, two studies have been published in which mortality patterns among immigrants and the Canadian-born or and general population were explored. Trovato (2003) examined all cause and disease-specific mortality in immigrants and the Canadian-born population during the period 1990-1992 using Vital Statistics and Census data. Nineteen immigrants groups were examined, characterized as New Wave (that is, predominantly visible minorities as of the early 1990s) and Old Wave (predominantly Europeans and Americans). Overall, the findings were consistent with previous research on the healthy immigrant effect. Mortality rates for immigrants were lower than for the Canadian-born population, with recent immigrants experiencing a reduced relative risk of both general and disease-specific mortality. Among the observed disease specific mortality patterns, heart disease mortality was lowest among New Wave immigrants and highest among the Canadian-born population, and Cancer mortality (with the exception of stomach cancer) was lower for all immigrants, especially those in the New Wave, compared to the Canadian-born population. Suicide rates were lowest for New Wave immigrants compared to all immigrants and the Canadian-born population. Both passive and active processes were believed to account for these findings. These included: selection biases, inherent genetic differences and cultural variations in health perceptions and behaviours, the role of ethnic cohesion and social support, (particularly for more recent immigrants), immigrants’ access to good health care in Canada, and regression to the mean and transitory hardships. Trovato (2003), however, did not examine differences in mortality rates between immigrants and refugees or differences within immigrant waves by length of stay in the host country.

DesMeules et al. (2005) examined mortality rates in Canadian immigrant and refugee populations using records of a random sample of Canadian immigrants landing between 1980-1990 that was linked to the Canadian Mortality Database (1980–1998). Mortality rates among immigrants and refugees were compared to the general population, and then were stratified by age, sex, immigration category, region of birth, and length of stay in Canada. Multivariate analysis was used to examine mortality risks for various immigrant subgroups. Findings indicated that direct age-standardized mortality rates (ASMRs) were lower for all immigrant and refugee subgroups compared to the general population; and there was also evidence of a decreasing healthy immigrant effect with length of stay, except for refugee men. The relative risk of mortality significantly increased with
length of stay among immigrants but not among refugees. Refugees experienced an increased risk of mortality compared to immigrants. Although most standardized mortality ratios (SMRs) were lower for refugees and immigrants compared to the general population, there were a number of exceptions to these trends, including nasopharyngeal cancer and liver cancer (immigrant males), AIDS and liver cancer (immigrant females), liver cancer (refugee males), and infectious diseases (refugee females). Differences in mortality rates by region of birth also were observed by these researchers, suggesting the importance of assessing the health risks of specific immigrant sub-groups.

**Summary and Research Gaps**

The studies reviewed for the 2001-2006 period continued to provide evidence of a healthy immigrant effect with respect to mortality, but raised a number of questions about what is happening and why. For example, more data are needed to confirm the differentials in mortality between immigrants and refugees, between recent and non-recent immigrants, and by country/region of origin. In the US, several studies have compared mortality between foreign and US-born ethnic groups (notably, Blacks, Whites, Asians, and Hispanics). For example, Singh and Miller (2004) used Vital Statistics data (1986-2000) to examine nativity differentials in mortality and other health outcomes. Of particular note were differentials in cancer, heart disease, and diabetes between US- and foreign-born groups. To date, few second-generation studies have been conducted in Canada. Although Singh and Miller (2004) attributed mortality differentials to acculturation, this seems simplistic, and may not account for the differentials observed between immigrant sub-groups. More data are clearly needed on the determinants of mortality in immigrant sub-groups and the intersections between gender, ethnicity, and migration.

**Health Status**

Prior to 2001, the majority of population-based studies on the health status of immigrants suggested that Canadian immigrants, particularly recent immigrants, enjoyed a health advantage over both long-term immigrants and the Canadian-born population. Methodological limitations, however, particularly the use of cross-sectional studies, has rendered it difficult to draw firm conclusions about whether the health status of immigrant groups improved or deteriorated over time. In most studies, small sample sizes made it difficult to examine more than one immigrant cohort or to identify structural or behavioural factors associated with immigrant health status. The most commonly used health outcomes were self-assessed health (SAH), functional health (as measured by the health utilities index (HUI)), and the reporting of any specific chronic conditions. Furthermore, there was little Canadian research on the health status of immigrant sub-groups (for example, refugees, seniors, and women).
Since 2001, nine published studies have examined the health status of immigrants (and immigrant sub-groups) using population health surveys, primarily the National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS). Most of these studies examined health status in immigrant groups characterized by length of stay, looking at more than the two cohorts that had usually been examined in the past (namely, immigrants 0-9 years in Canada and those who have been 10+ years in Canada). Three of the studies used longitudinal data from the NPHS to examine changes in health status over time. The use of larger data sets, such as the CCHS, permitted some researchers to look at immigrant sub-groups and probe the explanatory factors associated with health status. Three other studies looked at immigrant sub-groups (women, and seniors). There was also evidence of an increasing trend in Canadian research towards an examination of ethnic variations in health status. This section now will examine the following indicators of health status: self-assessed health (SAH), functional health (HUI), and the reporting of chronic health problems.

**Self-Assessed Health (SAH)/Functional Health (HUI)**

The earliest study by Newbold and Danforth (2003) used data from the 1998/99 NPHS to examine SAH and HUI among three cohorts of immigrants and the Canadian-born population. Multivariate analyses were used to examine the determinants of these health outcomes. Two models were used (one pooled for immigrants and non-immigrants, one immigrant only). Findings indicated that, with the exception of the most recent arrivals, immigrants reported worse health status (poor SAH, and lower HUI) relative to the Canadian-born population with significant declines in longer-term cohorts. Region of origin (European), income (low), gender (female), age (older), and race (White) were associated with poorer health status. There were similarities and differences in the determinants of health status between pooled and immigrant-only models.

Using longitudinal data from the 1994/5–2000/01 NPHS, Newbold (2005a) assessed changes in the SAH in four arrival cohorts over time. Proportional hazards models were used to evaluate the risk of transitioning to poor health. Findings showed that all immigrant cohorts rated their health as worse than the Canadian-born population and there was evidence of declines in SAH in every cohort. Factors associated with declines in health status in the pooled model were: gender (male), age, race (Black), language spoken (English/French), income (low), unemployment and health risk behaviours (for example, smoking, drinking). Although nativity was not a significant predictor of SAH, with the inclusion of interaction terms for gender, nativity and income, findings suggested that female immigrants and low-income immigrants were at greatest risk of transitioning to poor health status.

Newbold (2005b) used the same database described above to also examine factors associated with transitioning to poor health using pooled and immigrant-only models. Again, all cohorts experienced declines in SAH, but these were most apparent for recent immigrants. When determinants of SAH were examined in a pooled model, there were no significant differences in how immigrants and the Canadian-born population rated their health status. Instead, results were mostly
consistent with the determinants of health (DOH) framework. Newbold (2005a, 2005b) suggested, furthermore, that the healthy immigrant effect might be more perceived than real, at least for SAH, and it may well be associated with the acculturation process. A similar conclusion was reached by McDonald and Kennedy (2004) who found stronger evidence of the healthy immigrant effect for chronic conditions than for SAH.

Ng et al. (2005) used the same database as Newbold (2005a, 2005b) to examine factors associated with immigrants transitioning to poor health status, but also included a variable to distinguish between European and non-European immigrants. They found that recent non-European immigrants were twice as likely as Europeans to experience declines in SAH. Changes in health status could not be explained by the adoption of smoking, but there was evidence of both increased inactivity and obesity among recent non-European immigrants.

Chronic Conditions

Many of the above-cited studies also used population surveys to examine the prevalence of chronic diseases among immigrants and the Canadian-born population. Pérez (2002) used the CCHS to compare the health of immigrants of varying lengths of stay in Canada (6 groups) with the Canadian-born population for chronic conditions and specific chronic conditions (coronary heart disease (CHD), diabetes, hypertension, and cancers). The prevalence of chronic conditions was significantly lower among immigrants compared to the Canadian-born, and adjustment for age, education, and income widened the gap. Among immigrants, the odds ratio (OR) of reporting a chronic condition increased steadily, with immigrants who had resided in Canada for over 30 years approximating the Canadian-born rates. Patterns were less clear for specific conditions, particularly by length of stay. Although diabetes and hypertension rates were significantly lower among recent immigrants and increased over time, after adjustment, the relative advantage for recent immigrants disappeared. However, the rates of diabetes for non-recent immigrant men and women (20-29 years in Canada) after adjustment were significantly higher than for the Canadian-born population. Recent immigrant men, after adjustment, experienced a significantly lower risk of heart disease compared to Canadian-born men and recent female immigrants rates (0-19 years in Canada), after adjustment, experienced significantly lower cancer rates.

Similar findings were reported by Newbold (2005a, 2005b) and McDonald and Kennedy (2004). In fact, MacDonald and Kennedy suggested that year of arrival and region of origin may be important determinants of health. Most of the specific chronic conditions examined were lower for recent immigrant men and women compared to the Canadian-born, and increased over time, with some exceptions (for example, asthma, migraines, hypertension).
Ethnicity and Health Status

Although beyond the scope of this literature review, three studies used population-based surveys to examine racial/ethnic variations in health status and whether observed variations could be explained by structural or health-related behavioural factors. This is a vastly under-researched area in Canada as compared with the United States.

Prus and Lin (2005), in a report prepared for SEDAP (Social and Economic Dimensions of a Aging Population) at McMaster University, examined variations in health status among 21 ethnocultural groups in Canada using data from the 2000/1 CCHS. Health status variables included SAH, HUI, and activity limitations. Regression models were prepared for each outcome. Findings suggested that there were significant differences in reported health status by ethnicity, with visible-minority ethno-cultural groups reporting better health status than non-visible minority groups. Health differences between ethnic and racial groups were partly attributable to social structural variables and behavioural factors, the former being more important, but there were several unexpected findings. For example, some visible-minority groups, such as Filipinos, Koreans, Blacks, and Latinos, demonstrated better health outcomes than other visible-minority groups. The mediating effects of social and behavioural variables accounted for much of the health advantage of certain visible minority groups (for example, Filipinos, Blacks, and Latinos), but for less of the health disadvantage experienced by non-visible minorities, such as the Jewish and South/East European ethnic groups. The authors concluded that there remain many unmeasured factors that impact on health, including social support, ethnic identity and self-esteem.

Wu and Schimmele (2005) also were interested in examining racial and ethnic variation in health status among 13 groups. In their study, the used data from the 1996/7 NPHS. Health status variables included HUI and SAH. Regression models were prepared for each outcome, controlling for socio-economic status (SES) and health risk behaviours. Findings varied for HUI and SAH, with some contrasts observed. Some ethnic and racial groups experienced better functional health compared with the sample average (for example, South Asian, Black, Latin American, English). Some experienced worse functional health (for example, Aboriginal, Jewish, mixed racial groups). Similar differences persisted among groups reporting better SAH (for example, Black, French, English) and worse SAH (for example, East and Southeast Asian, Aboriginal). The mediating effect of SES was only observed for two ethnic groups. In contrast to the US, Afro-Canadians had superior functional health and SAH, regardless of SES and health behaviours.

Kopec et al. (2001) examined differences in health status across seven cultural groups in Canada, defined by place of birth and language, using data from the 1994/5 NPHS. The HUI scores were used to measure health and dysfunction. Findings indicated differences in the age-standardized prevalence of dysfunction between groups (for example, highest in French Canadians, lowest for English-speaking immigrants). After adjusting for the presence of chronic conditions, the odds of being unhealthy were significantly reduced in Asian immigrants, non-English immigrants, and bilingual Canadians. Other variations were observed in the age-standardized prevalence of emotion,
cognition and pain. The authors questioned the cross-cultural validity of the HUI, and suggested that there may be ethno-cultural differences in perceptions of health that influence reporting of pain and mental health problems. Still, they concluded that socioeconomic factors and the presence of chronic illnesses were not sufficient to explain variations in HUI across cultural groups.

**Immigrant Sub-Groups: Seniors**

Prior to 2001, very little research had examined the health and health needs of Canadian immigrant seniors. Previous research had produced inconsistent results with respect to whether older immigrants experienced better or worse health status compared to their Canadian-born counterparts. Newbold (2005b) suggested that older immigrants were more likely to transition to poor health despite reduced rates of hospitalization and increased barriers to help. To further explore this issue, CCHS data were used to compare the health status of older immigrants (55+ years) with Canadian-born seniors and to identify factors associated with health status (Newbold and Filice 2006). Health status variables included SAH, HUI3 and the presence of chronic conditions. Pooled and immigrant-only models logistic analyses were performed. The crude prevalence rates for all health outcomes were similar for immigrant seniors compared to the Canadian-born seniors, however females immigrants experienced poorer health for all outcomes compared to the Canadian-born. Similar proportions of immigrants and Canadian-born reported chronic conditions, but there were differences by condition (e.g., immigrants reported less asthma, cataracts, emphysema, heart disease) and age group. After adjustment for determinants of health, immigrant seniors were no more likely to experience poor SAH or chronic conditions than the Canadian-born; however; immigrant seniors were more likely to have lower HUI scores. The authors questioned whether determinants of health were consistent in the immigrant and the Canadian-born population and highlighted the need for more research on interactions with gender.

Gee et al. (2004) used data from the 2000/01 CCHS to examine the healthy immigrant effect in mid (45-64 year) and older (65+) immigrants. Health status variables included SAH, HUI, and activity limitations. Logistic regression was used to examine the relationship between length of stay and health status, controlling for determinants of health. There was strong evidence of a healthy immigrant effect for immigrants 45-64 years of age, particularly among recent immigrants. However, the health of recent older immigrants was similar to the Canadian-born population. For certain outcomes (for example, activity limitations and SAH), older immigrants were at a disadvantage. Findings suggested that immigrant adults have differential health needs. The authors speculated that older immigrants from Asia may experience nutritional deficiencies, post-migration (Johnson and Garcia 2003).
Immigrant Sub-Groups: Women

Prior to 2001, few studies used population-based surveys to specifically examine Canadian immigrant women’s health status. All of the studies reviewed above examined health outcomes for both males and females. Newbold and Danforth (2003) found that female immigrants were significantly more likely than male immigrants to rate their health poorly and to report worse states of health. However, gender (female) was not a significant predictor of the SAH or HUI of immigrants. Although males were found to be at greater risk than females of transitioning to poor health, there was a significant interaction between female gender and nativity that suggested that female immigrants were at a very high risk of declining health status (Newbold 2005a).

Vissandjee et al. (2004) used the 2000/01 CCHS to examine the healthy immigrant effect among immigrant women of four different ethnic origins in Canada (Western European, Chinese, South Asian, and Black). They were also interested in examining factors associated with immigrant women’s health, as measured by SAH and self-reported chronic conditions. Logistic regression models suggested that immigrant women in Canada for less than two years were less likely to report poor health as compared to with Canadian-born women, however this health advantaged decreased over time such that immigrant women who were in Canada more than 10 years were more likely to report poor health than the Canadian-born group. In contrast, the health advantage experienced by immigrant men wore out after between 2 and 9 years. Although recent immigrant women were significantly less likely to report chronic conditions than Canadian-born women, this health disadvantage decreased with time spent in Canada. Differences in both outcomes were observed by ethnic origin. Controlling for confounders, South Asian women were more likely than Canadian women to report poor health, and South Asian and Chinese women were less likely to report chronic conditions.

Two qualitative studies examined the health experiences of immigrant women. Meadows et al. (2001) focused on the health experiences of 41 mid-life immigrant women who immigrated as adults. Eleven of the women interviewed (approximately one quarter) reported experiencing a deterioration in their health status since arrival. This was attributed to physical and mental factors. Five reported improved health. Dyck (2004) conducted interviews with 10 Sikh women to explore how good health is maintained. Most women did not report changes in health status, but described illnesses associated with work and the new environment.

Summary and Research Gaps

The studies reviewed in this section provide additional evidence of a healthy immigrant effect in Canada, but this was more so for chronic conditions than for SAH. The studies reviewed identified different groups at risk, depending on the population sub-groups and health outcomes examined. For example, some findings suggested that immigrant sub-groups such as seniors (65+) and non-recent
immigrant women experienced a health disadvantage as compared with their Canadian-born counterparts. New research on health transitions suggested that immigrant women, low-income immigrants, and recent non-European immigrants were at an increased risk of transitioning to poor health. However, data on ethnic differences in health outcomes indicated that recent, visible-minority, and non-English-speaking immigrants experienced a health advantage. These findings explain why, in models examining ethnic differences and immigrant differences, health outcomes could only partially be explained by conventional determinants of health (for example, social structural and behavioural variables), and highlight the need for more integrated research. More research is needed on immigrant determinants of health, particularly the role of protective factors such as ethnic identity, social supports and resiliency.

A recently released US report has shed some light on the current state of knowledge in that country pertaining to immigrant health that can be used to inform research directions (Dey et al. 2006). This report used data from national health interviews (1998-2003) to examine differences in physical health and mental health in foreign-born and US-born adults in four racial/ethnic groups. Within the foreign-born population, health outcomes were also examined by length of stay (less than 5 years, 5+ years). For most outcomes, differences were observed by nativity and length of stay within the four racial/ethnic groups. Furthermore, for most racial/ethnic groups, health outcomes and health risk factors were better among the foreign-born compared to the US-born population (except Blacks), and, in certain groups (for example, Hispanic), risk factors increased with length of stay. The authors highlighted the importance of nativity to explain differences between racial/ethnic groups since acculturation processes may differ for different ethnic groups. Unlike the US, few second-generation studies have been conducted in Canada that examine changes in health status. Generational studies can also be used to examine the interactions between gender, ethnicity, and migration.

Findings further suggested that there are differences in perceptions of good health. For example, Newbold (2005a, 2005b) discussed the possibility that differences in SAH between immigrants and the Canadian-born population might be more perceived than real. Moreover, Kopec et al. (2001) have suggested that ethno-cultural differences in perceptions of health influence the reporting of pain and mental health problems. Little research has been conducted, however, on the cross-cultural validity of health outcome measures.

Cancer

Prior to 2001, most of the literature suggested that immigrants’ cancer rates shifted towards the rates of the host population. Convergence was most evident in the case of migration from low-risk countries to high-risk countries. There was, however, some evidence of variation according to cancer site. Evidence from generational studies suggested that immigrants’ offspring experienced a rate of cancer risk somewhere in between that of the native-born of the destination country and their immigrant parents, and that the risk increased over several generations. Among specific ethnic
groups, Chinese and South Asian cancer rates were generally lower than in the Canadian-born population.

Since 2001, four Canadian studies relating to immigration and cancer have been published; two used mortality data, and two used Cancer Registry data. Other population-based studies (for example, Newbold 2005a and 2005b; MacDonald and Kennedy 2004) included cancer among self-reported chronic conditions, but did not examine cancer sites. Pérez (2002) reported that recent female immigrants rates (0-19 years in Canada), experienced significantly lower rates of cancer than non-recent and Canadian-born women, but, again, did not examine differences by cancer site.

As previously noted, Trovato (2003) examined mortality in 19 immigrant groups and the Canadian-born population during the period 1990-1992. Stomach cancer, lung cancer, and other cancers were among the outcomes examined. He found that cancer mortality was lower for all immigrants groups, particularly the New Wave groups, as compared with their home countries and the Canadian-born population. However, immigrant males and females experienced higher death rates from stomach cancer, a difference Trovato (2003) attributed to dietary changes.

As previously reported, DesMeules et al. (2005) examined mortality patterns, including cancer, using landing data linked to the Canadian Mortality Database (1980–98). The ICD-9 categories examined for cancer were: all site cancer, nasopharyngeal cancer, and liver cancer. Although standardized mortality ratios (SMRs) for the all site cancer were lower for refugees and immigrants as compared with the general population, the SMRs for nasopharyngeal cancer were higher among male immigrants, and the SMRs for liver cancer were higher among male and female immigrants, particularly those from North East Asia, and refugee males, compared to the general population. Cancer mortality was not examined, however, by either length of stay or generational status. Higher rates of liver and nasopharyngeal cancer among Asian immigrants had been reported previously. According to DesMeules et al., risk factors for nasopharyngeal cancer include the consumption of salt-preserved foods, exposure to the Epstein-Barr virus, and genetic susceptibility. Higher rates of liver cancer were consistent with higher rates of hepatitis among Asian populations, molds on foods, and parasitic infections.

Two studies used cancer registry data to examine the incidence of cancer among Canadians of Chinese origin. Luo et al. (2004) examined the age-standardized incidence rates and ratios related to 14 cancer sites using data from the Alberta Cancer Registry (1974-1993) and IARC (for Shanghai China). A review of the data on each cancer site is beyond the scope of this report, but certain patterns were identified. For cancers that were relatively more common in China (for example, nasopharynx, stomach, liver, esophagus), the age-standardized incidence rates (ASIRs) for Chinese immigrants were higher (with the exception of stomach cancer) than among the Canadian-born population. For cancers that were relatively uncommon in China (for example, prostate, breast), the ASIRs were higher among Chinese immigrants but lower than among the Canadian-born population. The authors speculated that much of the liver cancer risk likely was due to Hepatitis B infection in early life, and was little affected by changes following migration. Similarly, early life events may be
protective for prostate and breast cancer rates among Chinese immigrants. Again, cancer mortality could not be examined by either length of stay or generational status in this study.

Au et al. (2004) examined the incidence of Hodgkin’s lymphoma among Chinese immigrants in BC using data from both the BC cancer registry (1970-1997) and Hong Kong. Previous research had suggested that the incidence of Hodgkin’s lymphoma was higher in Western countries as compared with those in Asia, South America, and Africa. Findings indicated that the incidence of Hodgkin’s disease was lower among Chinese immigrants to BC, but three times higher than in China/Hong Kong. The authors suggested that genetic and environmental factors influence the incidence of cancers, such as Hodgkin’s lymphoma, and stomach, colon, breast, and prostate cancers, and that the latter may produce changes in a relatively short period of time.

Summary and Research Gaps

The studies reviewed suggested that cancer rates among Canadian immigrants are subject to change following migration. Of particular concern are high rates of stomach, nasopharyngeal, and liver cancers that persist following migration, and rates of prostate and breast cancer that increase following migration. There was also evidence of differences in cancer rates by country/region of origin, but little research in this regard has been conducted in communities other than the Chinese-Canadian. More research is needed on the determinants of cancer in Canadian immigrants, both in the countries of origin and in Canada. Such research should examine genetic predisposition, factors associated with lasting immunity, and environmental, structural and acculturative changes following migration that may increase and/or reduce the risk of contracting cancer in any of its various forms.

Heart Disease

Prior to 2001, few studies investigated changes in rates of heart disease among immigrants to Canada, and most of these examined ischemic heart disease. Among the studies reviewed, findings suggested that immigrants had lower rates of heart disease mortality than the Canadian-born population, but differences did exist by gender and ethnicity. For example, rates of cardiovascular mortality were higher for South Asian women than for Canadian women of European descent. Canadian women of Chinese descent, however, experienced higher mortality from stroke than Canadian women of European descent.

Since 2001, limited information on hypertension and heart disease has been available from population-based studies. For reported heart disease, Pérez (2002) found that recent immigrant men (0-19 years) experienced a lower risk of heart disease compared to Canadian-born men. After ten years, however, no differences were observed in the rates of reported heart disease compared to Canadian-born (Newbold and Danforth 2003). Newbold and Danforth (2003) also found reporting
rates for hypertension and heart disease were lower for immigrants born in ‘Other countries’ as compared with those for immigrants born in the Americas or Europe.

Hypertension rates were significantly lower among recent immigrants, but they increased over time. After adjustment, however, the relative advantage for recent immigrants disappeared (Pérez 2002). McDonald and Kennedy (2004) reported gender differences in the incidence of hypertension in that rates were lower among immigrant men, but comparable among immigrant women to the Canadian-born population. Neither of these studies examined ethnic differences in hypertension rates.

Most of the current work in this area, such as Khan (personal communication regarding a proposal pending funding) and Anand et al. (2000), has been focused on ethnic differences in heart disease and the risk factors for heart disease, notably hypertension. The work of Anand et al. (2000) was excluded from the previous report because their primary focus was on ethnicity, not migration. Their SHARE project is a prospective investigation (since 1996) of atherosclerosis and cardiovascular disease and its determinants in three ethnic groups in Canada: South Asians, Chinese, and Europeans. Findings to date have suggested that South Asian participants had a higher prevalence of cardiovascular disease than European and Chinese participants, and experienced an increased risk of heart disease, even after adjustment for risk factors. Risk factors for heart disease were also compared among the three groups. South Asians had more plasma and glucose abnormalities than the other ethnic groups, and possibly as-of-yet-undiscovered risk factors.

Anand et al. (2006) also examined the prevalence of a marker for heart disease (C-reactive protein or CRP) among Canadians of different ethnic backgrounds. They found that the prevalence rates of CRP were highest among Aboriginals, followed by South Asians, Europeans, and Chinese Canadians. Prevalence rates were generally higher among females compared to males, but not for all ethnic groups.

Tso and Moe (2002) used clinical data to compare risk factors for heart disease in Chinese and Caucasian Canadians. Although coronary artery disease (CAD) and most forms of heart disease were less frequent among Chinese patients as compared with Caucasian patients, selected modifiable risk factors for heart disease, such as hypertension and hypercholesterolemia, were equally frequent. Other studies (not Canadian) have suggested that Chinese and South Asian men and women may have a greater prevalence of hypertension compared to the general population.

Finally, Kaplan et al. (2002) used data from the 1996 NPHS to examine the prevalence of hypertension among Asian immigrants by length of stay in Canada. They found that, after adjustment, the prevalence of hypertension increased in each of their three immigrant cohorts.
Summary and Research Gaps

The population-based studies reviewed in this section suggested that, although rates of heart disease were initially lower among recent immigrants as a whole, there was little evidence to suggest that rates of hypertension or heart disease increased over time. However, this situation was different when ethnic origin was taken into account. Research on Canadians of South Asian, Chinese, and European origins suggested that South Asians, particularly females, have tended to experience an increased risk of heart disease as well as an increased risk of hypertension with increasing length of stay in Canada. Unfortunately, little of the research thus far has included measure of gender, ethnicity, and migration, which would enable the identification of other possible at-risk populations.

Other research has suggested that even though rates of heart disease were lower among Canadian immigrants as compared with the Canadian-born population, many risk factors for heart disease among Chinese Canadians were comparable. Although determinants of heart disease were not the focus of this report, these findings suggest the need for more research to understand both genetic predisposition to, and changes in the determinants of, heart disease because together these may contribute to increases in heart disease morbidity and mortality as the immigrant population ages. Moreover, such considerations also need to be studied for members of the second generation. For example, Singh and Miller (2004) recently reported that Black and Hispanic immigrants to the US experienced lower rates of heart disease mortality as compared with their US-born Black and Hispanic counterparts. More integrated data clearly are needed concerning the determinants of mortality in immigrant sub-groups and the intersections between ethnicity and migration.

Diabetes

Prior to 2001, few Canadian or international studies specifically focused on changing patterns of diabetes in immigrant populations. Some research, however, had addressed the determinants of diabetes. For example, analysis of NPHS data found that the prevalence of excess weight (body mass index (BMI) > 25) among immigrants increased with length of stay in Canada for both males and females. Recent female and Asian male immigrants (less than 5 years) were less likely to be obese than their Canadian born counterparts (Cairney and Ostbye 1999). Pilot interviews conducted with South Asian and Chinese immigrants identified loss of social support, increased work burden and decline in status as significant contributors to their onset of diabetes (Spitzer 2003).

Despite the fact that diabetes is emerging as a global health issue, little Canadian research has addressed diabetes in Canadian immigrants. Kelly and Booth (2004) conducted a literature review on ethnicity and diabetes in Canada. They cited findings from the SHARE project that indicated that rates of diabetes and obesity were higher among South Asians compared to Canadians of Chinese and European origin. They also cited findings from the Ontario Health Survey showing that a higher proportion of participants who had diabetes reported their ethnic origin to be South or
West Asian, Aboriginal, Black, Latin American, or another non-White category; however, similar findings were not observed using data from the 2000/01 CCHS.

In another study, Ng et al. (2002) found the prevalence of diabetes was significantly lower among recent immigrants and increased over time, but, after adjustment, the relative advantage for recent immigrants disappeared. However, the rates of diabetes for non-recent immigrant men and women (20-29 years in Canada), even after adjustment, were significantly higher than for the Canadian-born population. Some studies (both Canadian and non-Canadian) have indicated that Chinese and South Asian men and women may have a greater prevalence of diabetes as compared with the general population, although prevalence rates vary considerably (Anand et al. 2000).

**Summary and Research Gaps**

The studies reviewed suggest three themes: 1) rates of diabetes among non-recent immigrants may be surpassing Canadian-born rates, 2) there are ethnic differences in the prevalence of diabetes, and 3) rates of obesity are increasing among Canadian immigrants. There is clearly a need for more integrated research on the prevalence of diabetes and its determinants (for example, obesity, the role of chronic stress, changes in socioeconomic status, and changes in health behaviours) among Canadian immigrants and Canadians of different ethnic origins.

**Disability/Arthritis**

There has been very little research on immigration and disability. Most of the Canadian research in this area has been focused on ethnicity, not immigrant status. For example, Mackelvie et al. (2001) examined risk factors for osteoporosis between Asian and Caucasian girls and suggested that Asian girls may be at a disadvantage for bone health. Wang et al. (2000) examined the prevalence of arthritis by ethnic origin and found that the age-adjusted prevalence of arthritis was lower for Asians compared to Europeans and other ethnic groups. Finally, Stienstra (2002) and Dossa (2005) explored how constructs such as disability, race/ethnicity, and gender intersect.

**Mental Health**

In the previous report, the literature reviewed provided only mixed evidence on the “healthy immigrant effect” with respect to mental health (Hyman 2001). Findings from Beiser’s Refugee Resettlement Project (Beiser et al. 1994; Beiser and Hyman 1997; Beiser 1999) suggested that, after an initial risk period, immigrant mental health improved over time and often persisted into the second generation. However, other researchers have suggested that certain sub-groups experienced
an increased mental health risk following migration. These included refugees (both children and adults), seniors, and women (Canadian Task Force on Mental Health Issues Affecting Immigrants and Refugees 1988).

Since 2001, almost a third of the articles reviewed addressed mental health issues (including determinants of mental health and health service utilization) among Canadian immigrants and refugees. Included here are studies examining mental health outcomes including mortality from suicide. Some studies used population-based sources of data and others used mortality data and community-specific data. As with the literature on health status, research aiming to understand ethnic (as opposed to immigration-based) variations in mental health status was included (see, for example, Wu et al. 2003). A large proportion of studies focused on immigrant and refugee youth, relatively fewer examined adult refugees, women, and seniors.

Ali (2002) used data from the 2000/01 CCHS to examine the healthy immigrant effect among Canadian immigrants in terms of mental health. Six immigrant cohorts were defined. The mental health outcomes included age- and sex-adjusted prevalence rates for depression and alcohol dependence. In that study, multivariate logistic regression models were used to identify factors associated with mental health outcomes. Ali found that immigrants had significantly lower rates of depression and alcohol dependence than the Canadian-born population, and the effect was strongest among recent immigrants (0-9 years) and immigrants from South and Central America, Africa, and Asia. After adjustment for age, length of stay and other demographic characteristics (but not region of origin), the risk of experiencing depression was lower for recent immigrants (0-9 years) only. Immigrants who had resided in Canada for 30 or more years no longer had a reduced risk of alcohol dependence. In his analysis of this study, Beiser (2005) critiqued the cross-sectional nature of this dataset, but still found the findings plausible due to the rigorous selection processes and since aging is as a potent risk factor for mental health among immigrants.

Malenfant (2004) used data from Canadian Vital Statistics (1991 and 1996) and the World Health Organization (WHO) to compare age-standardized suicide rates among immigrants, the Canadian-born population, and various countries of birth. He found that suicide rates for male and female immigrants were approximately half those of the Canadian-born population for both time periods. They were still generally lower among immigrants for most countries of birth, but there were some exceptions (for example, Poland, Germany). According to Malenfant, suicide rates for immigrants to Canada often were closer to those reported in their countries of origin. Interestingly, in Canada the risk of suicide was highest at ages 35-44, and then declined. The risk of suicide among Canadian immigrants, however, increased with age, and was highest among the elderly. This was similar to patterns observed in other countries. Suicide was less prevalent among immigrants residing in Montreal, Toronto, and Vancouver. Findings were attributed to close communities ties, cultural traits that remain similar to countries of birth and selection.

Kennedy et al. (2005) examined acculturation and suicide ideation among 1,135 undergraduates of Chinese, Indo-Asian, and European origins. They found that psycho-social variables associated with suicide were similar across ethnic groups and unrelated to generation.
Wu et al. (2003) were interested in exploring whether differences in mental health between racial and ethnic groups were ‘real,’ or whether they could be explained by socioeconomic factors, social resource factors, or interactions between the two. They used data from the 1996/7 NPHS to examine differences in depression and depressive symptoms among 12 ethnic groups, and to evaluate the utility of multivariate models that included risk factors for depression. Findings suggested that Canadians of East and Southeast Asian, Chinese, South Asian, and Black ethnic origins experienced a lower risk of depression as compared with English Canadians. Depressive episodes and depressive symptoms varied by ethnicity, even after controlling for SES and social support. The authors speculated that common risk factors for depression were not always clear cut across ethnic groups, and more research is needed on how cultural factors, such as ethnic identity and coping mechanisms, affect stress-reactivity. Although beyond the scope of this review, there also is some literature that suggests that ethnic identity and coping strategies may buffer the effect of discrimination on depression (Mossakowski 2003; Noh et al. 1999).

**Immigrant Sub-Groups: Seniors**

Two studies specifically focused on the mental health of Chinese seniors because US studies and a Medline search by Lai (2004a) suggested that this group reported less well-being and more depression than seniors in the general population. Lai (2004a) used data from the Chinese Health Survey (conducted in 2000/01 with 2,272 Chinese seniors 55+) to examine the prevalence of depressive symptoms among Chinese seniors 65+ and found that 24.2 per cent of Chinese seniors (versus 10-15 per cent in the general senior population) had at least one symptom of depression. Cultural barriers, higher cultural values, and socio-demographic factors were associated with an increased risk of being depressed. In a related study, Lai (2004b) used data from the Chinese Health Survey and the Canadian Osteoporosis Study to compare the health of Chinese seniors with their Canadian-born counterparts. Health status in this study was measured using SF-36 scores. Chinese seniors of all ages reported significantly better physical health, but poorer mental health, than the Canadian-born population. Chinese women reported poorer health than Chinese men. Ethnic and gender differences could not be explained using the available variables. The author speculated that older Chinese women may have been poorer.

Oxman-Martinez et al. (in press) recently examined the cultural variability in the expression of depression and emotional distress in a sample of caregivers to Chinese, Pakistani, and Lebanese seniors. Findings suggest that there is a risk of under-diagnosis or mis-diagnosis of depression in Canadian non-Western seniors because of major cultural differences in perceptions of aging, depression, and emotional distress.
**Immigrant Sub-Groups: Women**

No studies specifically examined the prevalence of mental health problems among Canadian immigrant women, outside of the work of Oxman-Martinez et al. (in press) and Gagnon (2002) who examined pre- and post-partum depression (not within the scope of this report). Rather, most of the literature reviewed explored how immigrant women conceptualize mental health, highlighting the importance of this information to direct prevention and practice. In their review of the literature, Ahmad et al. (2004) cited findings suggesting that South Asian women were at particular risk of acculturative stress, and experienced higher levels of anxiety and depressive symptoms and higher suicide rates as compared with their male counterparts and women in the general population. Their study explored how South Asian women in Canada appraised mental health and adopted coping strategies. In another study, Wong and Tsang (2004) explored Asian women’s perceptions of mental health, challenging predominant conceptualizations of mental health in America and existing stereotypes of Asian women in terms of family roles and sacrifices.

**Immigrant Sub-Groups: Children and Youth**

Previous research on the mental health of immigrant children has been mixed in its conclusions. Some studies have suggested that immigrant children experience an increased mental health problems due to predisposition or exposure to environmental stress, while others have found either no differences or better mental health.

Two databases can be used to examine the health and development of Canadian children: the National Longitudinal Survey of Children and Youth (NLSCY) and the New Canadian Children and Youth Study (NCCYS). The NLSCY is a longitudinal national database examining the health, mental health, and development of children and youth. Beiser et al. (2005) critiqued the ability of the NLSCY to examine immigrant children. Although a national sample of over 23,000 children should have included 4,600 immigrant and refugee children, this group was vastly under sampled in the NLSCY. As a consequence, Beiser and his colleagues recommended longitudinal research on immigrant children that considered the host of contingencies affecting their mental health, particularly migrant status; age at migration; pre- and post-migration stressors, including discrimination; and personal and social resources.

Beiser et al. (2002) used data from the NLSCY to examine the differential effects of poverty on the mental health of immigrant children (N = 684), Canadian-born children of immigrant parents (N = 2,573), and children of non-immigrant parents (N = 10,092). Even though immigrant children were more than twice as likely to live in poor families, they experienced fewer emotional and behavioural problems than their Canadian-born counterparts.
On the other hand, To et al. (2004) used data from the 1994/5 NPHS and 1996/7 NLSCY to examine social and environmental determinants of poor development attainment (PDA) among preschool children aged 1-5 years. A cohort of 4,987 children was followed over a 2-year period – 4.6 per cent were found to have PDA. Having a mother who was an immigrant was determined to be a risk factor for PDA, along with gender (male), maternal depression, low maternal education, and low income.

The NCCYS is a longitudinal study of more than 4,000 immigrant and refugee children living in six Canadian cities. Its objectives are:

1. To compare the physical health, mental health, and functioning of immigrant and refugee children in Canada with the majority-culture children;

2. To identify and describe psycho-social developmental issues common to all children, as well as those specific to immigrant and refugee populations;

3. To investigate possible differences in immigrant and refugee children’s health and well-being;

4. To compare mental-health risk factors for immigrant and refugee children with those identified by the NLSCY as pertaining to all children;

5. To investigate the effects of visible-minority status on immigrant and refugee children’s integration, development, and mental health;

6. To investigate, both cross-sectionally and over time, the effects of the like-ethnic community, and of the larger receiving society on children’s integration and mental health; and

7. To describe the evolution of personal identity, and to investigate ethnic community, family, and peer effects on this evolution.

The national sample included children aged 4 - 6, and 11 - 13 from seventeen different ethnocultural communities – Mainland Chinese, Hong Kong Chinese, Filipino, Haitian, Lebanese, Ethiopian, Somali, Polish, Serbian, Jamaican, Kurdish, Vietnamese, Sri Lankan, El Salvadoran, Afghani, Iranian, and Indian. Data from the NCCYS are forthcoming and should resolve inconsistencies in findings on the mental health of immigrant and refugee children.

Some work on the mental health of newcomer youth has being conducted since 2001. For example, studies by Khanlou et al. (2002) and Khanlou and Crawford (2006) have highlighted the importance of self-esteem and ethnic identity.
Immigrant Sub-Groups: Refugees - Adults

Canadian studies examining the mental health of refugees have been largely community specific. For example, the Refugee Resettlement Project (RRP) was a ten-year longitudinal study of the resettlement and mental health of Southeast Asian refugees in Canada. Previously reported results suggested that certain phases of resettlement are characterized by greater mental health risk. After a decade, depression rates were far lower in the study population than in the general population (Beiser et al. 1994; Beiser and Hyman 1997; Beiser 1999). More recent findings from this project examined determinants of mental health, such as ethnic identity, resettlement stress, and temporal perspectives (Beiser et al. 2002; Beiser and Wickama 2004).

In another study, Redwood-Campbell et al. (2003) compared the mental health and adaptation of two different refugee groups, Kosovars and Czech Roma, in Hamilton, Ontario. These groups were chosen because they represented two different types of refugee resettlement processes, the former involving a coordinated effort and the latter, self-selection. Fifty families were interviewed in each group. Findings indicated that 21.7 per cent of Kosovars experienced post-traumatic stress disorder (PTSD), compared with none of the Roma. Indeed, Kosovars were more likely than Czech Roma to report fair or poor adaptation to Canada, even after controlling for age and PTSD. The authors speculated that this was because Kosovars were different from the usual healthy immigrants to Canada – they were older, less educated, from rural areas, and had experienced more pre-migration hardship.

The Pathways and Barriers to Health Care for Ethiopians in Toronto project was initiated in 1997 to examine mental health and health care utilization among a random sample of 342 Ethiopian immigrants and refugees. Study variables included mental health, pre-migration and post-migration stressors, and personal and social resources. Findings reported by Fenta et al. (2004) indicated that the lifetime prevalence of depression among sample members was 9.8 per cent, only slightly higher than that for the Ontario population as a whole. However, this prevalence rate was approximately three times higher than that for Southern Ethiopia. The risk of developing depression was low during the first few years of resettlement, but increased after a few years and reached its maximum at approximately 15 years post-migration. Contrary to other studies, rates of depression were higher among males than females. Multivariate analyses were used to identify factors associated with lifetime and post-migration incidence of depression. Factors associated with a lifetime prevalence of depression included post-migration stressful life events, refugee camp internment, no clear motive for migration and low Ethiopian identity scores. In addition to these variables, younger age, pre-migration trauma, and lower levels of education were associated with an increased risk of depression post-migration. Findings raise questions about the resiliency of immigrants who do not have a clear motive for migration, the mental health advantage of women, the negative impact of post-migration stresses, the positive role of ethnic identity, and the long-term effects of pre-migration trauma.

The Tamil community in Toronto initiated a similar project in 1999. A community sample of 1,110 Tamil adults was interviewed about their health, mental health, pre-migration trauma, and
post-migration resettlement experiences. Preliminary findings indicated that one-third of respondents had experienced traumatic events, and rates were higher for women than for men. Among those, 36.2 per cent qualified for a diagnosis of PTSD. (Beiser et al. 2003). For this group, neither changes in mental health over time nor the factors associated with mental health have been examined to date.

Immigrants to Canada fall into several categories, depending on their reasons for immigrating. Sometimes these categories get blurred, for example, when family members of refugees reunite. Moreover, it is frequently assumed that refugees have experienced more political violence than other classes of immigrants. Using data from a population-based survey of immigrants to Quebec (1998-9), Rousseau and Drapeau (2004) explored the question of whether pre-migration exposure to political violence varied by immigration status at landing. Exposure and emotional distress were measured among immigrants originating from China/Hong Kong, Haiti, North Africa, and Latin America. Findings indicated that a high proportion of independent immigrants had been exposed to political violence. Furthermore, Rousseau and Drapeau found that mean levels of emotional distress did not vary across immigrant groups, and distress was associated with pre-migration exposure in most groups. These findings suggest that clinicians and service providers should not assume that independent immigrants have not been exposed to pre-migration violence.

**Immigrant Sub-Groups: Refugees - Youth**

Some of the previous literature reviewed suggested that Canadian refugee children and youth might be at higher risk of mental-health problems than other immigrant children and youth (see, for example, Tousignant 1997). However, several studies published by Rousseau and her colleagues have suggested this is not the case. For example, one such study compared emotional and behavioural problems of Cambodian, Central American, and Québécois youth (Grades 9 and 10) living in the Montreal area (Rousseau et al. 2000). Here, Rousseau and her colleagues found that the level of emotional and behavioural problems were lowest for the Central Americans and highest for the Québécois. According to this study, low SES in refugee families was not a major risk factor for mental-health problems, although there was an association between low income and introversion among the Central American youth in the sample.

In another study, Rousseau and Drapeau (2003) followed 57 young Cambodians and 45 native Quebeckers over a four-year period (1994-1998) to trace their passage from early to late adolescence. The purpose of this study was to examine associations between mental health symptoms and social adjustment. For the two groups under scrutiny, the profile of emotional and behavioural symptoms reported was similar, but the Québécois youth reported more risk behaviours. Associations between pre-migration violence and post-migration psycho-social adjustment also were examined in the Cambodian youth (Rousseau et al. 2003). The authors noted that association fluctuated over the four-year period, and adolescents in families that had been more exposed to violence reported more positive adjustment and self-esteem. This was attributed to higher parental expectations and more emphasis on the preservation of culture in homes where parents had
experienced a lot of pre-migration trauma. Finally, this research suggested that refugee adolescents should not be globally considered a group at-risk, and highlighted the need to further examine the resiliency of this group.

Rummens and Seat (2003) assessed the psychological impact of the 1999 Kosovo conflict on the mental health and well-being of Serbian children and youth in Toronto. Detailed questionnaires were administered to 80 children and their most knowledgeable parent. Findings indicated that 26.3 per cent of the children/youth interviewed met diagnostic criteria for PTSD as a direct result of the Kosovo conflict, even though they were in Canada. However, there were no differences in the prevalence of PTSD between children who had previous war trauma experience and those who had not.

Summary and Research Gaps

Overall, the literature reviewed in this section suggests that recent immigrants and immigrant children experienced better mental health than their Canadian-born counterparts, but it is unclear whether this health advantage persists over time. In fact, immigrant seniors and Chinese seniors may experience higher rates of depression than seniors in the general population. Other studies have suggested the need to focus research on other immigrant sub-groups, such as South Asian women, who may be at high risk of mental-health problems, but there has been little empirical evidence to support this. The tendency for research in this area to be ethno-specific limits the generalizability of findings to all immigrant groups and sub-groups.

The need for longitudinal studies is evident. For example, several studies in this category indicated that refugee youth experienced better mental health outcomes than their Canadian-born counterparts. Similar information soon should be available from the NCCYS.

Although the determinants of mental health were not the focus of this review, several of the studies examined suggested that ethnic identity, social support, coping strategies, and resettlement processes were critical variables to include in studies of immigrant and refugee mental health. However, in the case of refugee adults, pre-migration stresses continued to show a strong relationship to mental health post-migration. Other research is, therefore, necessary, and it should explore gender, ethnicity, and migration as intersecting determinants of mental health, including cultural differences in perceptions of mental health.
LIMITATIONS

This report strived to both review research on the health of Canadian immigrants and to identity research gaps with specific attention to the “healthy immigrant effect.” However, several limitations of these efforts must be identified:

- **Missing literature** – It is well-established that health and illness are socially and culturally constructed experiences. Many articles on migration and health appear in social science journals that focus on migration, gender and ethnicity issues, for example, *International Migration, Canadian Ethnic Studies, Canadian Women’s Studies*, which would not be captured in a Medline search.

- **Lack of data on non-status immigrants** – No studies were retrieved through Medline on immigrants without legal immigration papers. In Canada, estimates of non-status individuals range from 20,000 to 200,000 (OCASI 2006). Some studies have suggested that non-status migrants may be at particular high risk for negative health and mental health consequences, and that the precarious nature of such migrants’ lives may exacerbate existing health issues (Khanlou and Mill, 2005).

- **Lack of clarity in definitions** - The concepts of race, ethnicity, culture, and migration, were either poorly or mis-conceptualized in the research studies. “Ethnicity” was at times conflated with “race” or “country of origin.” There was similar confusion with respect to the construct of culture, wherein the terms “ethnicity” and “culture” tended to be used interchangeably. Although the term “visible minority” continues to be used by Canadian information systems, it is recognized that this terminology is subject to change and is being challenged. For example, many scholars are beginning to use the term “racialised” to define non-dominant ethno-racial communities who, through a process of racialisation, experience race as a key factor in their identity and experience barriers in accessing social, economic, political and cultural power (Galabuzi 2001). In Canada, ethnicity and race are not static and immutable entities. The fluidity and heterogeneity within groups often goes unrecognized.

- **Lack of consistency in measurement** – Studies used different variables to define race, ethnicity, culture, and migration and ethnic/immigrant sub-groups. Such inconsistencies contribute to inaccurate and irrelevant findings.

- **Lack of attention to intersectionality** – Even when concepts were defined, they were typically employed as independent variables, not integrated, multiple, and interactive variables. Intersectionality refers to the process of understanding the unique ways in which multiple identities join together to create varying degrees of privilege or penalty in different contexts (Razack, 1998). Similar findings were
discovered by Vissandjee et al. (forthcoming) in their recent meta-analysis of gender, ethnicity, and migration as determinants of women’s health.

- **Lack of comprehensive review of determinants of health** – The recently appointed WHO Commission on the Social Determinants of Health has established that “by far, the greatest share of health problems is attributable to broad social conditions” (Marmot 2005). It is difficult to draw conclusions about research gaps and future research directions without a comprehensive review of existing Canadian data on determinants of immigrant health, including health-service utilization.

Some of these limitations, especially those identified in points 2, 5, and 6, also are suggestive of future research directions.

**CONCLUDING THOUGHTS**

Although there remains evidence of the healthy immigrant effect in Canada, the effect was not equivalent for all immigrant sub-groups, and, to date, there has been little examination of intersectionality within and between groups along the lines of such variables as gender, ethnicity, and length of stay. Indeed, findings that existing measures of health determinants were inadequate to explain health disparities between immigrant sub-groups serve to suggest that more research is necessary on the social determinants of immigrant health, recognizing that these are often overlapping, intersecting, and dynamic. Determinations that some immigrant sub-groups (particularly certain ethnic groups) experienced a high risk of cancers, diabetes, and heart disease highlight the possible role of genetic predisposition, interacting with changing environmental or acculturative factors.

There remain many unanswered questions about the relationship between immigration and health in Canada. For example:

- Why do refugees experience an increased risk of mortality?
- Why do non-recent immigrants perceive their health as worse than the Canadian-born population?
- Why do visible minorities and recent immigrants perceive their health as better than the Canadian-born population?
- Is self-assessed health (SAH) as predictive of actual health among diverse population sub-groups as in the general population?
- Why do only certain immigrant sub-groups transition to poor health?
• What is the experience of Afro-Canadian immigrants, given the inconsistent findings uncovered in this literature review?

• What are the experiences of other immigrant groups whose health has not been examined?

• Why do Asian Canadians experience an increase in hypertension over time? Is this true of other immigrant sub-groups? Is this true of other immigrant sub-groups?

The literature reviewed in this paper, however, does seem to suggest that Canadian research on immigration and health is shifting away from understanding acculturation processes and towards an examination of ethnicity or genetic predisposition as predictors of immigrant health status. It could be argued, therefore, that ethnicity, like race or gender, is a socially constructed variable, and, genetic differences notwithstanding, these aspects of identity play a stronger role than biological endowment in determining the health status of immigrants and refugees to Canada.

On the other hand, it is well-established that employment and income are major determinants of health. Several recent reports have suggested that new immigrants to Canada are not catching up to their Canadian-born counterparts economically, as quickly as did previous immigrant cohorts (Lochhead 2003; McIsaac 2003; Simpson 2003). This may seriously exacerbate the “healthy immigrant effect” and will need more investigation over time.

FUTURE RESEARCH DIRECTIONS AND POLICY IMPLICATIONS

Some of these directions have not changed from those outlined in Hyman (2004). These include, for example, a need for:

• Longitudinal studies, to provide rich information on the health status and health determinants of immigrants over time. To date, much of the evidence for the healthy immigrant effect has come from cross-sectional studies and some of the limitations of these studies have been described. Longitudinal studies can control for cohort effects (for example, recent immigrants undergo screening that is more rigorous than previous immigrant cohorts, best immigrants leaving);

• Health research within immigrant subgroups to document and address community-specific health problems and needs;

• The use of participatory and multi-method studies, which can further the knowledge and understanding of health beliefs and behaviours within different immigrant groups; and
• Research that explores differences in perceptions and expressions of health and the equivalency of health measures across gender, ethnic, and immigrant sub-groups.

In addition, the current literature review also strongly suggests that more integrated research is critical. It was apparent from the findings that gender, ethnicity, and migration processes, such as length of stay, often have been examined as independent or control variables, and not from an integrated perspective. More integrated research would provide more robust information on how and why health disparities persist, particularly with respect to gender, ethnicity, and migration. Integrated research on the social determinants of health also would help to identify acculturative risk and protective factors associated with health status, such as resiliency.

There is also a definite need for more clarity in the conceptualization and operationalization of ethnicity, culture and migration processes (for example, ethnicity versus country of origin), that recognizes that these variables are not grounded in place, space, and time (Rummens 2003) and are shaped by other determinants of health.

Finally, there is a need for greater direction and knowledge transfer with respect to Canadian research on immigration and health. This would help to reach consensus on research priorities, avoid duplication, enable more sharing of methodologies/common definitions and measures, facilitate the establishment of interdisciplinary teams, and better inform health policy.
REFERENCES


Khan, N. 2005. Personal communication.


CERIS

The Joint Centre of Excellence for Research on Immigration and Settlement - Toronto (CERIS) is one of five Canadian Metropolis centres dedicated to ensuring that scientific expertise contributes to the improvement of migration and diversity policy.

CERIS is a collaboration of Ryerson University, York University, and the University of Toronto, as well as the Ontario Council of Agencies Serving Immigrants, the United Way of Greater Toronto, and the Community Social Planning Council of Toronto.

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Launched in 1996, the Metropolis Project strives to improve policies for managing migration and diversity by focusing scholarly attention on critical issues. All project initiatives involve policymakers, researchers, and members of non-governmental organizations.

Metropolis Project goals are to:

- Enhance academic research capacity;
- Focus academic research on critical policy issues and policy options;
- Develop ways to facilitate the use of research in decision-making.

The Canadian and international components of the Metropolis Project encourage and facilitate communication between interested stakeholders at the annual national and international conferences and at topical workshops, seminars, and roundtables organized by project members.

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