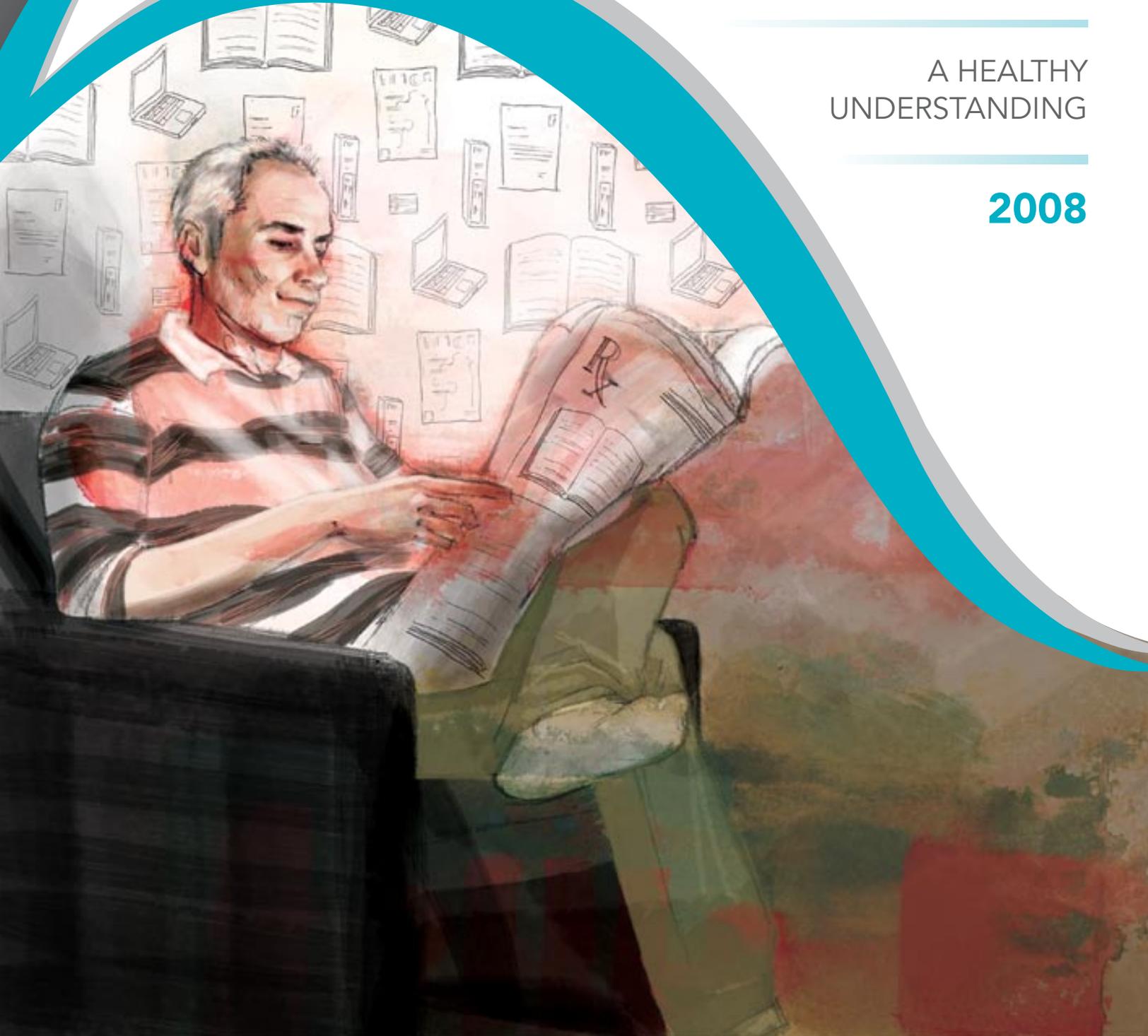


# *Health* **LITERACY** in Canada

A HEALTHY  
UNDERSTANDING

**2008**



CANADIAN COUNCIL  
ON LEARNING

**CCL**



CONSEIL CANADIEN  
SUR L'APPRENTISSAGE

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« HEALTH LITERACY:  
skills to enable access, understanding  
and use of information for health »

## EXECUTIVE SUMMARY

Canada has one of the most highly educated populations in the world, a publicly funded health-care system and a growing appreciation for contributions that ongoing learning makes to the health and well-being of individuals and to the quality of life within our communities.

However, new health literacy maps of Canada show that our country is not a picture of health. Six in 10 Canadian adults do not have the skills needed to adequately manage their health and health-care needs.

The fact that there are more people with low levels of health literacy (60%) than there are with low levels of literacy (48%) suggests a difference between the two. In order to master health-literacy tasks, adults are usually required to use their prose literacy, document literacy and numeracy skills simultaneously. In other words, health literacy involves more than the ability to read or understand numbers. Context matters, as does the ability to find, understand, evaluate and communicate health-related information.

This incidence of low health literacy is cause for concern. Canadians with the lowest health-literacy skills were found to be more than two-and-a-half times as likely to be in fair or poor health as those with the highest skill levels, much less likely to have participated in a community group or to have volunteered, and more than two-and-a-half times as likely to be receiving income support.

Health-literacy levels also seem to matter to health outcomes at the population level. An analysis of the relationship between health literacy and arthritis, diabetes, drinking, high blood pressure, injuries, stress and asthma for each of Canada's health regions shows some interesting findings. The strongest link was found with diabetes, the prevalence of which declines as health literacy rises.

Is there a cure for Canada's low levels of health literacy? The research presented in this report suggests that daily reading habits have the single strongest effect on health-literacy proficiency. Reading books, newspapers, magazines, websites, letters, notes or e-mails all helped to sustain or improve health-literacy rates, regardless of education level. Adults aged 16 to 65 who frequently engage in all these activities can score up to 38% higher than the average. Daily readers over the age of 65 can score up to 52% higher than the average for their age.

Although it may not be a panacea, this report makes a compelling case that reading each day helps keep the doctor away.

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## INTRODUCTION

In September 2007, the Canadian Council on Learning published *Health Literacy in Canada: Initial results from the International Adult Literacy and Skills Survey*.<sup>1</sup> From this report we learned:

- While Canadians have higher levels of health literacy than Americans, 60% of adults in Canada lack the capacity to obtain, understand and act upon health information and services and to make appropriate health decisions on their own.
- Average health literacy varies significantly by province and territory and between different population sub-groups within Canada, especially among seniors. Canadian adults with less than a high-school education perform well below adults with higher levels of education and this gap widens with age.
- Differences in literacy and numeracy skills exert a profound influence on a range of social, educational and economic outcomes. Differences in average health-literacy skill seem to be associated with large differences in perceived general health status.

The analysis presented in *A Healthy Understanding* builds on the initial results presented in *Health Literacy in Canada*. An individual's level of health literacy—which encompasses education level and ability to learn about health—is strongly connected to the health they enjoy. Simply put, good health-literacy skills can lead to good health, for the individual and for the population at large.

Health literacy involves more than just being able to handle words and numbers. Research shows that health literacy involves the simultaneous use of a more complex and interconnected set of abilities: to read and act upon written health information, to communicate needs to health professionals, and to understand health instructions. Without adequate health-literacy skills, ill-informed decisions may be taken,

health conditions may go unchecked or worsen, questions may go unasked or remain unanswered, accidents may happen and people may get lost in the health-care system.

Health literacy is important for all Canadians. Governments across the country are all dealing with rising health-care costs and continued pressure to deliver high quality health services. Health-care costs are growing, in part, due to an aging population with increasing life expectancy and the attendant chronic diseases. At the same time, changes in health-care delivery (e.g., early discharge from hospital) often require that individuals take more responsibility for their own health. These factors underline the need for the population to have strong health-literacy skills. Improving levels of health literacy may provide the key to containing system-wide costs, preventing illness and chronic disease, and reducing rates of accident and death.

*A Healthy Understanding* makes clear that it is in our collective interest to understand health literacy and its importance as an issue for public policy. This report offers a detailed response to some key questions: What is health literacy and how is it different from literacy? Why does health literacy matter? What are health-literacy levels across the country? Who is most at risk? What factors can influence health-literacy levels?

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## WHAT IS HEALTH LITERACY?

Literacy, as defined in 2003 by the United Nations Educational, Scientific and Cultural Organization (UNESCO), is:

*“The ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning to enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society.”<sup>2</sup>*

As such, literacy can have a direct and meaningful impact on health. It enables a person to read nutrition labels, follow dosage directions for medications and make healthy lifestyle choices.

### HOW IS HEALTH LITERACY DIFFERENT FROM LITERACY?

Definitions of health literacy range from a narrow view—being able to read material related to health care—to a much broader use of complex skills. Despite the differences, there are common factors in these definitions (see *text box on p. 8*).

All the broader definitions (i.e., those encompassing more than basic literacy skills), include finding and understanding health information. Canadians use numerous health information resources, with family doctors being the most frequently cited source of information, followed closely by media, friends and family, books and the internet.<sup>3</sup>

EVOLVING CONCEPTS AND DEFINITIONS  
OF HEALTH LITERACY

*The ability to read, understand and act on health-care information.*

—From the Center for Health Care Strategies, Inc., 1997

*The capacity of individuals to obtain, interpret and understand basic health information and services and the competence to use such information and services in ways which enhance health.*

—From the Joint Committee on National Health Education Standards, 1998

*The cognitive and social skills that determine the motivation and ability of individuals to gain access, to understand and use information in ways which promote and maintain good health.*

—From the World Health Organization (WHO) Health Promotion Glossary of Terms, 1998

*A constellation of skills, including the ability of individuals to gain access, to understand and use information in ways which promote and maintain good health.*

—From the Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association, 1999

*The degree to which individuals can obtain, process and understand the basic health information and services they need to make appropriate health decisions. (This definition was used in the Institute of Medicine's report *Health Literacy: Prescription to End Confusion* (2004) and the U.S. Department of Health and Human Services' *Healthy People 2010*)*

—From the National Library of Medicine's *Health Literacy*, Selden, C. et al., 2000

*The personal, cognitive and social skills which determine the ability of individuals to gain access, to understand and use information to promote and maintain good health. Three levels of health literacy were identified:*

- 1. basic or functional health literacy;*
- 2. communicative or interactive health literacy; and,*
- 3. critical health literacy*

—From *Health Literacy as a Public Health Goal*, Don Nutbeam, 2000

*The wide range of skills and competencies that people develop to seek out, comprehend, evaluate and use health information and concepts to make informed choices, reduce health risks and increase quality of life.*

—From *Understanding Health Literacy*,  
Zarcadoolas, Pleasant and Greer, 2005

*The ability to make sound health decisions in the context of everyday life—at home, in the community, at the workplace, in the health-care system, the marketplace and the political arena. It is a critical empowerment strategy to increase people’s control over their health, their ability to seek out information and their ability to take responsibility.*

—From *Navigating Health: The Role of  
Health Literacy*, Kickbusch, Wait and Maag, 2005

A few definitions also include evaluating health information either explicitly<sup>4</sup> or implicitly.<sup>5,6</sup> This skill is important because health information is constantly changing and being updated. New diseases and health threats, such as Severe Acute Respiratory Syndrome (SARS) and West Nile virus, challenge individuals to “continually learn new information and un-learn outdated information.”<sup>7</sup> As well, more than half of Canadians report that the information they get from different sources can be contradictory. Resolving these contradictions and identifying suspect information definitely requires critical thinking skills.<sup>8</sup>

Communication skills are a component of health literacy too. People need to be able to ask health professionals for information about diagnoses and treatment options, to understand the answers and then pass along that health information to family and friends as needed.<sup>9,10</sup>

The Canadian Public Health Association (CPHA) Expert Panel on Health Literacy has incorporated all these elements into its definition:

*“Health literacy is the ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life course.”<sup>11</sup>*

In other words, while literacy is a necessary foundation for health literacy, health literacy appears to involve more than the ability to read or understand numbers. Context matters, as does the ability to find, understand, evaluate and communicate health-related information.

In addition, the fact that there are more adults with low levels of health literacy (60%) than there are with low levels of prose literacy (48%) suggests that health literacy and prose literacy are different (see *text box for definitions of literacy levels*). It appears that in order to master health-literacy tasks, adults are usually required to use prose literacy, document literacy and numeracy skills simultaneously. Thus, a weakness in any of the three skills will limit an individual's ability to master the full range of health-literacy tasks.

#### LITERACY LEVELS DEFINED

The Organisation for Economic Co-operation and Development (OECD) defines the following five levels of literacy:<sup>12</sup>

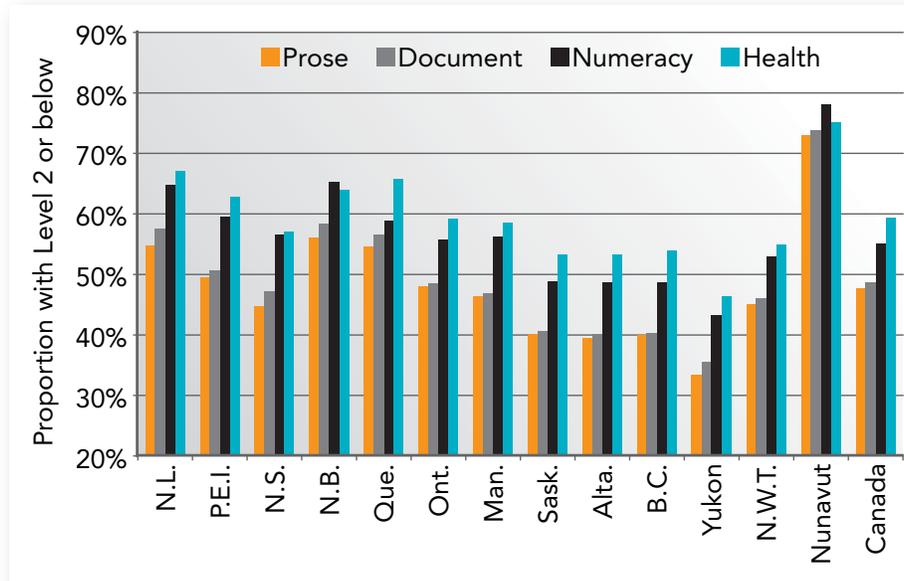
**Level 1—*Very poor literacy skills.*** An individual at this level may, for example, be unable to determine from a package label the correct amount of medicine to give a child.

**Level 2—*A capacity to deal only with simple, clear material involving uncomplicated tasks.*** People at this level may develop everyday coping skills, but their poor literacy makes it hard to conquer challenges such as learning new job skills.

**Level 3—*Adequate to cope with the demands of everyday life and work in an advanced society.*** It roughly denotes the skill level required for successful high-school completion and college entry.

**Levels 4 and 5—*Strong skills.*** An individual at these levels can process information of a complex and demanding nature.

**Figure 2.1:** Proportion of population with low literacy levels, by literacy type, ages 16 and older



Source: International Adult Literacy and Skills Survey, 2003

## HOW HEALTH LITERACY IS MEASURED

The Adult Literacy and Life Skills (ALLS) survey was designed to provide valid, reliable and comparable measures of prose literacy, document literacy, numeracy and problem solving in different languages and cultures. Although the data that exist from ALLS were not collected for the purpose of measuring health literacy, a large subset of ALLS test items contain broadly defined health content in the following areas: health promotion and behaviours related to healthy habits; health protection and accident prevention; disease prevention; health-care activities, such as learning about illness or disease; and, navigating the health-care system. Of the 350 unique assessment items, some 191 (55%) literacy tasks were judged to measure health-related activities. These items were used by researchers Rima Rudd, Irving Kirsch and Kentaro Yamamoto to develop a health-activity literacy scale. Results for Canada were derived by Yamamoto using the health-related literacy tasks from the Canadian component of the 2003 ALLS survey (also referred to as the International Adult Literacy and Skills Survey, or IALSS).

**Table 2.1:** Literacy levels and scores

Level	Score Range	Interpretation
1	0–225	Tasks at this level require the ability to read relatively short text, locate or enter a piece of information and complete simple, one-step tasks such as counting, sorting dates or performing simple arithmetic.
2	226–275	Tasks at this level require, for example, the ability to sort through “distractors” (plausible but incorrect pieces of information), integrate two or more pieces of information, compare and contrast information, and interpret simple graphs.
3	276–325	These tasks require the ability to integrate information from dense or lengthy text, integrate multiple pieces of information and demonstrate understanding of mathematical information represented in a range of different forms. Tasks typically involve a number of steps or processes in order to solve problems.
4	326–375	Tasks at this level involve multiple steps to find solutions to abstract problems. Tasks require the ability to integrate and synthesize multiple pieces of information from lengthy or complex passages and make inferences from the information.
5	376–500	Tasks at Level 5 require the ability to search for information in dense text which has a number of distractors, make high-level inferences or use specialized background knowledge and to understand complex representations of abstract formal and informal mathematical ideas.

Source: International Adult Literacy and Skills Survey, 2003

The items used to create the health-literacy scale are of varying levels of difficulty and represent a broad range of contexts. This scale assigns a score from 0 to 500 for health-related literacy task (see text box above). Each literacy level represents a progression of knowledge and skills; individuals within a particular level not only demonstrate the knowledge and skills associated with that level but the proficiencies associated with the lower levels as well.

## HOW WOULD YOU DO?

Individuals are given one or more questions or tasks to complete, each representing a different level of difficulty or complexity. For example, there are three tasks associated with this *Tempra* ranging from the relatively simple (a score of 239), to moderately difficult (329), to quite hard (378).

The easiest task directs the reader to simply underline the sentence that indicates how often medication should be administered. Participants had to locate and underline the sentence that read, "Dosage may be given every 4 hours as needed but not more than 5 times daily."

A second task using the *Tempra* text asks the reader to identify "How much *Tempra* syrup is recommended for a child who is 10 years old and weighs 50 pounds?" What makes this task so much more complex and difficult relates to the structure of the chart that the reader must use.




**Pediatric Dosage Chart Drops, Syrup, & Chewables**

Age	Approximate Weight Range*	Dosage			
		Drops	Syrup	Chewables 80 mg	Chewables 160 mg
† Under 3 mo	Under 13 lb	½ dropper	¼ tsp	—	—
† 3 to 9 mo	13-20 lb	1 dropper	½ tsp	—	—
† 10 to 24 mo	21-26 lb	1 ½ droppers	¾ tsp	—	—
2 to 3 yr	27-35 lb	2 droppers	1 tsp	2 tablets	—
4 to 5 yr	36-43 lb	3 droppers	1 ½ tsp	3 tablets	1 ½ tablets
6 to 8 yr	44-62 lb	—	2 tsp	4 tablets	2 tablets
9 to 10 yr	63-79 lb	—	2 ½ tsp	5 tablets	2 ½ tablets
11 yr	80-89 lb	—	3 tsp	6 tablets	3 tablets
12 yr and older	90 lb & over	—	3-4 tsp	6-8 tablets	3-4 tablets

† Consult with physician before administering to children under the age of 2 years.  
 Dosage may be given every 4 hours as needed but not more than 5 times daily.  
 How Supplied:  
 Drops: Each 0.8 ml dropper contains 80 mg (1.23 grains) acetaminophen.  
 Syrup: Each 5 ml teaspoon contains 160 mg (2.46 grains) acetaminophen.  
 Chewables: Regular tablets contain 80 mg (1.23 grains) acetaminophen each. Double strength tablets contain 160 mg (2.46 grains) acetaminophen each.  
 \* If child is significantly under- or overweight, dosage may need to be adjusted accordingly.  
 The weight categories in this chart are designed to approximate effective dose ranges of 10-15 milligrams per kilogram.  
 (Current Pediatric Diagnosis and Treatment, 8<sup>th</sup> ed. CH Kempe and HK Silver, ed. Lange Medical Publications; 1984, p. 1079.)  
 LA-1451-2-88 © 1988, Bristol-Myers U.S. Pharmaceutical and Nutritional Group • Evansville, Indiana 47721 U.S.A.  
 © 1988, Bristol-Myers Pharmaceutical and Nutritional Group.

Note: This example is reprinted with permission.

Source: Rudd, R., I. Kirsch and K. Yamamoto. *Literacy and Health in America* (New Jersey: Center for Global Assessment, Policy Information Center, Research and Development, Educational Testing Service, 2004)

The chart is composed of columns starting with age, then weight, then dosage by type including drops, syrup, chewables 80mg, and chewables 160 mg. The typical reader would look down the column to find the age of the child and then over the row to the column for syrup. The problem here is that in very small print under the chart is a conditional statement that tells the reader: "If child is significantly under- or overweight, dosage may need to be adjusted accordingly."

Finally, the third and most difficult task associated with the *Tempra* chart requires the reader to not only locate information within the chart itself based on several stated conditions, but then to calculate the maximum number of tablets that could be administered in a 24-hour period. Specifically, the task states "Imagine your child is 11 years old and weighs 85 pounds. According to the chart, how many 80 mg tablets of *Tempra* can you administer to your child in a 24-hour period?" Here, the reader must put together information on the chart with information provided elsewhere on the package.

*(This Tempra example is reprinted with permission.)*

## LIMITATIONS

The ALLS-based health-literacy scale excludes several dimensions of health literacy that theory suggests are important, such as measures of oral fluency, reading component skills, problem solving or scientific literacy. Nonetheless, the scales provide valid, reliable and comparable measures of adults' ability to deal with health-related tasks. While not perfect, the measures reveal valuable information about the distribution, outcomes and some determinants of health literacy—enough to warrant further research. Future attempts to study health literacy need to take into account the kinds of processing and problem-solving skills required to understand and use the information in each task, whether they are presented orally or in written form.

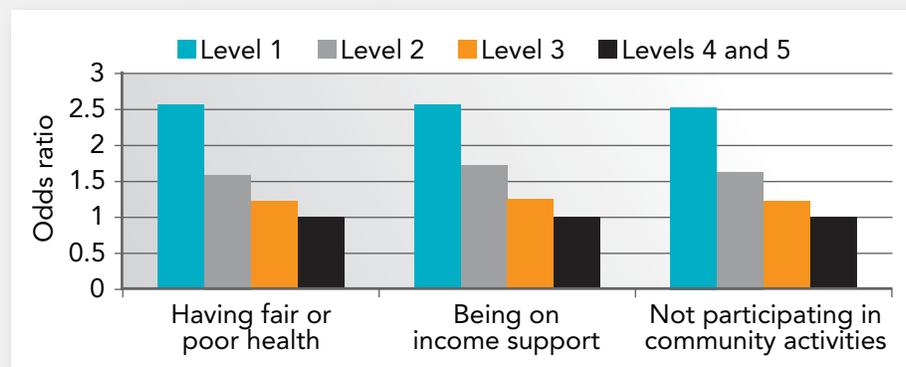
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## WHY DOES HEALTH LITERACY MATTER?

Literacy and education have long been recognized as determinants of health—key factors that contribute to individuals' health outcomes. In 2005, CCL established the Health and Learning Knowledge Centre, a 17-member consortium that serves as a pan-Canadian network of expertise on the link between learning and health. Health literacy is one of the knowledge centre's three central themes and is included in the priorities of each of its working groups.

Health literacy matters because it can have an impact on the social and economic well-being of individuals and of Canada. The results of a logistic regression<sup>13</sup> show that many people and some specific groups in particular are at a disadvantage in our society—their low levels of health literacy making them vulnerable to a range of negative health outcomes. There is a price tag associated with ineffective use of health services, blocked access, chronic illness, preventable disease and accidents. Poor or declining health has a spill-over effect on our labour market as well, affecting workplace safety and national productivity.

**Figure 3.1:** Comparison of social and health outcomes, by health-literacy level



Source: International Adult Literacy and Skills Survey, 2003

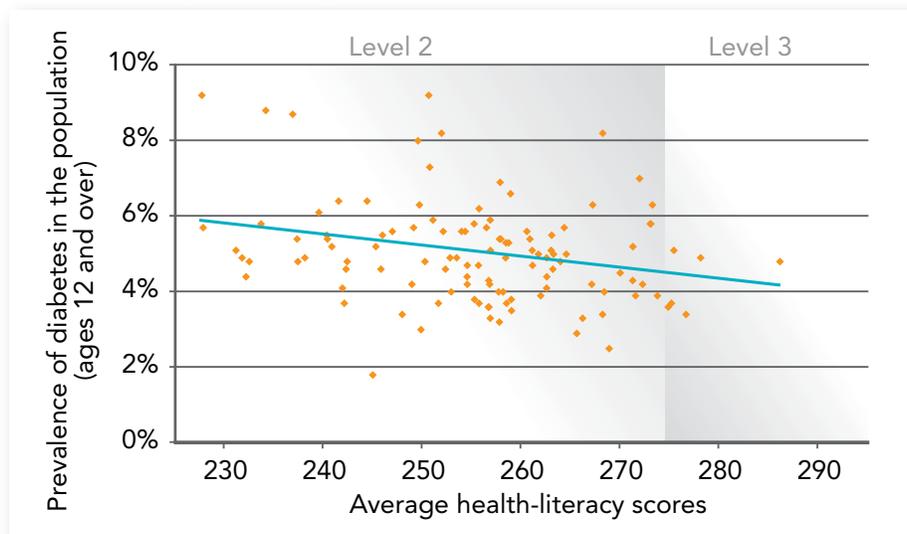
Canadians with the lowest health-literacy skills were found to be: more than 2.5 times as likely to be in fair or poor health when compared to those with skills at Levels 4 or 5; less than half as likely to have participated in a community group or to have volunteered; and more than 2.5 times as likely to be receiving income support. This finding was true even after removing the impact of age, gender, education, mother tongue, immigrant and Aboriginal status.

Health-literacy levels also have some measurable effects on health outcomes at the population level. An analysis of the relationship between health literacy and arthritis, diabetes, heavy drinking,<sup>14</sup> high blood pressure, injuries, stress and asthma for each of Canada's health regions shows some interesting findings.

Of the factors analyzed, the strongest link was with diabetes. As health literacy scores increase there is a decline in the prevalence of diabetes.

A significant proportion of the Canadian adult population is afflicted by diabetes, reducing the quality of life for those with the disease and placing significant demand on health providers and health budgets. While genetics can also play a factor, diabetes is a disease that is highly influenced by individual behaviour. The probability of getting the disease is related to diet, lifestyle and weight. The ability of individuals to self-manage their diabetes treatment influences quality of life, longevity and the risk of experiencing complications. In this context, it is understandable that health literacy might contribute to the prevention and the management of diabetes since it plays a role in modifying behaviour, shaping attitudes and communicating core health knowledge.

**Figure 3.2:** Prevalence of diabetes, by average health-literacy level, by health region



Source: International Adult Literacy and Skills Survey, 2003, and the Canadian Community Health Survey, 2003

Figure 3.2 displays the relationship between the prevalence of diabetes and health literacy by health region. The figure reveals a steady decline in the prevalence of diabetes with increasing health literacy. This is an important finding and raises the prospect of potential cost savings—individuals with diabetes and associated renal vascular disease are expected to use 10 times the health-care resources of the population average. The number of people with diabetes in Canada is projected to increase from approximately 1.4 million patients in 2000, with a cost of \$4.66 billion, to 2.4 million in 2016, with a cost of \$8.14 billion (1996 dollar values).<sup>15</sup>

Although not as strongly correlated, a similar trend was found for high blood pressure. As health literacy rises the prevalence of the disease is diminished. Similar to diabetes, high blood pressure requires ongoing management and is affected by individual lifestyle and diet choices. Also, cardio-vascular disease is highly influenced by the incidence of high blood pressure in the population.

**Figure 3.3:** Prevalence of high blood pressure, by average health-literacy level, by health region



Source: International Adult Literacy and Skills Survey, 2003, and the Canadian Community Health Survey, 2003

The fact that the analysis reveals no significant relationship between high blood pressure and life stress is unexpected and warrants further exploration.

Another unexpected finding that requires additional research is the strong relationship observed between health literacy and the prevalence of injuries—the number of reported injuries<sup>16</sup> increases significantly with higher levels of health literacy.

On the other hand, there appears to be no link between health literacy and the prevalence of asthma or arthritis—findings that are not unexpected given what is known about the causes of these diseases. There was also no link found with heavy drinking.

### HEALTH-CARE AND ECONOMIC COSTS

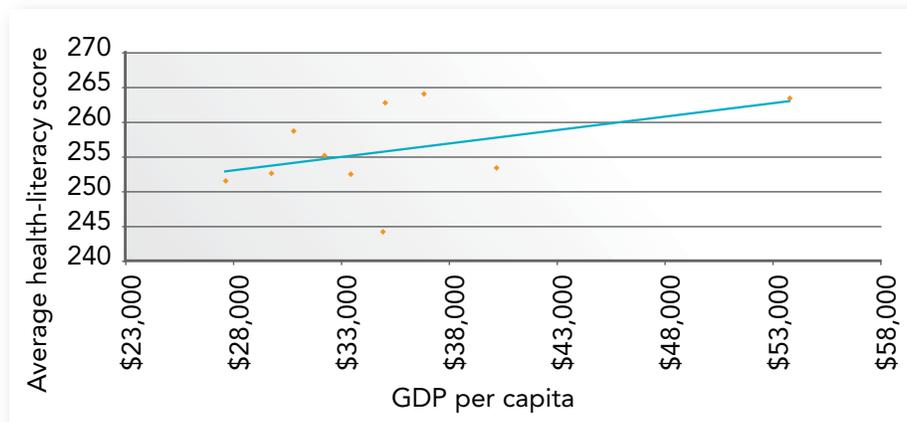
The World Health Organization (WHO) *Health Promotion Glossary* states that health literacy “means more than being able to read pamphlets and make appointments;” it also “implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions .... By improving people’s access to health information, and their capacity to use it effectively, health literacy is critical to empowerment”<sup>17</sup> [emphasis in the original].

Having an adequate level of health literacy in the population, with individuals who are empowered to make appropriate health decisions in life, is ever more critical given the constantly evolving cost realities that changing demographics, therapies and technologies pose for our national health-care system.

For example, people are living longer and the Baby Boom generation is entering its 60s. This means the public health-care system has to support an older population and treat the attendant diseases that come with age. At the same time, changes in health-care delivery (e.g., earlier discharge protocols from hospital, new pharmaceutical therapies) often require that individuals take more responsibility for their own health, or must turn to family and their community.

Health-care costs represent a large and growing share of total public and private expenditures each year and so finding ways to reduce costs and demand on the health-care system becomes a collective priority. As the diabetes example demonstrates, boosting health literacy could make a substantive dent in the cost of sustaining our health-care system. Not only are higher health-literacy levels a likely predictor of individual good health, they deliver a powerful impact in the labour market and the country's economic performance. Research indicates that low-skilled individuals in the labour market can have a negative effect on a nation's long-term economic performance. Specifically, the higher the proportion of low-skilled individuals in the work force, the lower the long-term growth rate of Gross Domestic Product (GDP) per capita. Figure 3.4 illustrates that GDP per capita increases as average health-literacy scores increase.

**Figure 3.4:** GDP and average health-literacy scores, by province



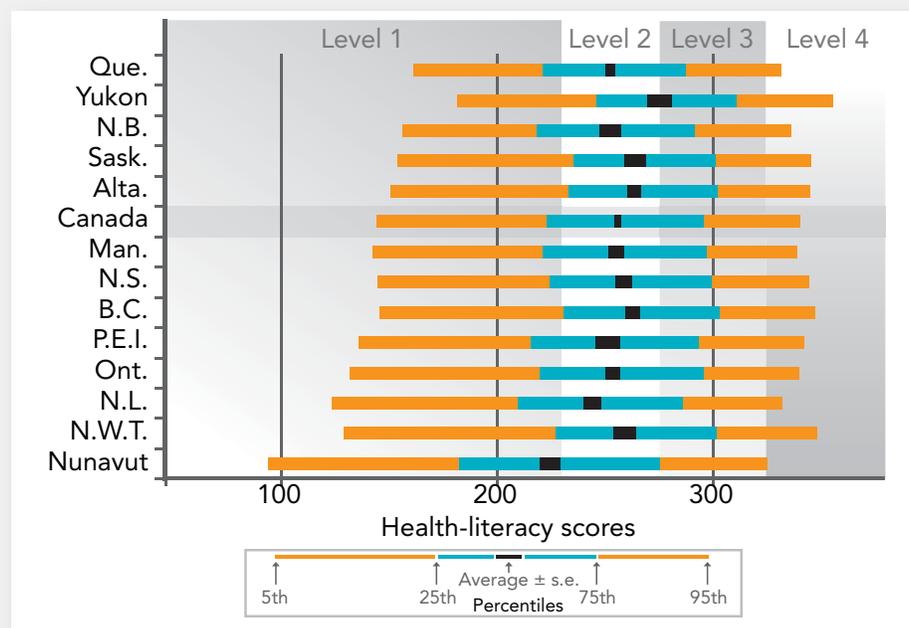
Source: International Adult Literacy and Skills Survey, 2003 and Statistics Canada's CANSIM Table 384-0013

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## HEALTH LITERACY LEVELS IN CANADA

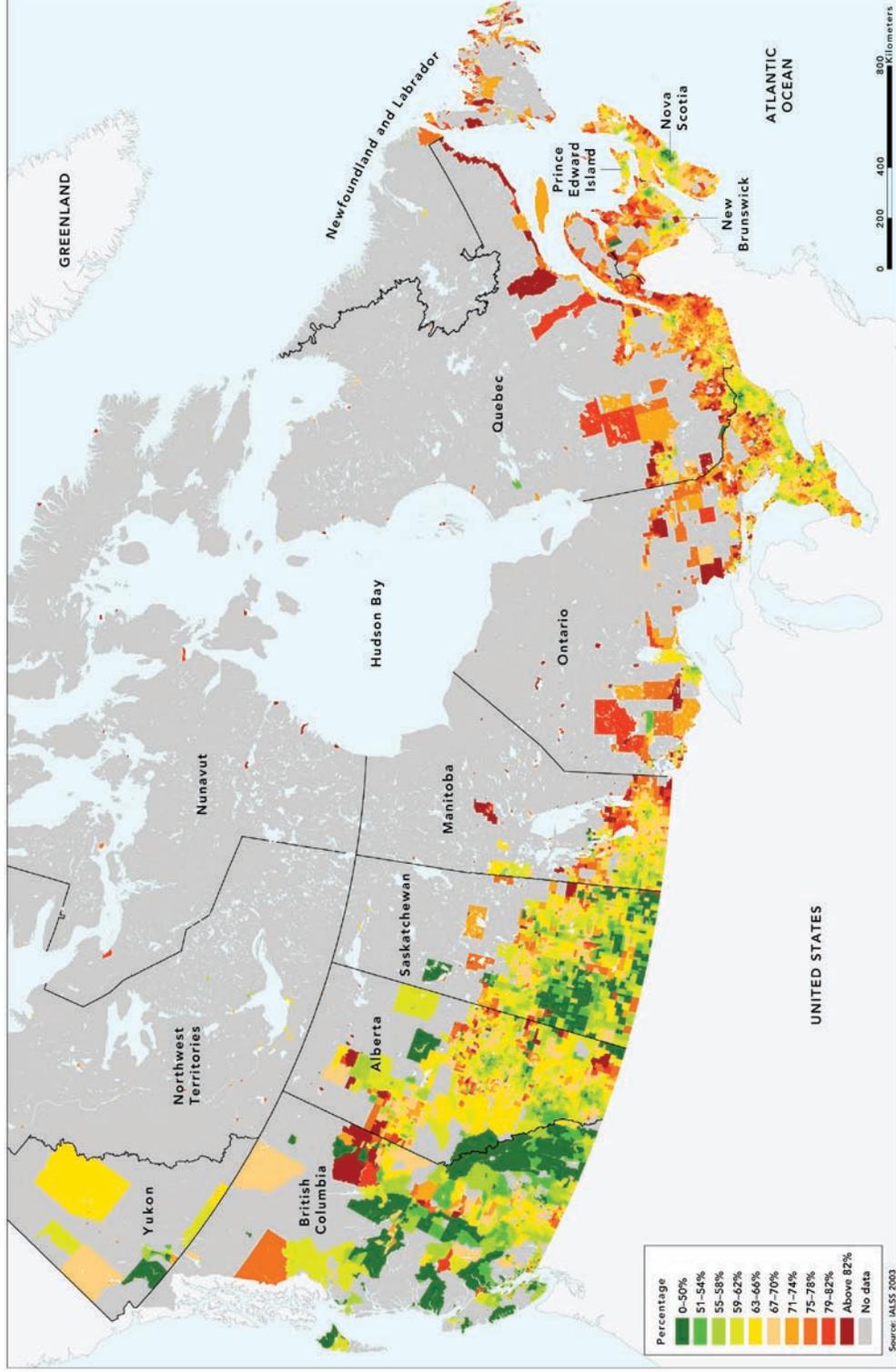
As reported by CCL in September 2007, on average Canadians have higher health-literacy scores than individuals in the United States. That comparison, however, is not the best indicator of how well Canada is doing on the issue of health literacy. If it is assumed that, as in prose literacy, Level 3 (276–325) on the health-literacy scale is the minimum required in order to participate fairly and fully in society, Canada has a significant percentage of adults (60%) who lack the skills to manage their health-literacy needs. Canada’s average health-literacy score of 258 conceals significant variation among and within the provinces and territories. This suggests that there is a large proportion of adults in every jurisdiction with literacy skill levels that put them at risk of poor health. A more narrow distribution of health-literacy scores implies a greater degree of equity among population groups.

**Figure 4.1:** Distribution of health-literacy scores, ages 16 and older, 2003



Source: International Adult Literacy and Skills Survey, 2003  
Note: Ranked in order of smallest gap between the 5th and 95th percentile

**Figure 4.2:** Distribution of health literacy in Canada  
Proportion of adult health literacy at Level 2 and below, ages 16 and older



### ZOOM IN ON HEALTH LITERACY

CCL has developed an interactive map that displays the distribution of low health literacy in Canada's provinces, territories, cities, and regions, and more than 49,000 communities and neighbourhoods.

Get results for the location you want by using CCL's online map of health literacy, available at: [www.ccl-cca.ca/healthliteracy](http://www.ccl-cca.ca/healthliteracy).

These results are derived from estimates for a geographical area based on the 2003 International Adult Literacy and Skills Survey (IALSS). The estimates are achieved by combining an area's results with those from neighbouring areas. They also factor in several characteristics of the area, from the 2001 Census, such as education and income. The geographical unit used in the map is Statistics Canada's dissemination area (DA), which is the smallest standard geographic area for which all census data are disseminated. DAs have a population of between 400 and 700 people. The analysis and mapping of the health-literacy results were conducted by J. Douglas Williams, Canada Research Chair in Human Development at the University of New Brunswick (UNB), with the assistance of Teresa Tang, GIS Programmer at the Canadian Research Institute for Social Policy at UNB.

**HEALTH LITERACY MAP**

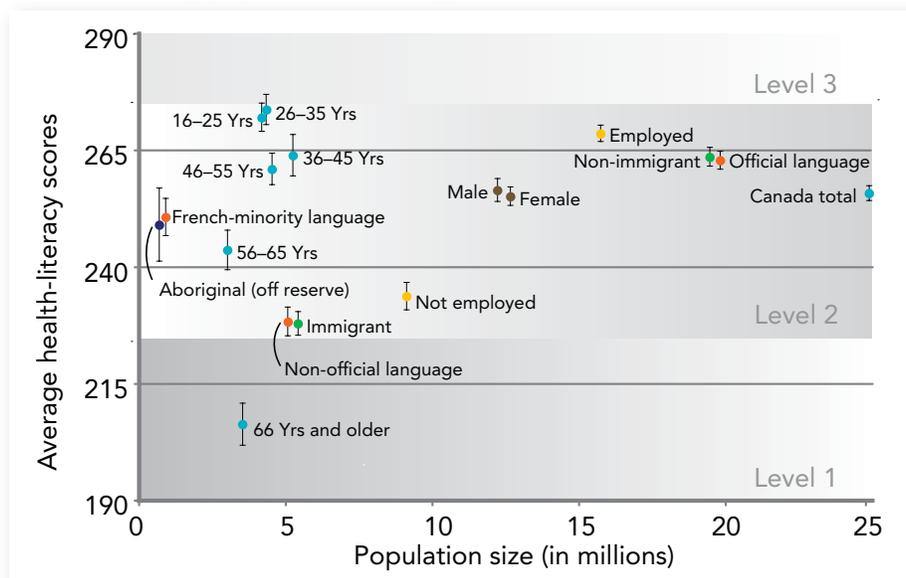
The map of health literacy in Canada provides a compelling visual overview of low health-literacy rates (Level 2 and below) for more than 49,000 communities and neighbourhood throughout the country. The map (see Figure 4.2) clearly shows that the distribution of health literacy, community by community, is far more variable than is the case at the level of health regions. This raises the question about the extent to which differences in average health-literacy levels and in the proportion of adults with low levels of skill might explain differences in the relative health, wealth and social development of communities.

**WHO IS MOST AT RISK?**

Another key finding of this research is that there are considerable health-literacy differences among various groups within the population, differences that clearly make these groups more vulnerable than others when navigating health issues and services. Perhaps not surprisingly, seniors, immigrants and the unemployed possess, on average, much lower levels of skill in terms of health literacy. These groups score below the national average.

Figure 4.3 illustrates the average score with the confidence interval (on the left) of each population group assessed, as well as the health-literacy level (on the right), relative to their population size (across the bottom). The Canadian average appears at the far right.

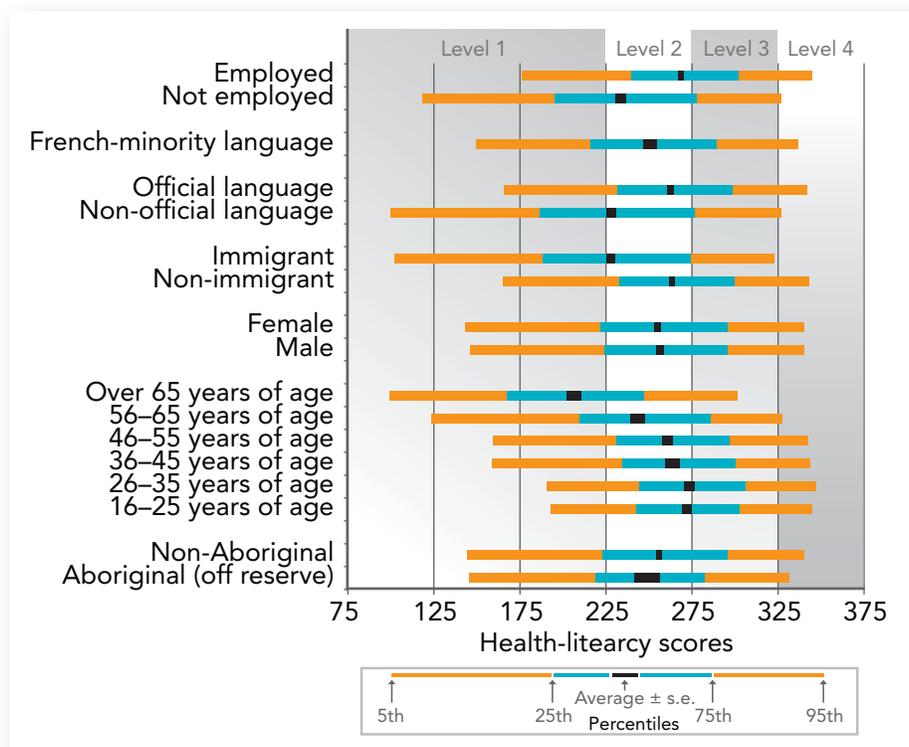
**Figure 4.3:** Average health-literacy performance for key groups, by population size, ages 16 and older, 2003



Source: International Literacy and Life Skills Survey, 2003  
 Note: Average health-literacy scores are displayed with 95% confidence intervals (the vertical bars above and below each point on the chart)

Given the strong influence that health-literacy skill is perceived to have on physical health outcomes, the presence of large differences in the average level and distributions of health literacy may imply large differences in the individual health. The situation for seniors is of particular concern since the research shows that average health-literacy scores fall consistently as we age.<sup>18</sup> There is also a relatively large gap in the health-literacy scores between the employed and unemployed population, as well as between immigrants and non-immigrants within the Canadian population.

**Figure 4.4:** Comparative distributions of health-literacy scores, by selected sub-populations, ages 16 and older



Source: International Literacy and Life Skills Survey, 2003  
 Note: These categories are not discrete. It is possible to have been counted in more than one group.

When considering average health-literacy scores alongside population size and the distribution of those scores, the most vulnerable three groups are: seniors (ages 66 and older); immigrants, especially those who do not speak either French or English; and people who are not employed.

It is important to note that while the average health-literacy score for certain groups, such as seniors and immigrants, is well below Level 3, Figure 4.4 demonstrates that there is a large distribution of health literacy—that is, there are significant percentages of the population in these groups who are above Level 3 on the health-literacy scale. This raises the question, “What determines levels of health literacy?”

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## WHAT DETERMINES LEVELS OF HEALTH LITERACY?

### EDUCATION AND HEALTH OUTCOMES

Evidence clearly indicates that there is a link between learning experiences, education and health outcomes.<sup>19,20,21</sup> But how are these and other factors linked to health literacy?

A number of related studies have focussed on the relationships between literacy and health-related outcomes, indicating that lower health knowledge is associated with lower health status, more use of health services and increased costs for health care.<sup>22</sup> This suggests that literacy may be a contributing factor to the wide disparities in health care that many adults face. The rationale is that numerous health-related activities, tasks and contexts are linked to print materials. Often these materials are complex and inaccessible, due either to poor design or complicated vocabulary. Furthermore, many whose health may depend on printed information have poor literacy skills.

The education–health relationship is complex, with a large number of intervening and mediating factors. There are many models in the research literature that help explain why and how learning can influence health.<sup>23</sup> The effect of education can be indirect, such as its influence on employment and income levels. Education can also play a more direct role in health, by influencing preferences, behaviours and lifestyle choices, by affecting individuals' general coping abilities and by increasing their ability to gather and interpret health-related information. Further, while education can be directly implicated in the formation of health-related knowledge, it can also form skills (such as literacy and other health-related competencies) that help in the gathering of additional health knowledge via continued learning.

Additionally, there is an intergenerational link between parents' educational attainment and the health and educational attainment of their children.<sup>24, 25</sup>

## FACTORS INFLUENCING HEALTH LITERACY

It is true that education levels and home background provide a strong foundation for literacy. However, an analysis disentangling potential factors that influence health literacy shows significant positive effect from daily reading.

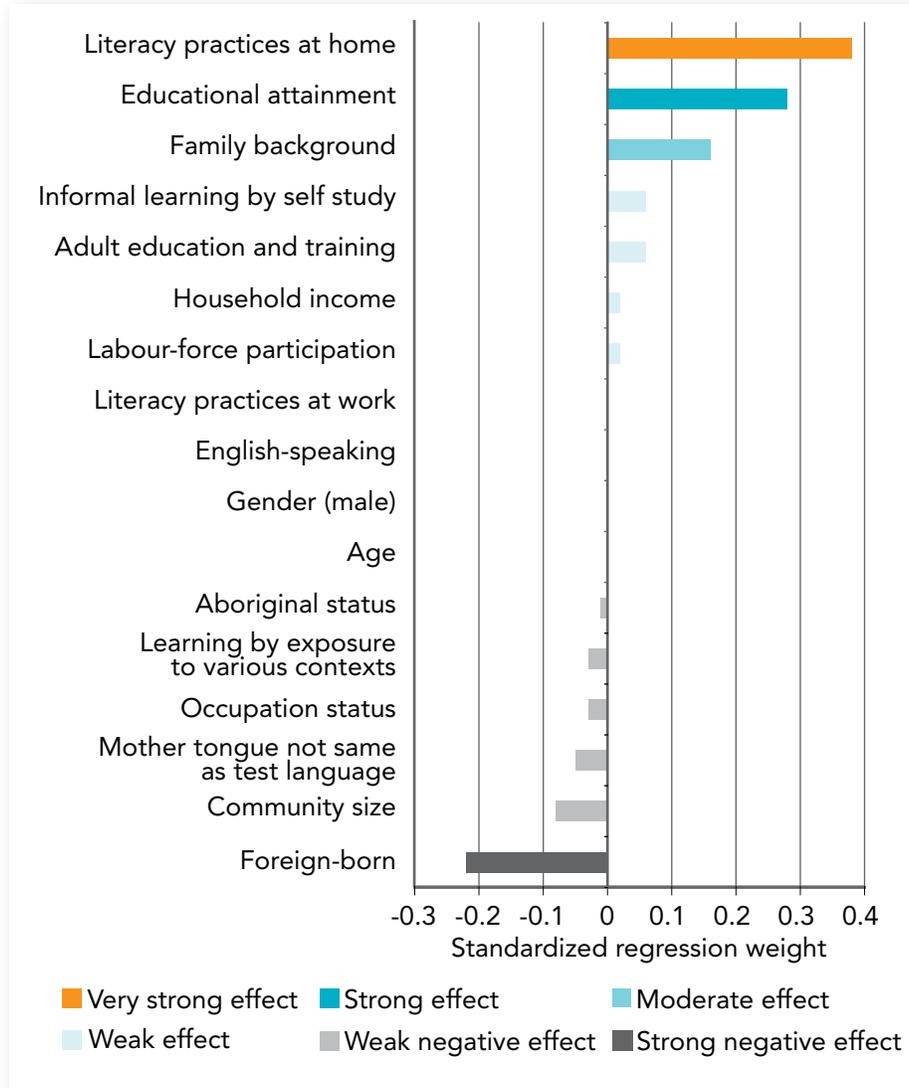
As figures 5.1 and 5.2 demonstrate, many factors and variables could have an effect on health literacy. CCL commissioned an analysis<sup>26</sup> examining the extent to which numerous factors (e.g., education, daily reading practices, parental education, income) each may contribute to the development of health literacy, by itself or in combination with other variables.

Age, gender, community size and language are other background factors included in this analysis. With the exception of age, there were no strong theoretical expectations for how these variables would affect health literacy. Generally, older adults tend to have lower literacy proficiency than younger adults,<sup>27, 28</sup> so a separate analysis was conducted for seniors, aged 66 and over.

## DAILY READING

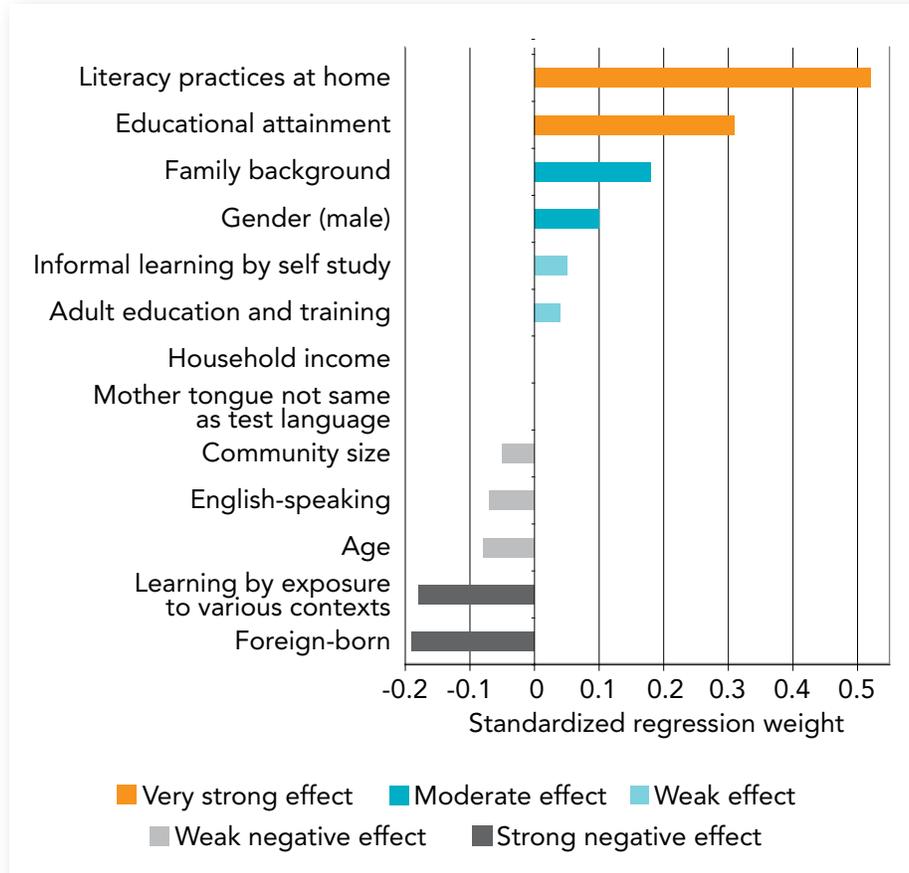
Results from this analysis indicate that daily reading habits have the single strongest effect on health-literacy proficiency. It is particularly notable that educational attainment is the second-strongest factor explaining health-literacy proficiency, especially since a similar analysis of prose and document literacy found education to be the single-most important determinant.<sup>29</sup> This suggests that there is something unique about daily reading that provides a health-literacy boost.

**Figure 5.1:** Factors predicting health literacy, ages 16–65



Source: International Literacy and Life Skills Survey, 2003

**Figure 5.2:** Factors predicting health literacy, ages 66 and over



Source: International Literacy and Life Skills Survey, 2003

The theory of practice engagement suggests that individuals acquire literacy through participation in different literacy practices.<sup>30</sup> According to this theory, those who engage more in literacy practice, both at work and at home, will enhance or at least maintain their literacy skills. Reading books, newspapers, magazines, letters, notes, websites or e-mails all help to sustain or improve health-literacy rates. Adults aged 16 to 65 who frequently engage in all these activities can score up to 38% higher than the average for their age. For those 66 years and older, the daily readers can score up to 52% higher than the average for their age. The effect of daily reading was not reliant on other factors, such as parents’ educational attainment or an individual’s higher education level. This suggests that literacy-related habits in daily life could substantially compensate for low levels of education when it comes to health literacy.

The importance of daily reading to health literacy is supported by recent research that explores the links between neuroscience and education.

This work shows that the normal age-related decline in brain function can be slowed by continued learning. Recent brain research also demonstrates that literacy practice increases the agility and acuity of the brain in later life—reinforcing the benefits associated with lifelong learning.<sup>31</sup>

While this report serves as a starting point for other avenues of research into the effects of health literacy—on health outcomes and on costs for the health-care system—it also makes a compelling case that a prescription for good health is reading.

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## CONCLUSIONS

Our ability to find, understand, evaluate and communicate health-related information—our health literacy—is critical for maintaining a healthy lifestyle, managing our own or our family’s health-care needs, making informed decisions about our health and navigating the health-care system. Yet findings from the analysis of the health-literacy data in the ALLS survey show that an estimated 60% of Canadian adults have health-literacy skills below Level 3, the level thought to be needed in order to appropriately access, understand and evaluate health information for themselves.

Health literacy matters because it contributes both directly and indirectly to good health. The differences in health status that are associated with differences in health literacy are large enough to imply that significant improvements in overall levels of population health might be realized if a way could be found to raise adult health-literacy levels. The same logic suggests that other benefits might flow from increases in health literacy: improved health literacy may lead to improved health, which would result in real savings and benefits for our health-care system and our national productivity.

### ADDRESSING CANADA’S HEALTH LITERACY CHALLENGES

*A Healthy Understanding* addresses the question “What do we know about health literacy in Canada?” With this report, Canadians can begin to develop a healthy understanding of health literacy and what to do about it. Canada’s health-literacy challenges will not be met without the active involvement of all sectors of society. In addition, the wide variation in health-literacy levels, both among provinces and territories and specific groups of the population, implies that a variety of responses and initiatives are required to raise health-literacy levels, including modifications to the delivery of health information and services.

## What individuals can do

- Research presented in *A Healthy Understanding* suggests that the strongest determinant of health literacy is the regular practice of a broad range of literacy activities: daily reading of newspapers, books, e-media and magazines can help to keep your brain healthy and active as well as maintain your literacy skills. Reading each day could keep the doctor away.
- Patients are increasingly being asked to become more involved in their own health care. So, it is important that all patients ask the right questions about their health and health care, and that they receive information and instructions in a way that they can understand. As a start, for example, the Manitoba Institute for Patient Safety encourages patients to ask their care providers three simple questions:
  - What is my health problem?
  - What do I need to do?
  - Why do I need to do this?

Additional information about the “It’s Safe to Ask” initiative, as well as information in a variety of languages, is available on the Manitoba Institute for Patient Safety website: [www.safetoask.ca](http://www.safetoask.ca).

- The saying “you can’t always believe what you read” certainly applies to health information. Canadians should seek out reputable information sources, use the library and verify information with a health-care professional.

## What the health community can do

- Health-care and community organizations, associations, centres and providers should seek to understand the issue of health literacy:
  - What is health literacy?
  - What are the levels of health literacy in your community or practice area?
  - Who is most at risk?

CCL's health-literacy map is one tool that can help health-care providers understand needs within their community.

- Much health information is in print format, using language and vocabulary that are beyond the ability of most Canadians to understand. Plain language, visual models and asking patients to repeat back information and instructions<sup>32</sup> can help address the health-literacy needs of patients. Newcomers whose first language is neither English nor French and adults with low levels of literacy also

highlight the need for informational videos and visuals about health, available in different languages.

- Health-promotion and disease-prevention initiatives can also integrate strategies to address the health-literacy needs of the population. For example, healthy-eating programs could include instructions on how to read food labels and shop for groceries more effectively.

### What educators can do

- In 2006–2007, the Adult Working Group of the Health and Learning Knowledge Centre consulted adults with low literacy skills, immigrants and refugees, to identify what is working well and what are the barriers to health and learning for these population groups. Adult literacy providers and students agreed that literacy classes can effectively address health-related literacy issues.
- Health is a common concern and a motivator for learners to improve their literacy skills. A health component can be included in literacy programs in order to promote critical thinking, analysis and discussion on health issues, especially for topics where there has been a lot of media attention. Literacy programs can also promote reputable health-information websites, encourage their students to understand how to access the health-care system and to ask questions of health-care providers.

More information about the work of the Health and Learning Knowledge Centre is available at: [www.ccl-cca.ca/healthlearning](http://www.ccl-cca.ca/healthlearning).

### What employers and unions can do

- Occupational health and safety are a priority for employers and employees. Safety instructions in clear and simple language, visuals and on-the-job training can address the health-literacy needs of employees and reduce or eliminate workplace injury and accident. There is also a wide variety of workplace safety information available in non-print formats through a number of provincial Workers' Compensation Boards which can be used to promote occupational health and safety. For example, WorkSafe BC has a number of slide shows and videos available online at [www.worksafebc.com](http://www.worksafebc.com) on topics such as construction safety, safe lifting, violence prevention and hand-washing.

## What governments can do

- In 2003, 48% of Canadian adults were at Levels 1 and 2 on the prose literacy scale, scoring lower than the international standard of Level 3. Programs and initiatives designed to improve overall literacy rates will also address health-literacy needs. All levels of government have responsibility for some piece of Canada's literacy and health-literacy challenge. Since the provinces and territories have a responsibility for education, training and health, they obviously have a role to play. So do cities, with their control over community resources, such as libraries and schools and their role in public health. Because the federal government has an economic and social development mandate, and literacy has an impact on quality and performance in both of these domains, it clearly has interests as well.
- Immigrants to Canada are among the groups most at risk. Workshops and information about health and the health-care system in Canada could be made available in a variety of languages. Language skills training and skills upgrading can help newcomers whose first language is neither English nor French.
- Governments at all levels can employ plain-language principles and various text formats (large print or Braille for example) when communicating health issues and health information to the public.
- Investments in libraries can increase access to materials and thereby improve overall literacy and health-literacy skills among all sectors of society.

## What will CCL do next?

One of the key projects funded by the Health and Learning Knowledge Centre is an Expert Panel on Health Literacy. Organized early in 2006 by the Canadian Public Health Association, the 13-member panel has written *A Vision for a Health Literate Canada*. Together with *A Healthy Understanding* and the health-literacy maps produced by CCL, this suite of information can serve as an important tool in the development of policies, practices and interventions for improving health literacy in communities and population groups.

The results presented in *A Healthy Understanding* suggest priorities for future research into the causes and consequences of low health literacy, as well as for focussed interventions to improve health-literacy levels across the country. The findings also imply that any strategies to address low health literacy, particularly among vulnerable groups, should reinforce the following two issues:

- Canadians need to understand the important role that ongoing learning plays in achieving and maintaining a sufficient level of literacy.
- Governments, institutions, health-care practitioners and the private sector need to do more to simplify the presentation of health information in print and other forms.

CCL's plans to undertake further work in the field of health literacy will:

- enhance Canada's understanding of health literacy through commissioned research, future reports, and information available on the CCL website,
- work with stakeholders to develop better indicators and establish clear benchmarks and objectives for health literacy in Canada,
- partner with other groups and stakeholders to develop tools and resources that will address Canadians' health-literacy needs, and
- support ongoing research in health literacy, including a feasibility study to explore research opportunities that would assess the relationship between health literacy and a range of important health outcomes, including the prevalence of disease, the cost of treatment and lost productivity.

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## ENDNOTES

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- 12 OECD and Statistics Canada. *Literacy in the Information Age: Final Report of the International Adult Literacy Survey* (Paris and Ottawa: 2000).
- 13 Logistic regression is used to help determine how certain characteristics of a population might change the likelihood of a given outcome. Because many demographic factors tend to interact, logistic regression is useful in separating out the influences of factors that tend to interact or covary. For example, since education affects health outcomes, it is useful to know whether health literacy also influences health outcomes, regardless of education.

- 14 The definition of heavy drinking used in this analysis is taken from the Canadian Community Health Survey (CCHS), in which people self-reported their alcohol consumption. For this analysis, someone who reported drinking five or more alcoholic beverages on one occasion, 12 or more times a year, is considered a heavy drinker.
- 15 Ohinmaa A, P. Jacobs, S. Simpson and J. Johnson. "The projection of prevalence and cost of diabetes in Canada: 2000 to 2016," *Canadian Journal of Diabetes*, 28(2) (Toronto: Canadian Diabetes Association, 2004).
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- 17 World Health Organization. *Health Promotion Glossary* (Geneva: 1998) p.10. Available at [www.who.int/healthpromotion/about](http://www.who.int/healthpromotion/about).
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- 26 The effect (or standardized regression weight) of each factor was estimated using a Linear Structural Relations (LISREL) path model. The model, which combines both path and factor analysis, analyzes the relationship between factors influencing health literacy and the health literacy score. Please contact CCL for further information about the underlying LISREL analysis.
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