

Successful aging in health care institutions

- *Four out of ten seniors living in long-term care facilities in 1996/97 had positive self-perceived health.*
- *When the effects of age, sex and the presence of chronic conditions were controlled, over a six-year period, institutionalized seniors with positive self-perceived health were less likely to die than were those with more negative perceptions.*
- *Seniors were more likely to report positive health if they were pain-free and independent.*
- *Participation in social activities and feeling close to at least one staff member were significantly related to positive self-perceived health among institutionalized seniors.*

Abstract

Objectives

This article explores factors associated with positive self-perceived health among Canadian seniors who live in health care institutions.

Data source

Cross-sectional and longitudinal data are from the institutional and household files of the National Population Health Survey (NPHS).

Analytical techniques

Prevalence rates of positive self-perceived health were estimated using 1996/97 cross-sectional data from the NPHS. Logistic regression models were used to identify factors associated with positive self-perceived health. With four cycles of longitudinal data, the relationship between positive self-perceived health and mortality was explored using survival analysis.

Main results

In 1996/97, 43% of the institutional population aged 65 or older reported positive self-perceived health. Institutional residents with positive self-perceived health had a lower risk of mortality. The odds of positive self-perceived health were higher for those who were usually free of pain and were independent. Participation in social and recreational activities and having a close relationship with at least one staff member of the institution were associated with positive self-perceived health.

Keywords

self-perceived health, residential facilities, chronic conditions, social support

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The Canadian population is aging. In 2004, 13% of the population was 65 or older; in 1971, the figure was just 8%.¹ Even greater changes in the proportion of seniors will occur in 2011 when the oldest baby boomers, those born in 1946, reach 65. It is projected that by 2051, a quarter of Canadians will be in their senior years.²

Aging is often accompanied by the onset or exacerbation of disease and disability, and a greater need for assistance with daily activities and personal care. While most seniors remain in the community as their needs increase, some require long-term institutional care. Since 1981, the proportion of people aged 65 or older living in health care institutions has remained fairly stable at around 7%.³ However, over the same period, as the elderly population increased, the actual number living in health care institutions rose from about 173,000 to more than 263,000.³

Methods

Data sources

This article is based on data from the National Population Health Survey (NPHS). The NPHS, which began in 1994/95, has three components: private households, the North, and health care institutions. This study relies most heavily on the last component.

The NPHS Health Institutions component collected data from people living in hospitals, nursing homes, and facilities for people with disabilities. The institutions were sampled from a list of residential care facilities collected by the Canadian Institute for Health Information and a list of hospitals maintained by the Health Statistics Division of Statistics Canada. The sample was restricted to facilities with at least four beds. In-scope institutions were stratified in three stages, first by geography (five regions excluding the Territories), then by type of institution (institutions for the elderly, institutions for those who are cognitively impaired, and other rehabilitative institutions), and finally, by size (number of beds). The first cycle of the NPHS (1994/95) was cross-sectional, while the second (1996/97) was both cross-sectional and longitudinal. Beginning in cycle 3 (1998/97), the NPHS became strictly longitudinal.

Interviewers initially met with institution administrators to establish which residents would require proxy interviews because of illness or incapacity (see *Proxy responses*). Next-of-kin were contacted and given the option of completing the interview on their relative's behalf or having a knowledgeable staff member or volunteer respond for their relative. Most interviews were done in person, although telephone interviews were accepted for proxy respondents who could not be met in person.

Prevalence rates for the institutional and household populations were based on the NPHS 1996/97 (cycle 2) cross-sectional files. The institutional file contains data for 2,118 respondents, 1,711 of whom were 65 or older, representing about 185,100 seniors at the Canada level. This cycle had an institutional response rate of 100% and an individual response rate of 89.9%. The 1996/97 household file contains data for 81,804 respondents, 13,363 of whom were 65 or older, representing approximately 3.4 million seniors. The response rate for the selected person in the household component was 95.6%.

Four cycles (1994/95, 1996/97, 1998/99, 2000/01) of the NPHS Health Institutions component, longitudinal file, were used to calculate proportional hazards ratios for death, by self-perceived health. The original sample of 2,287 respondents was restricted to 1,768 people who were 65 or older in the first cycle (1994/95) and for whom information was available in every cycle. The analysis relied on the full file (responses at every cycle) because of the availability of bootstrap weights. By cycle 4 (2000/01) 1,449 people had died, leaving 319 survivors. The initial 1,768 respondents represented about 186,300 seniors at the Canada level. The cycle 4 longitudinal institutional response rate was 99.3%. Within these institutions, interviews were completed for 97.6% of selected residents (individual response rate).

Detailed documentation on the NPHS can be found at Statistics Canada's Web site (<http://www.statcan.ca>).

In addition to the NPHS, census data from 1971 onwards were used to provide background information on the number and percentage of seniors in Canada, as well as the proportion of the population living in health care institutions. The population projections were produced by the Demography Division of Statistics Canada.²

Analytical techniques

Prevalence rates of self-perceived health by selected characteristics were estimated using cross-sectional data from the 1996/97 NPHS institutional and household components. The institutional component was used for the multiple logistic regression analysis to model associations between selected factors and self-perceived health. Some factors were not modifiable (selected chronic physical conditions), while others could be modified, or modified at least in part (social network, social involvement, independence, pain and barriers to communication). In addition, age (entered as a continuous variable), sex, and proxy reporting status were included in the model. Separate models were examined; that is, groups of factors were entered in blocks, but only the final model, which includes all variables, is presented in this analysis.

Proportional hazards ratios for death were calculated with data from the longitudinal file of the NPHS Health Institutions component. Death dates were imputed for 47 people reported to have died during the study but whose date of death was missing. These people were assumed to have died midway between cycles. For missing values in cycle 2, the imputed year of death is the year of the first interview, plus one; for cycle 3, it was the year of the first interview plus three. There were no missing death dates for cycle 4. Month of death was imputed to the same month as the first interview, and day of death was set to the first day of the month. Multivariate proportional hazards analysis was used to assess the association between positive self-perceived health and survival time. The proportional hazards coefficient estimates the effect on survival time of each covariate entered in the model. For respondents who died during the six-year follow-up period, the duration of survival was measured as the number of days from the date of the cycle 1 interview until the date of death at some time before the cycle 4 interview. For people who completed the cycle 4 interview, the duration of survival was defined as the difference in days between the cycle 1 and cycle 4 interviews; after the cycle 4 interview, the survival time was considered censored. A single model was generated that controlled for sex, age (entered as a continuous variable) and selected physical conditions.

All analyses based on survey data were weighted to reflect the age and sex distribution of the appropriate target population. To account for survey design effects, standard errors and coefficients of variation were estimated with the bootstrap technique.⁴⁻⁶

The number of institutional beds required to meet the needs of the aging population is growing. One projection suggests over half a million (565,000) people will require long-term care by 2031.⁷ Based on population projections,² and assuming that the proportion of seniors living in health care institutions remains at the 2001 rate of 6.7%, by 2051, between 600,000 and 670,000 Canadians will be residing in such institutions. The demand will likely rise most rapidly among the oldest seniors (85 or older), because almost a third of people in this age group live in health care institutions, and because the number aged 80 or older is expected to increase nearly fourfold to more than 3 million by 2051.²

While the need for institutional care has increased with the aging population, so, too, has the emphasis on “successful aging.” The idea that declining life satisfaction is inevitable in the senior years has given way to the belief that people can maintain a good quality of life as they age.⁸⁻¹¹

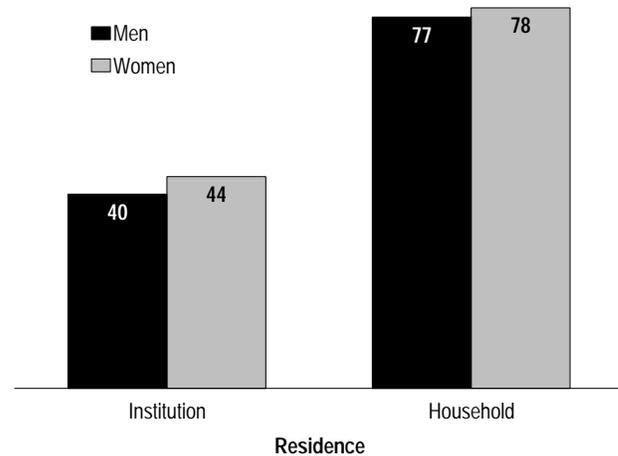
“Successful aging” is a multidimensional concept that includes physical, psychosocial and spiritual components.⁸⁻¹² It has been operationalized using both objective and subjective measures: physician-diagnosed conditions and self-reported physical health, for example.^{10,13} For some, “successful aging” means living in the community, a perspective that automatically excludes residents of health care institutions. Others cite the importance of adaptation to life’s circumstances, such as chronic diseases and institutionalization. Although community-residing seniors age more successfully than those who are institutionalized, the latter are not excluded from a positive aging process.¹⁰

Based on cross-sectional and longitudinal data from the National Population Health Survey (NPHS), this analysis examines seniors living in health care institutions to determine factors associated with successful aging (see *Methods, Definitions and Limitations*). Following the patient-centred approach of other research,⁹ this study uses seniors’ perceptions of their own general health as a measure of successful aging.

Evidence of successful aging

Having good, very good or excellent self-perceived health (referred to here as “positive” self-perceived health) is used to identify seniors who are likely to be aging successfully. Self-perceived health is a reliable and valid measure of overall well-being, encompassing mental and emotional health, as well as physical conditions and underlying symptoms.¹⁴⁻¹⁹ This indicator has been used with a variety of age groups, including seniors.^{16,18,20-22} However, most studies focus on

Chart 1
Percentage with positive self-perceived health, by sex and residence, population aged 65 or older, Canada excluding territories, 1996/97



Data source: 1996/97 National Population Health Survey, cross-sectional samples, Health Institutions and Household components

household populations and exclude people who are institutionalized.^{15,18,20,22,23}

As expected, seniors in health care institutions were far less likely to report positive self-perceived health than were those in private households (Chart 1) (see *Proxy responses*). However, a sizeable proportion of institutionalized seniors—43%—reported their health as good, very good or excellent. Unlike the results of some earlier studies,²¹ the proportions of men and women with positive self-perceived health did not differ. Even when other possible confounders such as age and health status were taken into account, no gender differences were apparent in institutionalized seniors’ odds of reporting positive health (Table 1).

Older seniors most positive

While negative perceptions of health are often associated with aging,¹⁸ this is not inevitable.^{17,19} In fact, based on NPHS data, the oldest (85 or older) seniors in health care institutions were more likely than younger residents (65 to 84) to rate their health positively (Chart 2). Even when the other factors were controlled, as residents aged they had higher odds of reporting positive self-perceived health (Table 1). The opposite was true for seniors in private households; those who were older were more likely than younger seniors to rate their health as fair or poor (Chart 2).

This pattern is consistent with the idea that people assess their health in relation to their circumstances, their expectations and their peers.^{17,19,21} The context

Table 1
Prevalence of and adjusted odds ratios for positive self-perceived health, by selected characteristics, institutional population aged 65 or older, Canada excluding territories, 1996/97

	%	Adjusted odds ratio	95% confidence interval		%	Adjusted odds ratio	95% confidence interval
Total	42.8	...	...	Independent			
Sex				Yes	66.0*	1.7*	1.1, 2.6
Men†	40.5	1.0	...	No†	37.3	1.0	...
Women	43.6	1.1	0.8, 1.5	Pain-free			
Age group				Yes	52.5*	2.6*	1.9, 3.4
65-84†	39.8	...	...	No†	29.9	1.0	...
85+	45.7*	...	...	Barriers to communication			
Age (continuous)	...	1.04*	1.02, 1.06	Yes	36.2*	0.9	0.7, 1.1
Proxy response				No†	50.0	1.0	...
Yes	34.3*	0.7*	0.5, 0.9	Social network			
No†	55.4	1.0	...	Close staff member(s)			
Chronic conditions				Yes	48.0*	1.3*	1.0, 1.8
Alzheimer's disease				No†	40.8	1.0	...
Yes	35.8*	0.8	0.6, 1.1	Missing	...	0.9	0.6, 1.4
No†	48.2	1.0	...	Close friend(s) inside facility			
Arthritis/Rheumatism				Yes	47.4*	0.9	0.7, 1.2
Yes	39.3*	0.8	0.6, 1.1	No†	41.4	1.0	...
No†	47.0	1.0	...	Missing	...	1.3	0.8, 2.3
Cataracts				Close relative(s) or friend(s) outside facility			
Yes	35.4*	0.6*	0.4, 0.8	Yes	43.2	0.7	0.4, 1.2
No†	46.6	1.0	...	No†	47.5	1.0	...
Diabetes				Missing	...	0.4	0.1, 1.1
Yes	27.5*	0.5*	0.3, 0.8	Social involvement			
No†	45.9	1.0	...	Daily	56.5*	2.4*	1.4, 3.9
Effects of stroke				At least once a week	49.3*	1.8*	1.3, 2.5
Yes	29.0*	0.7*	0.5, 1.0	At least once a month	45.8*	2.1*	1.3, 3.4
No†	47.3	1.0	...	Less than once a month	44.2*	1.4	0.9, 2.2
Heart disease				Never†	29.6	1.0	...
Yes	31.4*	0.7*	0.5, 0.9				
No†	47.3	1.0	...				
Urinary/Bowel incontinence							
Yes	35.0*	0.7*	0.5, 0.9				
No†	55.1	1.0	...				

Data source: 1996/97 National Population Health Survey, cross-sectional sample, Health Institutions component

Note: Because of rounding, some odds ratios with 1.0 as the lower/upper limit were statistically significant.

† Reference category

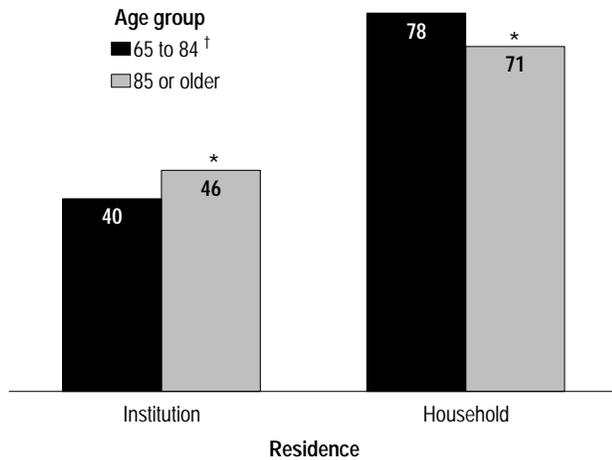
*Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

of seniors in institutions is very different from that of seniors who reside in the community. Simply reaching an older age may give a person in an institution the perception of being among the “healthiest.” As well, the relatively high percentage of very old institutional residents with positive self-perceived health may be a “healthy survivor” effect: those who had reached 85 or older may have been hardier, and many who were not as healthy had already died.¹⁸ Alternatively, self-perceived health may depend more on a *change* in

health status than the actual level of health before or after that change.^{17,18} Younger seniors whose declining health prompted a recent move into an institution may view their health more pessimistically than do those who have been institutionalized for a longer period. The move to an institution can be a particularly difficult transition, as it often represents a “last resort” where people may surrender their self-image as independent, productive members of society.²⁴

Chart 2
Percentage with positive self-perceived health, by age group and residence, population aged 65 or older, Canada excluding territories, 1996/97



Data source: 1996/97 National Population Health Survey, cross-sectional samples, Health Institutions and Household components
 † Reference category
 * Significantly different from estimate for reference category ($p < 0.05$)

Table 2
Adjusted proportional hazards ratios for death by 2000/01, by selected characteristics, institutional population aged 65 or older in 1994/95, Canada excluding territories

	Proportional hazards ratio	95% confidence interval
Self-perceived health		
Good/Very good/Excellent	0.6*	0.6, 0.7
Fair/Poor†	1.0	...
Sex		
Men†	1.0	...
Women	0.6*	0.5, 0.7
Age (continuous)	1.05*	1.04, 1.06
Chronic physical conditions		
Alzheimer's disease	1.1	1.0, 1.3
Arthritis/Rheumatism	0.9	0.8, 1.0
Cataracts	1.1	1.0, 1.3
Diabetes	1.2*	1.0, 1.4
Effects of stroke	1.2*	1.1, 1.4
Heart disease	1.0	0.9, 1.1
Urinary/Bowel incontinence	1.2*	1.1, 1.4

Data source: 1994/95, 1996/97, 1998/99 and 2000/01 National Population Health Survey, longitudinal sample, Health Institutions component
Note: Because of rounding, a hazards ratio with 1.0 as the lower limit was statistically significant.
 † Reference category. When not noted, reference category is absence of characteristic; for example, reference category for diabetes is no reported diagnosis of diabetes.
 *Significantly different from estimate for reference category ($p < 0.05$)
 ... Not applicable

Self-perceived health and mortality

Studies of community samples have found that self-perceived health is predictive of mortality.^{17,20,21,25,26} According to NPHS data, this relationship also exists in the institutional population. Seniors who reported positive self-perceived health in 1994/95 were less likely to die over the following six years than were those with poor self-perceived health, even when age, sex and physical conditions were taken into account (Table 2).

The strength and consistency of self-perceived health as a predictor of mortality may lie in its ability to reflect an array of information not easily captured by objective health measures, including early symptoms of disease, severity of diagnosed conditions, availability of resources including social networks and support, family history, and other factors that can influence both short- and longer-term mortality.^{17,20,25}

Factors associated with positive self-perceived health

The relationship between self-perceived health and mortality raises questions about the factors associated with positive perceptions. Helping people maintain or improve their perception of their health likely contributes to successful aging. Earlier studies have explored how personal characteristics and the availability of resources affects self-perceived health.^{18,22,23}

In this analysis, factors associated with self-perceived health are divided into three categories: those that cannot be modified, those that can, and those with elements of both. The non-modifiable factors are chronic conditions that frequently affect seniors. Although these conditions can be treated, they are non-modifiable in the sense that they cannot easily be eliminated; they represent the circumstances that seniors must live with as a result of the aging process, earlier lifestyle choices, past environmental conditions, and genetic make-up. Respondents' social networks and levels of social involvement are modifiable factors. These factors may be changed by the individual, by family and by friends, or through the actions of the health care institutions. Independence, pain and barriers to communication have modifiable and non-modifiable elements. While they may result from a non-modifiable physical condition, their effects can be modified with the use of medications and assistive devices.

Definitions

Self-perceived health is based on the question: “In general, would you say your health is: ...” The five response categories were combined: good/very good/excellent health comprises “positive” self-perceived health, while fair/poor health constitutes “negative” self-perceived health.

The presence of a *chronic condition* was established by asking respondents if a doctor had told them that they had a chronic disease that had lasted, or was expected to last, at least six months. Respondents were read a list of conditions that included Alzheimer’s disease/other dementia, arthritis/rheumatism, cataracts, diabetes, effects of stroke, heart disease, and urinary or bowel incontinence.

Seniors were considered *independent* if they did not need the help of another person with any of the following activities:

- Personal care (bathing, dressing or eating).
- Moving about inside the residence or institution.
- Getting in or out of bed.
- Getting in or out of a chair or wheelchair.

Seniors were considered *pain-free* if they answered “yes” to the question, “Are you usually free of pain or discomfort?”

Derived variables for speech and hearing problems were used to identify seniors who reported a *barrier to communication*. The National Population Health Survey uses a series of questions to derive an ordinal variable with categories from “no speech problems” (1) to “not understood by friends” (5). Similarly, categories for hearing range from “no hearing problems” (1) to “cannot hear” (7). Between these extremes are problems of varying degrees that are corrected or are not. Seniors with any degree of speech or hearing problem (a response category greater than (1) were considered to have a barrier to communication.

Three *social network* variables were derived from four questions:

- “How many staff members of this facility do you have a close relationship with, that is, feel at ease with or can talk to about private matters?”
- “Not counting relatives or staff, how many close friends do you have living inside this facility?”
- “How many relatives do you feel close to?”
- “Again, not counting relatives or staff, how many close friends do you have living outside this facility?”

For staff members and friends inside the facility, two dichotomous variables were created to indicate if the respondent had one or more close friends/staff members versus no close relationships. The third derived variable indicates if the respondent felt close to at least one relative or friend outside the institution.

Social involvement was derived from the following questions:

- “Do you belong to any groups or participate in groups inside this facility such as a social club, a hobby group, or religious services or meetings?”
- People who responded “yes” to the first question were then asked: “How often did you participate in meetings or activities in the past 12 months? If you belong to many [groups], just think of the one in which you are most active.”
- “During the past 12 months, how often did you leave this facility for social or recreational purposes, such as outings, visits or trips?”

From these three questions, respondents were categorized as having daily, at least once a week, at least once a month, less than once a month or no social involvement.

Physical conditions

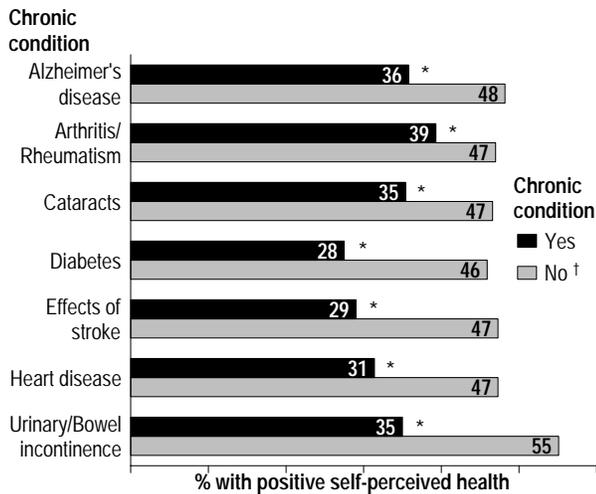
Consistent with earlier studies,^{15,23,27} findings from the NPHS show that seniors who suffer from selected chronic conditions were less likely to have a positive perception of their health (Chart 3). Even when other factors were taken into account, people with heart disease, incontinence, cataracts, diabetes, and those experiencing the effects of stroke had lower odds of having positive self-perceived health than did those who were free of these conditions (Table 1). Are physical conditions the only influence on seniors’ perceptions of their health, or is it possible to have positive self-perceived health despite these conditions? These are important questions.

Social network and social involvement

For seniors living in private households, social contacts and networks have been identified as important influences on their quality of life.^{10,28,29} Seniors residing in health care institutions also need social resources, but the nature of their networks and contacts may be different.¹⁰

According to NPHS data, seniors in institutions who were close to at least one staff member and those with at least one close friend in the institution tended to have positive self-perceived health (Chart 4). When possible confounding factors were considered, seniors who reported being close to at least one staff member still had higher odds (1.3) of having positive self-perceived health (Table 1).

Chart 3
Percentage with positive self-perceived health, by presence of chronic condition, institutional population aged 65 or older, Canada excluding territories, 1996/97



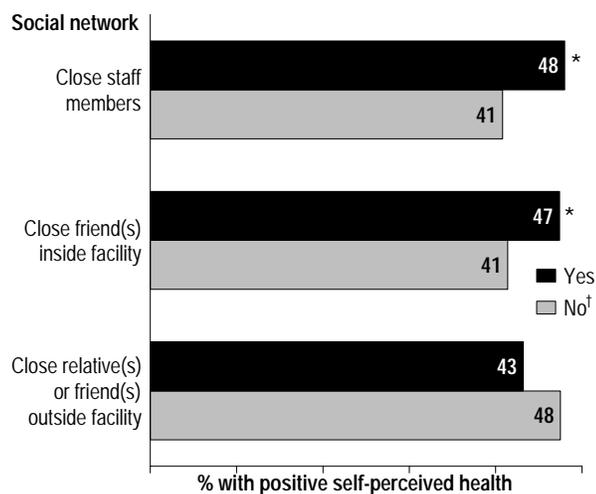
Data source: 1996/97 National Population Health Survey, cross-sectional sample, Health Institutions component
 † Reference category
 * Significantly different from estimate for reference category ($p < 0.05$)

In addition, those who had some social involvement were more likely to have a positive perception of their health (Chart 5, Table 1). Daily social involvement was particularly valuable. Even when the other factors were taken into account, those with daily social involvement had 2.4 times the odds of having positive self-perceived health, compared with those who did not participate in such activities.

Forming close relationships with staff members and social involvement likely go hand-in-hand. Staff members who are close to residents may offer extra encouragement to attend social and recreational activities, while higher levels of participation offer more opportunities to get to know staff members and form close relationships.

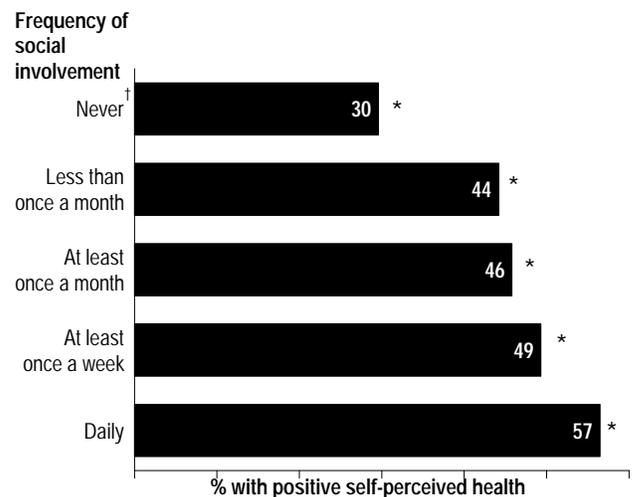
No association was evident between having close friends or relatives outside the health care institution and residents' positive self-perceived health (Chart 4, Table 1). While it is possible that such relationships may not be associated with a person's feelings about their health, there may be other explanations. The responses may be based on too broad a range of potential relationships to show an association. For example, a close friend or relative could be an adult child who visits daily or an elderly friend or sibling with

Chart 4
Percentage with positive self-perceived health, by availability of social network, institutional population aged 65 or older, Canada excluding territories, 1996/97



Data source: 1996/97 National Population Health Survey, cross-sectional sample, Health Institutions component
 † Reference category
 * Significantly different from estimate for reference category ($p < 0.05$)

Chart 5
Percentage with positive self-perceived health, by frequency of social involvement, institutional population aged 65 or older, Canada excluding territories, 1996/97



Data source: 1996/97 National Population Health Survey, cross-sectional sample, Health Institutions component
 † Reference category
 * Significantly different from estimate for reference category ($p < 0.05$)

whom only telephone contact is maintained. Alternatively, the cut-offs for dichotomizing this variable (zero versus 1 or more close friends or relatives) may not have been appropriate, since most respondents (93%) were close to at least one person outside the facility.

Pain-free, independent, able to communicate

Earlier studies have shown that severity of pain and changes in the level of pain are related to perceptions of health.^{18,23,30} Results from the NPHS are consistent with these findings. Seniors in institutions were much more likely to report positive health if they were generally pain-free (Chart 6). Even when physical conditions and other factors were taken into account,

Proxy responses

For reasons of illness or other incapacity, surveys of residents of health care institutions often depend on staff members, relatives or friends of the selected respondent to complete the interview. Such proxy responses can be particularly problematic for attitudinal or self-assessment information. Indeed, for this reason, proxy responses are often excluded from analyses.²⁰ However, proxy responses are necessary for many institutional residents, and the choice is to either work with this limitation or ignore the institutionalized population. In the 1996/97 NPHS, 59% of the institutional interviews were completed by proxy, compared with 18% of the household interviews for the same age group (65 or older). The rates of proxy response did not differ by sex (data not shown).

Age initially appeared to be associated with the use of a proxy, but this apparent link disappeared when other factors were taken into account. Certain conditions, such as Alzheimer's disease, were understandably associated with the use of proxy respondents. Fully 93% of people with Alzheimer's disease relied on proxy respondents, compared with 37% of people without this condition. As well as those with Alzheimer's disease, people with incontinence, those with a barrier to communication (hearing and/or speaking), and those who had suffered a stroke all had higher odds of using a proxy respondent (data not shown).

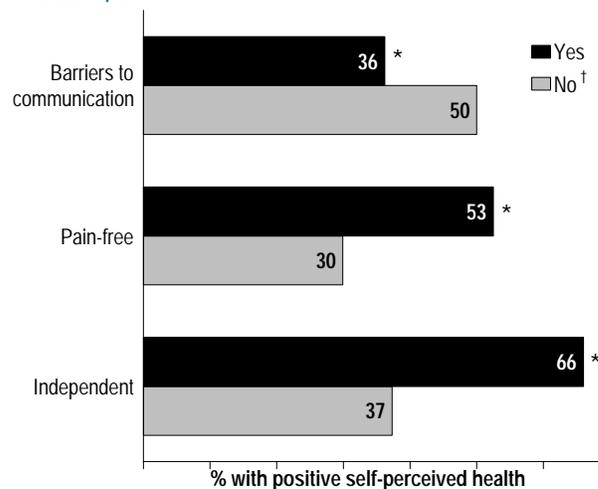
Proxy status was controlled in the logistic regression analysis (Table 1). Residents who depended on proxy respondents had significantly lower odds of reporting positive self-perceived health. This may reflect more severe levels of illness experienced by those who depended on others to respond on their behalf. Alternatively, it may indicate that proxy respondents systematically rate institutional residents' health more negatively than do residents who respond for themselves.

those who were pain-free had over twice the odds of reporting positive self-perceived health (Table 1). In fact, certain chronic conditions such as arthritis lost their association with positive self-perceived health when pain was entered into the model. This suggests that it is not always the physical conditions themselves, but rather, the symptom of pain associated with them, that is associated with negative self-perceived health.

People whose independence is threatened or diminished are less likely to regard their health positively. In community samples, people with activity limitations or restrictions, and those with recently acquired disabilities, had lower odds of reporting positive health.^{18,23} Similarly, according to the analysis of NPHS data, some degree of independence was an important predictor of positive self-perceived health in the institutional population. Seniors who could move about inside the residence, get in or out of a bed, chair or wheelchair, and attend to their personal care without the help of others were more likely to report positive self-perceived health (Chart 6, Table 1). This relationship held even when the other factors were taken into account.

Meaningful interactions are important for the overall well-being of seniors in residential facilities.³¹ The inability to hear properly or be understood likely poses barriers to conversation. The NPHS revealed that 36% of institutional residents who had difficulty speaking

Chart 6
Percentage with positive self-perceived health, by presence of barriers to communication, pain and independence, institutional population aged 65 or older, Canada excluding territories, 1996/97



Data source: 1996/97 National Population Health Survey, cross-sectional sample, Health Institutions component
 † Reference category
 * Significantly different from estimate for reference category (p < 0.05)

and being understood, or who had trouble hearing, rated their health positively, compared with 50% of those who did not experience such barriers to communication (Chart 6). However, these barriers lost significance in the final model, the effect being better accounted for by other factors (Table 1). It is possible, for example, that barriers to communication affect self-perceived health through social networks and involvement.

Limitations

In the 1996/97 National Population Health Survey (NPHS) Health Institutions component, 59% of the interviews were completed by proxy respondents, compared with 18% in the household component (see *Proxy responses*). The impact of a possible reporting bias is unknown.

Respondents were asked if they had certain physical conditions diagnosed by a health care professional. The presence of these self-reported conditions was not verified against clinical records. In addition, no information was available about the severity of the conditions reported.

Research in the area of social networks and support emphasizes the need for information about the nature of networks (size and geographic proximity, for example) and the quality of support they offer.³² Institutionalized respondents were asked to identify people that they felt "close" to. Information about the levels and types of social support was not available. For the question, "How many staff members of this facility do you have a close relationship with, that is, feel at ease with or can talk to about private matters?", information was not available for 21% of respondents. For the other social network variables, information was not available for 5% to 8% of respondents. In each instance, missing categories were included in the logistic regression model to optimize the sample size.

For investigations of social resources, self-perceived health and mortality, earlier work has demonstrated the benefit of analyzing men and women separately.^{21,33} However, the health care institution samples were too small to stratify the analysis by sex. The 1996/97 cross-sectional file contained 1,711 respondents aged 65 or older, 457 of whom were men. A similar situation exists with the longitudinal file used for the survival analysis: 485 of the 1,768 respondents aged 65 or older were men.

The prevalence of positive self-perceived health is presented for two age groups (65 to 84 and 85 or older). A further breakdown of the younger age group (65 to 74 and 75 to 84) in the institutional file revealed the same point estimate for positive self-perceived health for both age groups (39.8%). Thus, no information was lost by combining the two younger age groups, and combining them ensured more adequate cell sizes. Of the 1,711 respondents, only 261 were aged 65 to 74.

Concluding remarks

Positive self-perceived health is an indicator of successful aging among seniors living in health care institutions. In 1996/97, 43% of institutionalized seniors reported good, very good or excellent health. This suggests that it is important to include the institutionalized population in definitions of successful aging.

Seniors with positive self-perceived health had a lower risk of mortality. A number of factors associated with self-perceived health are, at least in part, modifiable. Results from this study suggest that efforts aimed at controlling pain, increasing independence, promoting social involvement and encouraging close relationships with staff may help seniors in health care institutions improve or maintain a positive perception of their health and thereby age successfully. ■

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