QUANTITATIVE RESEARCH

# Immigration, Generation and Self-rated Health in Canada: On the Role of Health Literacy

D. Walter Rasugu Omariba, PhD, Edward Ng, PhD

## ABSTRACT

**Objectives:** The purpose of this study was to determine whether there are differences in self-rated health by immigration and generational status, and the role of health literacy in this relationship.

**Methods:** Data were from the Canadian component of the 2003 International Adult Literacy and Skills Survey (IALSS) undertaken by Statistics Canada. The sample comprised a total of 22,818 persons, of whom 3,861 were immigrants and 18,957 non-immigrants. The study employed logistic regression to examine the relationship between health literacy and self-rated health. The analysis separately compared: immigrants and non-immigrants; immigrant groups defined by region of origin and recency of arrival in Canada; and the local-born defined by generation.

**Results:** Logistic regression results indicated that immigrants compared to non-immigrants, and recent immigrants not from Europe or USA compared to established immigrants from Europe or USA, were more likely to report good self-rated health. On the other hand, compared to the third-plus generation, the second generation were less likely to report good self-rated health. Health literacy was positively associated with good self-rated health. However, its effect was largely accounted for by discordance between mother tongue and language of survey administration among immigrants, and by literacy practices at home, education, place of residence, and income among non-immigrants.

**Conclusion:** Health literacy is important in the health of both immigrants and non-immigrants, but with different underlying mechanisms. For non-immigrants, engaging in literacy practices at home would benefit both health literacy and overall health, whereas for immigrants, it would be improving proficiency in either English or French.

**Key words:** Health literacy; health status; immigrants; generations

La traduction du résumé se trouve à la fin de l'article.                                    *Can J Public Health* 2011;102(4):281-85.

Health literacy, the ability to access and use health information to make appropriate health decisions and maintain basic health,[1,2] is now considered a critical pathway linking education to health and a contributor to health disparities.[1] Previous research shows that limited health literacy is associated with difficulties accessing health information and using medical services, depressive symptoms, mortality and poor self-rated health.[3-7]

In Canada, about 60% of adults (age ≥16) lack the requisite level of health literacy. Although this is partly due to the aging of the population and the shrinking youth cohort, an important contributor could be the growing immigrant population.[1,8] Not only is the proportion of immigrants in the population (standing at 20% in 2006) the highest since the 1930s, immigrants' countries of origin changed since the 1960s. Whereas in 2006, recent immigrants mainly came from Asia (58%) followed by Europe (16%), the corresponding figures in 1971 were 11% and 61%, respectively.[9] Because many recent immigrants have cultures and languages different from those of Canada, they are likely to face adjustment challenges in Canada. The short- and long-term impact of immigration is therefore of research and policy importance. Research on immigrants has identified generational status as a marker of integration into the host society.[10] Research in this area examines differences between generations of immigrants in different socio-economic and health outcomes.

Immigrants initially arrive in Canada with better health compared to non-immigrants. However, this health advantage disappears over time, their health eventually resembling that of non-immigrants.[11-13] This loss in health advantage has been observed in self-reported overall health,[11,14] chronic disease,[15] dis-ability,[16] mental health[17] and mortality.[18] The initial health advantage for immigrants is partly explained by selection factors: individuals generally need to be healthy, motivated, and physically and financially able to immigrate. Also, Canada generally selects immigrants based on positive characteristics that enhance health.[19] The subsequent decline in health has been attributed to difficulties with settling, adjusting and integrating into the host country;[11] poor access to health care;[20] limited knowledge of services;[21] low income;[22] limited social supports;[23] and low proficiency in English or French.[24-26] The latter, in particular, limits immigrants' ability to communicate, access and use health information.

To our knowledge, there are no population-based studies in Canada examining the effect of health literacy on health outcomes by immigration and generational status. This is mainly because of unavailability of health literacy information in major Canadian population health surveys. However, the International Adult Literacy and Skills Survey (IALSS) collected information on health literacy and several indicators of population health.[27] This study sought to determine whether there are differences in self-rated health by immigration and generation status, and the role of health literacy in this relationship. The analysis compared immigrants and non-immigrants (overall sample); immigrant groups defined by region of origin and recency of arrival in Canada; and the local-born defined by generation.

**Authors' Affiliation**

Health Analysis Division, Statistics Canada, Ottawa, ON

**Correspondence:** D. Walter Rasugu Omariba, Health Analysis Division, Statistics Canada, 100 Tunney's Pasture Driveway, R.H. Coats Building 24B, Ottawa, ON K1A 0T6, Tel: 613-951-6528, Fax: 613-951-3959, E-mail: Walter.Omariba@statcan.gc.ca

## METHODS

### Sample

Data were from the Canadian component of the 2003 IALSS undertaken by Statistics Canada. The main purpose of the survey was to establish how well adults used printed information to function in society. It targeted people aged ≥16, excluding institutional residents, people living in Canadian military bases, Indian reserves, and certain remote areas. The survey was also designed to provide reliable estimates for special target populations, including immigrants. After excluding 220 respondents on student, work and visitor's visas, refugee claimants, and those missing information on immigration status, our study comprised 18,957 non-immigrants and 3,861 immigrants aged ≥16. Data in our analyses were weighted to represent the target population.

### Outcome variable

Respondents in the IALSS were asked: In general, would you say your health is (Excellent, Very Good, Good, Fair, or Poor)? The first three categories and the last two categories were combined, respectively, to create a new dichotomous variable: Good versus Poor. 'Good' was the predicted category.

### Predictor variables

Immigration had three variables. First, non-immigrants were compared to immigrants in the overall sample. Second, because of sample size limitations, immigrants were divided into two groups: those from Europe or USA versus those from all the other countries. Further, immigrants were categorized as either "recent" (arrived between 1994 and 2003) or "established" (arrived between 1900 and 1993). Eventually, immigrants comprised four categories: established European or American; established from other countries; recent European or American; and recent from other countries. Last, non-immigrants comprised two generation groups: second generation (one parent foreign-born) or third-plus generation (both parents local-born).

The IALSS collected information on respondents' proficiency from 350 items in four skills domains: prose and document literacy, numeracy, and problem-solving. Of these, 191 were judged to measure health-related activities covering five dimensions of health (health promotion, health protection, disease prevention, health care, and system navigation).[28] From these, a Health Activities Literacy Scale was developed with scores ranging from 0 to 500. Individuals require a score of ≥276 to maintain their health.[28] Respondents scoring ≥276 were considered to have high health literacy and those scoring <276, low health literacy.

The study included age and sex. Age had the following categories: 16-25, 26-35, 36-45, 46-55, 56-65, or over 65 years of age.

Following the life-long and life-wide perspective in literacy research,[29] we included literacy- and education-related variables, namely, language discordance (whether mother tongue is dissimilar to language of survey administration, English or French), literacy practices at home, and education. Literacy practices at home was a dichotomous variable derived from information on frequency (weekly or monthly) of using the library, or frequency (at least once weekly) of reading or using information from newspapers, magazines, books, letters, notes or e-mails. Education had two categories: less than high school and high school or higher.

Socio-economic variables included employment status, Census Metropolitan Area (CMA) of residence, and household income.

**Table 1.** Descriptive Statistics of the Predictor Variables for the Overall, Immigrant and Non-immigrant Populations, IALSS 2003

| Characteristic | Overall | Immigrants | Non-immigrants |
|---|---|---|---|
| Good self-rated health | 86.1 | 84.0* | 86.7 |
| **Socio-demographic factors** | | | |
| Age (years) | | | |
| 16-25 | 16.8 | 9.5* | 18.9 |
| 26-35 | 17.2 | 16.1 | 17.6 |
| 36-45 | 21.0 | 21.2 | 20.9 |
| 46-55 | 18.3 | 19.1 | 18.1 |
| 56-65 | 12.3 | 15.0* | 11.5 |
| Over 65 | 14.4 | 19.1 | 13.0 |
| Females | 51.0 | 51.7 | 50.8 |
| Immigrants | | | |
| Established European or American | | 33.1 | |
| Established from other countries | | 42.6 | |
| Recent European or American | | 4.6 | |
| Recent from other countries | | 19.7 | |
| Second generation Canadians | | | 14.8 |
| **Literacy and education factors** | | | |
| Health literacy, mean (% ≥275) | 256 (40.5) | 228 (24.8) | 264 (45.0) |
| Languages discordant (1= yes) | 23.1 | 73.0* | 9.1 |
| Literacy practices (1= yes) | 91.3 | 87.6* | 92.3 |
| Education (1= ≥High school) | 74.1 | 75.4 | 73.7 |
| **Socio-economic factors** | | | |
| Employment status | | | |
| Employed | 63.4 | 57.8* | 65.0 |
| Looking for work | 6.3 | 7.0 | 6.1 |
| Retired | 18.2 | 22.9* | 16.8 |
| Student | 5.7 | 4.8* | 5.9 |
| Other | 6.5 | 7.5 | 6.2 |
| Census Metropolitan Area | | | |
| Toronto | 15.9 | 40.1* | 9.1 |
| Montreal | 11.4 | 10.8* | 11.5 |
| Vancouver | 6.8 | 13.9* | 4.8 |
| Other CMA | 46.6 | 29.1* | 51.5 |
| Non-CMA | 19.4 | 6.1* | 23.1 |
| Household income | | | |
| Low | 32.3 | 39.4* | 30.3 |
| High | 59.2 | 52.3* | 61.2 |
| Not stated | 8.5 | 8.3 | 8.6 |
| Total (N) | 22,818 | 3861 | 18,957 |

\* Immigrants statistically different from non-immigrants, p<0.05.

Employment status comprised: Employed; not working and looking for work; retired; student; and 'other'. CMA of residence comprised Toronto, Montreal, Vancouver, other CMA, and non-CMA. Income comprised two levels adjusted for household size: low-income level included incomes <$30,000 for families of 2, <$40,000 for families of 3 and 4, and <$60,000 for families of 5 or more. Households with incomes above these cut-offs were considered high-income. An additional category comprised people who did not report their household income.

### Statistical analysis

Because self-rated health was binary, we used logistic regression for the analysis. Health literacy was derived using item response theory,[27] and therefore it could not be analyzed using standard routines in statistical software. Consequently, we used Stattool, a SAS macro developed at Statistics Canada for the analysis. We assessed individual variables' significance using the $t$ statistic, while model significance was assessed using log-likelihood ratio tests. Statistical significance was set at p<0.05 level.

Four separate models were fitted for the overall sample, and the subsamples of immigrants and non-immigrants. Model 1 had age, sex, and the applicable immigration or generation indicator. Model 2 added health literacy, Model 3 introduced language discordance, while Model 4 included all the control variables. This modelling approach enabled us to examine the mediation effect of health lit-

**Table 2.** Multivariate Logistic Regression Results of Association of Immigrant Status, Socio-demographic, Education and Literacy, and Socio-economic Variables With Good Self-rated Health (N=22,818)

| Characteristic | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| **Socio-demographic factors** | | OR (95% confidence intervals) | | |
| Age (years) | | | | |
| 16-25 | 4.81 (3.40, 6.80) | 3.94 (2.78, 5.58) | 3.93 (2.76, 5.57) | 2.41 (1.55, 3.76) |
| 26-35 | 4.76 (3.46, 6.56) | 3.80 (2.75, 5.26) | 3.84 (2.79, 5.30) | 2.11 (1.36, 3.29 ) |
| 36-45 | 4.09 (3.28, 5.10) | 3.38 (2.67, 4.29) | 3.42 (2.71, 4.31) | 1.81 (1.22, 2.67) |
| 46-55 | 2.42 (1.99, 2.95) | 2.05 (1.65, 2.54) | 2.05 (1.65, 2.54) | 1.07 (0.77, 1.50) |
| 56-65 | 1.72 (1.40, 2.11) | 1.53 (1.23, 1.89) | 1.51 (1.22, 1.87) | 1.06 (0.82, 1.36) |
| Over 65 (reference) | | | | |
| Sex (1= Females) | 0.91 (0.79, 1.05) | 0.91 (0.79, 1.05) | 0.91 (0.79, 1.05) | 1.06 (0.92, 1.23) |
| Immigrant (1= yes) | 0.93 (0.80, 1.08) | 1.02 (0.88, 1.19) | 1.28 (1.01, 1.63) | 1.40 (1.03, 1.90) |
| **Literacy and education factors** | | | | |
| Health literacy (1= High) | | 1.94 (1.50, 2.52) | 1.92 (1.47, 2.50) | 1.35 (1.05, 1.72) |
| Languages discordant (1= yes) | | | 0.70 (0.57, 0.86) | 0.78 (0.63, 0.98) |
| Literacy practices (1= yes) | | | | 1.70 (1.30, 2.23) |
| Education (1= ≥High school) | | | | 1.52 (1.23, 1.87) |
| **Socio-economic factors** | | | | |
| Employment status | | | | |
| Employed (reference) | | | | |
| Looking for work | | | | 0.42 (0.30, 0.59) |
| Retired | | | | 0.47 (0.36, 0.61) |
| Student | | | | 0.73 (0.44, 1.21) |
| Other | | | | 0.25 (0.21, 0.31) |
| Census Metropolitan Area | | | | |
| Toronto (reference) | | | | |
| Montreal | | | | 1.66 (1.16, 2.38) |
| Vancouver | | | | 1.21 (0.89, 1.64) |
| Other CMA | | | | 1.34 (0.91, 1.96) |
| Non-CMA | | | | 1.60 (1.09, 2.33) |
| Household income | | | | |
| Low (reference) | | | | |
| High | | | | 1.56 (1.31, 1.86) |
| Income not reported | | | | 1.35 (0.98, 1.86) |
| –Log-likelihood | -9,395,953 | -9,248,570 | -8,776,190 | -8,711,804 |

eracy and the other independent variables on differences by immigration and generation in self-rated health.

## RESULTS

Table 1 presents the descriptive statistics of the sample. A majority of the respondents (86.1%) reported their overall health as good, with significantly more non-immigrants (86.7%) than immigrants (84%) reporting same. Immigrants had significantly lower mean health literacy compared to the overall population and non-immigrants (228 versus 256 and 264, respectively). Immigrants and non-immigrants were also significantly different in age, language discordance, literacy practices, employment status, CMA of residence, and income.

Table 2 presents multivariate logistic regression results for the overall sample. Immigrants were more likely to report good self-rated health only when language discordance was introduced in the model (OR=1.28, Model 3). This relationship increased in magnitude when socio-economic factors were added (OR=1.40, Model 4). Compared to people with low health literacy, those with high health literacy were more likely to report good self-rated health (OR=1.94, Model 2). Language discordance did not explain this difference (Model 3). Health literacy remained significant in Model 4 which included all controls, although the magnitude of the estimate attenuated substantially. Over two thirds of its effect was mediated by literacy practices at home, education and socio-economic factors.

Differences between immigrant groups emerged only when socio-economic factors were included. Compared to established European or American immigrants, recent immigrants from other countries were more likely to report good self-rated health (OR=1.93, Model 4, Table 3). Health literacy was not significant in the presence of language discordance (Model 3). This indicates that 12.5% of its effects operate through language discordance. Controlling for other factors,

however, rendered language discordance statistically insignificant. Education was more important for health among immigrants than health literacy and language discordance (Model 4, Table 3).

Compared to the third-plus generation, second-generation Canadians were less likely to report good self-rated health (Table 4). Language discordance did not explain the differences in self-rated health associated with health literacy (Model 3). About 60% of the effect of health literacy on self-rated health was attributable to literacy practices at home, education, CMA and income. Health literacy remained statistically significant, however, even with all controls included (OR=1.41, Model 4).

## DISCUSSION AND CONCLUSION

We examined the role of health literacy in the relationship between immigration and self-rated health. Immigrants were more likely to report good self-rated health, a relationship that was better revealed after including selected factors, particularly language discordance. Similarly, differences between immigrant groups became apparent after including explanatory factors, particularly education and employment status. Further, second-generation Canadians were less likely to report good self-rated health, even with statistical controls.

Consistent with previous research, health literacy was associated with reporting good health.[6-8] Nonetheless, there were differences between our study populations on the underlying mechanisms. Although language discordance is not a measure of language proficiency, the results suggest that not having English or French as the mother tongue is a risk factor for poor health among immigrants. It is unsurprising that education was more important in explaining self-rated health among immigrants than language discordance. Most recent immigrants tend to be more educated because education is one of the screening criteria, especially for economic class

**Table 3.** Multivariate Logistic Regression Results of Association of Immigrant Group, Socio-demographic, Education and Literacy, and Socio-economic Variables With Good Self-rated Health (n=3,861)

| Characteristic | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| **Socio-demographic factors** | OR (95% confidence intervals) | | | |
| Age (years) | | | | |
| 16-25 | 4.62 (2.56, 8.36) | 4.05 (2.16, 7.62) | 4.01 (2.13, 7.56) | 2.20 (0.91, 5.29) |
| 26-35 | 9.46 (4.81, 18.60) | 8.19 (4.09, 16.40) | 8.30 (4.11, 16.77) | 3.83 (1.69, 8.70) |
| 36-45 | 4.70 (3.24, 6.83) | 4.19 (2.83, 6.20) | 4.31 (2.92, 6.36) | 2.00 (0.94, 4.26) |
| 46-55 | 2.69 (1.91, 3.79) | 2.45 (1.72, 3.50) | 2.50 (1.75, 3.58) | 1.17 (0.56, 2.41) |
| 56-65 | 1.61 (1.15, 2.25) | 1.50 (1.07, 2.10) | 1.51 (1.09, 2.09) | 0.96 (0.57, 1.60) |
| Over 65 (reference) | | | | |
| Sex (1= Females) | 0.75 (0.56, 0.99) | 0.76 (0.57, 1.01) | 0.74 (0.56, 0.99) | 0.93 (0.69, 1.27) |
| Immigrants | | | | |
| Established European or American (reference) | | | | |
| Established from other countries | 0.97 (0.72, 1.31) | 1.01 (0.74, 1.38) | 1.09 (0.79, 1.51) | 1.15 (0.80, 1.64) |
| Recent European or American | 0.87 (0.43, 1.74) | 0.86 (0.41, 1.82) | 0.93 (0.44, 2.00) | 0.95 (0.42, 2.13) |
| Recent from other countries | 1.32 (0.89, 1.94) | 1.42 (0.96, 2.11) | 1.60 (1.08, 2.38) | 1.93 (1.25, 3.00) |
| **Literacy and education factors** | | | | |
| Health literacy (1= High) | | 1.88 (1.02, 3.48) | 1.77 (0.95, 3.32) | 1.35 (0.72, 2.53) |
| Languages discordant (1= yes) | | | 0.65 (0.45, 0.95) | 0.81 (0.54, 1.20) |
| Literacy practices (1= yes) | | | | 1.44 (0.98, 2.10) |
| Education (1= ≥High school) | | | | 1.58 (1.21, 2.07) |
| **Socio-economic factors** | | | | |
| Employment status | | | | |
| Employed (reference) | | | | |
| Looking for work | | | | 0.37 (0.22, 0.65) |
| Retired | | | | 0.42 (0.22, 0.78) |
| Student | | | | 0.58 (0.25, 1.39) |
| Other | | | | 0.28 (0.18, 0.45) |
| Census Metropolitan Area | | | | |
| Toronto (reference) | | | | |
| Montreal | | | | 1.17 (0.70, 1.98) |
| Vancouver | | | | 0.80 (0.56, 1.15) |
| Other CMA | | | | 0.87 (0.59, 1.29) |
| Non-CMA | | | | 1.14 (0.55, 2.38) |
| Household income | | | | |
| Low (reference) | | | | |
| High | | | | 1.27 (0.96, 1.69) |
| Income not reported | | | | 1.16 (0.67, 2.00) |
| –Log-likelihood | -2,164,828 | -2,126,433 | -2,119,281 | -2,030,154 |

**Table 4.** Multivariate Logistic Regression Results of Association of Canadian-born Generation Group, Socio-demographic, Education and Literacy, and Socio-economic Variables With Good Self-rated Health (n=18,957)

| Characteristic | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| **Socio-demographic factors** | OR (95% confidence intervals) | | | |
| Age (years) | | | | |
| 16-25 | 4.52 (2.99, 6.82) | 3.53 (2.33, 5.35) | 3.50 (2.31, 5.31) | 2.22 (1.28, 3.87) |
| 26-35 | 3.92 (2.73, 5.62) | 2.94 (2.02, 4.28) | 2.95 (2.03, 4.28) | 1.65 (1.00, 2.73) |
| 36-45 | 3.68 (2.77, 4.89) | 2.88 (2.11, 3.94) | 2.89 (2.12, 3.94) | 1.55 (0.96, 2.48) |
| 46-55 | 2.20 (1.71, 2.85) | 1.77 (1.34, 2.34) | 1.76 (1.33, 2.32) | 0.90 (0.59, 1.39) |
| 56-65 | 1.69 (1.32, 2.17) | 1.44 (1.10, 1.89) | 1.43 (1.09, 1.87) | 0.99 (0.72, 1.35) |
| Over 65 | | | | |
| Sex (1= Females) | 0.97 (0.82, 1.14) | 0.96 (0.81, 1.13) | 0.96 (0.82, 1.13) | 1.09 (0.92, 1.28) |
| Generation (1= Second) | 0.76 (0.59, 0.98) | 0.72 (0.56, 0.93) | 0.75 (0.58, 0.98) | 0.75 (0.58, 0.97) |
| **Literacy and education factors** | | | | |
| Health literacy (1= High) | | 2.05 (1.52, 2.76) | 2.04 (1.51, 2.75) | 1.41 (1.07, 1.86) |
| Languages discordant (1= yes) | | | 0.74 (0.57, 0.94) | 0.74 (0.57, 0.96) |
| Literacy practices (1= yes) | | | | 1.83 (1.30, 2.59) |
| Education (1= ≥High school) | | | | 1.51 (1.16, 1.96) |
| **Socio-economic factors** | | | | |
| Employment status | | | | |
| Employed (reference) | | | | |
| Looking for work | | | | 0.41 (0.27, 0.61) |
| Retired | | | | 0.49 (0.35, 0.69) |
| Student | | | | 0.75 (0.41, 1.37) |
| Other | | | | 0.24 (0.19, 0.30) |
| Census Metropolitan Area | | | | |
| Toronto (reference) | | | | |
| Montreal | | | | 2.23 (1.41, 3.51) |
| Vancouver | | | | 1.84 (1.05, 3.21) |
| Other CMA | | | | 1.89 (1.20, 2.99) |
| Non-CMA | | | | 2.22 (1.40, 3.53) |
| Household income | | | | |
| Low (reference) | | | | |
| High | | | | 1.81 (1.50, 2.18) |
| Income not reported | | | | 1.51 (1.06, 2.17) |
| –Log-likelihood | -7,190,318 | -7,063,313 | -7,054,423 | -6,575,801 |

immigrants. For non-immigrants, the results suggest that the effect of health literacy was largely mediated by literacy practices at home, education, household income, and CMA of residence.

Overall, our results support the 'healthy immigrant' hypothesis and are consistent with previous research.[12-14] On the one hand, the results on recent immigrants not from Europe or USA support the hypothesis that immigrants are selected for good health at the outset. On the other hand, the loss of health advantage over time was supported by the lack of differences between established immigrants not from Europe or USA and established immigrants from Europe or USA. The results also point to the possible role of cultural differences or similarities between the groups. The reasons for the differences between second and third-plus generations in self-rated health, however, are not clear and may point to unmeasured and unobservable factors.

This study had two limitations. First, the IALSS did not collect information on health risk factors such as smoking, physical activity, alcohol consumption, and body mass index. These factors could explain some of the differences in self-rated health, especially among non-immigrants. Second, the IALSS did not include a large sample size suitable for in-depth analyses of salient issues on immigrants and their subgroups going beyond the broad categories we used. This information could help in the design of programs taking into account the diversity of the Canadian immigrant population. Qualitative studies are also needed to clarify the patterns observed in quantitative analyses. Nonetheless, this study contributes to the developing literature on the role of health literacy on health and to the understanding of the determinants of immigrant health.

## REFERENCES

1. Canadian Council on Learning. *Health Literacy in Canada: Initial Results from the International Adult Literacy and Skills Survey 2007*. Ottawa, ON: Canadian Council on Learning, 2007.
2. Rootman I, Ronson B. Literacy and health research in Canada: Where have we been and where should we go? *Can J Public Health* 2005;96(supplement 2):S62-S77.
3. Von Wagner C, Semmler C, Good A, Wardle J. Health literacy and self-efficacy for participating in colorectal cancer screening: The role of information processing. *Pat Educ Counsel* 2009;75(3):352-57.
4. Sudore RL, Mehta KM, Simonsick EM, Harris TB, Newman AB, Satterfield S, et al. Limited health literacy in older people and disparities in health and healthcare access. *J Am Geriatr Soc* 2006;54:770-76.
5. Lincoln A, Paasche-Orlow MK, Cheng DM, Lloyd-Travaglini C, Caruso C, Saitz R, Samet JH. Impact of health literacy on depressive symptoms and mental-health related quality of life among adults with addiction. *J Gen Intern Med* 2006;21(8):818-22.
6. Baker DW, Wolf MS, Feinglass J, Thompson JA, Gazmararian JA, Huang J. Health literacy and mortality among elderly persons. *Arch Intern Med* 2007;167(14):1503-9.
7. Guerra CE, Shea JA. Health literacy and perceived health status in Latinos and African Americans. *Ethn Dis* 2007;17:305-12.
8. Canadian Council on Learning. *Health Literacy in Canada: A Healthy Understanding*. Ottawa, ON: Canadian Council on Learning, 2008.
9. Chui T, Tran K, Maheux H. *Immigration in Canada: A Portrait of the Foreign-born Population, 2006 Census*. Catalogue No. 97-557-XIE. Ottawa, ON: Statistics Canada, 2007.
10. Acevedo-Garcia D, Pan J, Jun H-J, Osypuk TL, Emmons KM. The effect of immigrant generation on smoking. *Soc Sci Med* 2005;61:1223-42.
11. Ng E, Wilkins R, Gendron F, Berthelot J-M. Dynamics of immigrants' health in Canada: Evidence from the National Population Health Survey. In: *Healthy Today, Healthy Tomorrow? Findings from the National Population Health Survey* (Statistics Canada, Catalogue 82-618). Ottawa, ON: Statistics Canada, 2005.
12. Newbold KB. Self-rated health within the Canadian immigrant population: Risk and the healthy immigrant effect. *Soc Sci Med* 2005;60:1359-70.
13. Hyman I. *Immigration and Health: Reviewing Evidence of the Healthy Immigrant Effect in Canada*. Joint Centre of Excellence for Research on Immigration and Settlement (CERIS) Working Paper No. 55. Toronto, ON: CERIS, 2007.
14. Newbold KB, Danforth J. Health status and Canada's immigrant population. *Soc Sci Med* 2003;57:1981-95.
15. McDonald JT, Kennedy S. Insights into the 'healthy immigrant effect': Health status and health service use of immigrants to Canada. *Soc Sci Med* 2004;59:1613-27.
16. Chen J, Ng E, Wilkins R. The health of Canada's immigrants in 1994-95. *Health Rep* 1996;7(4):33-45.
17. Ali J. Mental health of Canada's immigrants. *Health Rep* 2002;13 (Supplement):101-13.
18. Wilkins R, Tjepkema M, Mustard C, Choinière R. The Canadian census mortality follow-up study, 1991 through 2001. *Health Rep* 2008;19(3):25-43.
19. Beiser M. The health of immigrants and refugees in Canada. *Can J Public Health* 2005;96(supplement 2):S30-S44.
20. Vissandjée B, Weinfeld M, Dupéré S, Abdool S. Sex, gender, ethnicity, and access to health care services: Research and policy challenges for immigrant women in Canada. *J Int Migration Integration* 2001;2(1):55-75.
21. Steele LS, Lemieux-Charles L, Clark JP, Glazier RH. The impact of policy changes on the health of recent immigrants and refugees in the inner city: A qualitative study of service providers' perspectives. *Can J Public Health* 2002;93(2):118-22.
22. Dunn JR, Dyck I. Social determinants of health in Canada's immigrant population: Results from the National Population Health Survey. *Soc Sci Med* 2000;51:1573-93.
23. Stewart M, Anderson J, Beiser M, Mwakarimba E, Neufeld A, Simich L, et al. Multicultural meanings of social support among immigrants and refugees. *International Migration* 2008;46(3):123-59.
24. Zanchetta MS, Poureslami IM. Health literacy within the reality of immigrants' culture and language. *Can J Public Health* 2006;97(supplement 2):S26-S30.
25. Pottie K, Ng E, Spitzer D, Mohammed A, Glazier R. Language proficiency, gender and self-reported health: An analysis of the first two waves of the Longitudinal Survey of Immigrants to Canada. *Can J Public Health* 2008;99(6):505-10.
26. Ng E, Pottie K, Spitzer D, Glazier R. *Language proficiency, gender and self-reported health: A dynamic view from the Longitudinal Survey of Immigrants to Canada*. Poster presented at the National Metropolis Conference, Halifax, NS, April 4-5, 2008.
27. Statistics Canada and Human Resources and Social Development Canada. *Building Our Competencies: Canadian Results of the International Adult Literacy and Skills Survey 2003*. Catalogue No.89-617-XIE. Ottawa, ON: Statistics Canada, 2005.
28. Rudd R, Kirsch I, Yamamoto K. *Literacy and Health in America*. Princeton, NJ: Policy Information Center, Education Testing Service, 2004.
29. Desjardins R. Determinants of literacy proficiency: A lifelong-life-wide learning perspective. *Int J Educ Res* 2003;39:205-45.

## RÉSUMÉ

**Objectifs :** Cette étude vise à déterminer s'il existe des différences dans l'état de santé auto-évalué selon le statut d'immigrant et le statut générationnel, et le rôle que joue la littératie en santé dans cette relation.

**Méthode :** Les données proviennent de la composante canadienne de l'Enquête internationale sur l'alphabétisation et les compétences des adultes (EIACA) de 2003 menée par Statistique Canada. Notre échantillon comptait 22 818 personnes en tout, dont 3 861 immigrants et 18 957 non-immigrants. Par régression logistique, nous avons établi un lien entre la littératie en santé et l'état de santé auto-évalué. L'analyse comparait séparément : les immigrants et les non-immigrants; les groupes d'immigrants définis selon leur région d'origine et la récence de leur arrivée au Canada; et les gens nés au Canada définis selon leur génération.

**Résultats :** Les résultats de la régression logistique montrent que les immigrants sont plus susceptibles de se déclarer en bonne santé que les non-immigrants; et que les immigrants récents non originaires d'Europe ou des États-Unis sont plus susceptibles de se déclarer en bonne santé que les immigrants établis originaires d'Europe ou des États-Unis. Par ailleurs, la deuxième génération est moins susceptible que la troisième et les suivantes de se déclarer en bonne santé. La littératie en santé est positivement liée à un bon état de santé auto-évalué. Toutefois, ses effets s'expliquent en grande partie par la différence entre la langue maternelle et la langue d'administration de l'enquête (chez les immigrants) et par la pratique de la lecture à la maison, la scolarité, le lieu de résidence et le revenu (chez les non-immigrants).

**Conclusion :** La littératie en santé est importante pour la santé des immigrants et des non-immigrants, mais ses mécanismes sous-jacents sont différents. Pour les non-immigrants, c'est en pratiquant la lecture à la maison qu'ils peuvent améliorer leur littératie en santé et leur santé en général, tandis que pour les immigrants, c'est en perfectionnant leurs connaissances du français ou de l'anglais.

**Mots clés :** compétences informationnelles en santé; état de santé; immigrants; générations