







# **TOBACCO USE**

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# BACKGROUND OF THE NUNAVIK INUIT HEALTH SURVEY

The monitoring of population health and its determinants is essential for the development of effective health prevention and promotion programs. More specifically, monitoring must provide an overall picture of a population's health, verify health trends and how health indicators vary over distance and time, detect emerging problems, identify priority problems, and develop possible health programs and services that meet the needs of the population studied.

The extensive survey conducted by Santé Québec in Nunavik in 1992 provided information on the health status of the Nunavik population (Santé Québec, 1994). The survey showed that health patterns of the population were in transition and reflected important lifestyle changes. Effectively, the Inuit population has undergone profound sociocultural, economic, and environmental changes over the last few decades. The Inuit have changed their living habits as contact with more southerly regions of Quebec increased. A sedentary lifestyle, the switch to a cash-based domestic economy, the modernization of living conditions and the increasing availability and accessibility of goods and foodstuffs imported from southern regions have contributed to these changes. These observations suggest the need for periodic monitoring of health endpoints of Nunavik Inuit to prevent the negative impact of risk factor emergence and lifestyle changes on subsequent morbidity and mortality from major chronic diseases.

In 2003, the Nunavik Regional Board of Health and Social Services (NRBHSS) decided to organize an extensive health survey in Nunavik in order to verify the evolution of health status and risk factors in the population. The NRBHSS and the Ministère de la Santé et des Services sociaux (MSSS) du Québec entrusted the Institut national de santé publique du Québec (INSPQ) with planning, administering and coordinating the survey. The INSPQ prepared the survey in close collaboration with the Unité de recherche en santé publique (URSP) of the Centre hospitalier universitaire de Québec (CHUQ) for the scientific and logistical component of the survey. The Institut de la statistique du Québec (ISQ) participated in methodology development, in particular the survey design.

The general aim of the survey was to gather social and health information on a set of themes including various health indicators, physical measurements, and social, environmental and living conditions, thus permitting a thorough update of the health and well-being profile of the Inuit population of Nunavik. The survey was designed to permit a comparison of the 2004 trends with those observed in 1992. Data collected in 2004 also allowed researchers to compare the Inuit to other Quebecers.

# Target population

The health survey was conducted among the Inuit population of Nunavik from August 27 to October 1, 2004. According to the 2001 Canadian census, the fourteen communities of Nunavik have a total of 9632 inhabitants, 91% of whom identified themselves as Inuit. The target population of the survey was permanent residents of Nunavik, excluding residents of collective dwellings and households in which there were no Inuit aged 18 years old or older.

#### Data collection

Data collection was performed on the Canadian Coast Guard Ship Amundsen, thanks to a grant obtained from the Canadian Foundation for Innovation (CFI) and the Network of Centres of Excellence of Canada (ArcticNet). The ship visited the fourteen villages of Nunavik, which are coastal villages. The study was based on selfadministered and interviewer-completed questionnaires. The study also involved physical and biological measurements including clinical tests. The survey was approved by the Comité d'éthique de la recherche de l'Université Laval (CERUL) and the Comité d'éthique de santé publique du Québec (CESP). Participation was voluntary and participants were asked to give their written consent before completing interviews and clinical tests. A total of 677 private Inuit households were visited by interviewers who met the household respondents to complete the identification chart and the household questionnaire. A respondent was defined as an Inuit adult able to provide information regarding every member of household. The identification chart allowed demographic information to be collected on every member of the household. The household questionnaire served to collect information on housing, environment, nutrition and certain health indicators especially regarding young children.

All individuals aged 15 or older belonging to the same household were invited to meet survey staff a few days later, on a Canadian Coast Guard ship, to respond to an interviewer-completed questionnaire (individual

questionnaire) as well as a self-administered confidential questionnaire. Participants from 18 to 74 years of age were also asked to complete a food frequency questionnaire and a 24-hour dietary recall, and to participate in a clinical session. The individual questionnaire aimed to collect general health information on subjects such as health perceptions, women's health, living habits and social support. The confidential questionnaire dealt with more sensitive issues such as suicide, drugs, violence and sexuality. During the clinical session, participants were invited to answer a nursecompleted questionnaire regarding their health status. Then, participants had a blood sample taken and physical measurements were performed including a hearing test, anthropometric measurements, an oral glucose tolerance test (excluding diabetics) and toenail sampling. Women from 35 to 74 years of age were invited to have a bone densitometry test. Finally, participants aged 40 to 74 could have, after consenting, an arteriosclerosis screening test as well as a continuous measure of cardiac rhythm for a two-hour period.

# Survey sampling and participation

The survey used a stratified random sampling of private Inuit households. The community was the only stratification variable used. This stratification allowed a standard representation of the target population. Among the 677 households visited by the interviewers, 521 agreed to participate in the survey. The household response rate is thus 77.8%. The individual response rates are obtained by multiplying the household participating rate by the individual collaboration rate since the household and individual instruments were administered in sequence. The collaboration rate corresponds to the proportion of eligible individuals who agreed to participate among the 521 participating households. In this survey, about two thirds of individuals accepted to participate for a response rate in the area of 50% for most of the collection instruments used in the survey. A total of 1056 individuals signed a consent form and had at least one test or completed one questionnaire. Among them, 1006 individuals answered the individual questionnaire, 969 answered the confidential questionnaire, 925 participated in the clinical session, 821 had a hearing test, 778 answered the food frequency questionnaire, 664 answered the 24-hour dietary recall, 282 had an arteriosclerosis test, 211 had a continuous measure of their cardiac rhythm for a two-hour period and 207 had a bone densitometry test. More details on the data processing are given in the Methodological Report.

# INTRODUCTION1

The risks of tobacco use have been recognized by health workers for several years: smoking is a major risk factor affecting the health of smokers and non-smokers alike. Tobacco smoke contains more than 4000 chemical substances, at least 50 of which cause or contribute to cancer (Hoffmann & Hoffmann, 2001).

According to the 1992 health survey conducted by Santé Québec among the Inuit of Nunavik, the second most frequent reported health problem in Nunavik is lung disease (8%) (Santé Québec, 1994), and lung cancer is the most common form of cancer reported by the Inuit (Statistics Canada, 2003). According to the mortality file of the Nunavik Department of Public Health, smoking is responsible for 85% of the lung cancer cases in Nunavik that caused 81 deaths (36 women and 45 men) between 1992 and 2004, or 8% of all deaths in the region during that period. It is the third largest cause of mortality in the area. Major respiratory health problems (asthma, pneumonia, emphysema and bronchitis) are also common (Santé Québec, 1994). It is obvious that tobacco use continues to be a major public health issue.

The proportion of smokers established by the 1992 survey was very high – nearly three quarters of Inuit aged 15 years and over were smokers. Monitoring the evolution of the situation has been essential. Have the prevention campaigns organized since 1992 been effective? What are the most vulnerable groups? The Nunavik Inuit Health Survey conducted in 2004 sheds new light on the prevalence and impacts of tobacco use in the area.

# **METHODOLOGICAL ASPECTS**

The 2004 survey data on smoking was obtained through the administration of an individual questionnaire. The section on tobacco use was addressed to all participants aged 15 and over. The questions sought information on current smoking status, age at which the first cigarette was smoked, age at which smoking became a daily habit, number of cigarettes smoked and, finally, cessation of smoking. Besides, a question on home smoking

<sup>&</sup>lt;sup>1</sup> For ease of readability, the expression "Inuit" is used throughout the theme paper to define the population under study even though a small percentage of individuals surveyed identified themselves as non-Inuit. Refer to "Background of the Health Survey" for further details regarding the definition of the target population.

restrictions in the household questionnaire allowed gathering information on passive smoking.

Statistical analyses for comparisons of proportions by sex and age group have been conducted at a threshold of  $\alpha = 0.05$  using a chi-square test corrected for design effect. Some comparisons have been made with results obtained during the 1992 Santé Québec survey where the questions asked are comparable. The results of the current survey were also compared to those of the 2003 Canadian Community Health Survey Cycle 2.1 (CCHS) for all of Quebec and Canada when relevant. Given the sampling procedures in the different surveys, these comparisons include an adjustment in proportions or rates to take into account the change in the population's age structure. This adjustment was made on a five-year age group basis using Statistics Canada 2001 census data for Nunavik as the reference population for comparisons with the 1992 survey, and Statistics Canada 1996 census data for comparisons with Quebec or Canada. However, only raw data is reported in the current text and accompanying tables to avoid any possible confusion with adjusted proportions. Moreover, the comparisons with the 1992 Inuit survey also included an adjustment for survey design (Aguirre-Torres, 1994).

# Accuracy of estimates

The data used in this module come from a sample and are thus subject to a certain degree of error. The coefficient of variation (CV) was used to quantify the accuracy of estimates and the Statistics Canada scale was used to qualify their accuracy. The presence of an "E" footnote next to an estimate indicates a marginal estimate (CV between 16.6% and 33.3%). Estimates with unreliable levels of accuracy (CV > 33.3%) are not presented and have been replaced by the letter "F."

#### RESULTS

#### Prevalence of smoking

At the time of the survey, 70% of Nunavik Inuit reported daily smoking, 6% occasional smoking, and 24% identified themselves as non-smokers. About 73% of the women interviewed during the survey smoke daily, compared to 68% of men; that difference is not statistically significant (Table 1). The proportions observed for occasional smokers are more or less the same for both genders. The overall results indicate that

close to 80% of Nunavik Inuit women currently smoke (daily or occasionally) compared to 74% of men.

Among non-smokers at the time of the survey, 63% declared having smoked at least 100 cigarettes in their lifetime. Among them, 90% acknowledged having smoked daily which means that 56% of present non-smokers have been regular smokers in the past.

When smoking status is analyzed by age group (Table 1), it may be surprising to observe that many young people smoked at the time of the survey: more than eight out of ten adolescents aged 15 to 17 smoked, the vast majority of them already being daily smokers (71%). Among those aged 18 to 29, the proportion of smokers is even higher, with nearly nine individuals out of ten who smoke and. once again, a majority (82%) being daily smokers. The group aged 30 to 49 is no different from the previously mentioned groups: eight out of ten individuals smoke. Three quarters of that age group are daily smokers. The only age group that stood out was that aged 50 and over. Approximately 45% of these individuals smoke and slightly more than 40% are daily smokers. This is the only age group where more than half of the individuals are non-smokers.

**Table 1**Type of smoker according to sex and age group (%), population aged 15 years and over, Nunavik, 2004

Characteristics -	Type of smoker				
Cilaracteristics -	Daily	Occasional	Non-smoker		
Total	70.1	6.4	23.5		
Sex					
Men	67.7	6.1 <sup>E</sup>	26.2		
Women	72.6	6.8	20.6		
Age group					
15-17 years	71.3	10.7 <sup>E</sup>	18.1 <sup>E</sup>		
18-29 years	81.6	6.6 <sup>E</sup>	11.8		
30-49 years	74.6	5.7 <sup>E</sup>	19.7		
50 years and over	40.7	4.7 <sup>E</sup>	54.6		

E Interpret with caution.

P-value Age: < 0.0001; P-value Sex: 0.06. Source: Nunavik Inuit Health Survey 2004.

Even if a slight increase was observed among daily and occasional smokers between 1992 and 2004 in Nunavik (73% in 1992, to approximately 77% in 2004), this increase was not statistically significant (Table 2).

Table 2 shows that slightly more than three quarters of Nunavik residents smoke cigarettes every day or occasionally, compared to roughly one quarter of Quebec and Canadian residents. The proportion of daily smokers in Nunavik is clearly higher than that observed for all of Quebec and for Canada even when we take into account that Nunavik population is much younger.

**Table 2**Comparison of tobacco use (%), population aged 15 years and over, Nunavik (1992 and 2004), Quebec (2003) and Canada (2003)

	Nunavik		Quebec	Canada
	1992	2004	2003	2003
Daily smoker	67.6	70.1	21.6	18.6
Occasional smoker	5.4	6.4	5.3	5.3
Non-smoker	27.1	23.5	73.1	76.1

Comparisons with Nunavik 1992: P-value = 0.09.

Comparisons with Quebec and Canada: P-value < 0.0001.

Sources: Santé Québec survey 1992, Nunavik Inuit Health Survey 2004 and CCHS 2003.

# Age at which the first cigarette was smoked

Inuit daily smokers had their first whole cigarette at a very young age. Among daily smokers, 25% smoked their first whole cigarette by the age of 11. Further, daily smokers stated having their first whole cigarette earlier than occasional smokers. Whereas close to 48% of daily smokers smoked their first whole cigarette before the age of 14, that percentage is only 31%<sup>E</sup> among occasional smokers (Table 3).

There are similarities between the age at which former and current daily smokers started smoking: close to 22% of non-smokers (ex-smokers) began smoking daily before the age of 14, 25% between the ages of 14 and 15, and 54% at age 16 or older.

Table 3

Age at which smokers smoked their first cigarette and age at which daily smokers and non-smokers (ex-smokers) began smoking daily (%), population aged 15 years and over, Nunavik, 2004

	Age		
	13 years and under	14 to 15 years	16 years and over
Daily smoker			
First whole cigarette	47.6	26.0	26.4
Began to smoke daily	23.6	27.6	48.8
Occasional smoker			
First whole cigarette Non-smoker (ex-smoker)	30.5 <sup>E</sup>	37.5	32.0 <sup>E</sup>
Began to smoke daily	21.7	24.6	53.7

E Interpret with caution.

Source: Nunavik Inuit Health Survey 2004.

# Number of cigarettes smoked

At the time of the survey, close to half of the daily smokers (45%) smoked 1 to 10 cigarettes per day, 39% smoked 11 to 24 cigarettes daily and 16% smoked 25 cigarettes or more. A definite majority of daily smokers in Nunavik therefore declared smoking less than one pack of cigarettes per day.

As for the occasional smokers, most of them (61%) smoke 1 to 5 cigarettes per day on the days during which they said they smoked. Concerning the number of days per month during which occasional smokers stated they smoked, 29% of occasional smokers smoke 1 to 5 days per month, 31% smoke 6 to 14 days per month and the majority, 39%, smoke more than 15 days per month. Roughly half (53%) of occasional smokers declared having smoked every day in the past.

Among former daily smokers, 42% smoked 1 to 10 cigarettes per day, 30% smoked 11 to 24 per day and 29% smoked 25 or more per day.

One third of men daily smokers smoke 1 to 10 cigarettes a day compared to one half of women. Although there are more daily smokers among women (Table 1), the present results indicate that Inuit women smoke smaller quantities than do men: there are more women in the category of individuals who smoke 1 to 10 cigarettes per day and fewer women in the category of individuals who smoke 25 or more cigarettes per day. For those two categories,

the differences in smoking between men and women are statistically significant.

An analysis of the number of cigarettes smoked by daily smokers according to age reveals interesting facts. Slightly more than one in two daily smokers aged 15 to 29 smokes 1 to 10 cigarettes per day, one third smoke 11 to 24 cigarettes per day and roughly 14% smoke one pack a day or more. Table 4 also shows that individuals aged 30 to 49 years reported smoking more cigarettes than those aged 15 to 29 years, with one third of them smoking 1 to 10 cigarettes per day, nearly half smoking 11 to 24 per day and about one in five smoking 25 per day or more. Among adults aged 50 and over, roughly 40% declared that they smoke 1 to 10 cigarettes per day. This group has the highest proportion of individuals (nearly one in four) who smoke 25 cigarettes or more a day. The average number of cigarettes smoked per day among daily smokers is 12 among those aged 15 to 29 and 15 among those aged 30 or over.

**Table 4**Number of cigarettes smoked by daily smokers, by sex and age group (%), population aged 15 years and over, Nunavik, 2004

Number of cigarettes			
1-10	11-24	25 or more	
,			
36.2	42.8	20.9	
52.8	35.2	12.0	
53.6	33.0	13.5	
34.4	47.1	18.5	
40.2	37.3	22.5 <sup>E</sup>	
	36.2 52.8 53.6 34.4	36.2 42.8 52.8 35.2 53.6 33.0 34.4 47.1	

E Interpret with caution.

P-value Age: < 0.0001; P-value Sex: < 0.0001. Source: Nunavik Inuit Health Survey 2004.

# Smoking cessation

Many daily smokers in Nunavik attempt to stop smoking, as indicated by the 42% of daily smokers who declared having tried to quit smoking during the 12 months preceding the survey. That proportion increases to 65% among occasional smokers (Table A1, Appendix). Among former daily smokers, 28% reported having quit smoking less than three years ago. That proportion rises to 30% among those who quit three to nine years ago and, finally, to 42%, the highest, among those who quit ten or more years ago.

Table A1 (Appendix) clearly shows that regardless of the individual's smoking status, the method most often used to quit smoking is simply to stop, with no quitting aids. Nicotine patches and gum, which have been proven useful according to literature on quitting smoking, are used by only one in five daily smokers. Other methods mentioned were for the most part, food related such as chewing regular gum, having candies or drinking water. Some of the respondents said they gradually decreased their cigarette smoking as a method of quitting.

The main reason motivating individuals in Nunavik to stop smoking is their health, with more than one in two individuals stating having quit for that reason (Table A2, Appendix). In decreasing order, the other reasons mentioned are: no particular reason, the cost, tired of smoking (bad breath, disgusting), pregnancy or because of children, illness or death of family member or friend, concern about the health of one's family, allergy or asthma and, finally, pressure from family or friends. Reasons other than those listed in the questionnaire are too varied to detect any pattern.

Some trends may be observed if we examine the results by sex. More men than women quit for their health (67% compared to 48%) and due to cost (men 15% vs. very few women (unreliable estimate)). As expected, pregnancy or children was an incentive to stop for women exclusively (17% ). Another reason that motivates more women than men to stop smoking is bad smell and an attitude of disgust toward cigarettes, as 17% of them quit for that reason compared to a very few number of men.

#### Passive smoking

It is well known that people repeatedly exposed to environmental tobacco smoke are more likely to develop or even die from heart problems, lung cancer, and breathing problems. Second-hand smoke is also recognized to cause chest infections, ear infections, excessive coughing and throat irritation (Health Canada, 2005).

Data from the Nunavik Inuit Health Survey 2004 revealed that smoking restrictions were present in 84% of Inuit homes. Total restriction inside the house was reported in 54% of houses, while smoking was allowed in certain rooms or under certain circumstances in 30% of households.

# Smoking during pregnancy

Tobacco use during pregnancy is also of concern in Inuit communities. The results from the Nunavik Inuit survey reveal that 65% of women smoked daily and 17% smoked occasionally during their last pregnancy. Again, these proportions are considerably higher than that observed for Quebec and for Canada where the proportions of daily and occasional smoking reported in CCHS 2003 are 22% and 11% for Quebec, and 14% and 13% for the Canadian population.

#### DISCUSSION

In 2004, there were still more than three in four Inuit who smoked, compared to one in four for all of Quebec and in Canada. There are also more smokers among women (79%) than among men (74%). However, among daily smokers, women smoke smaller quantities than do men, with 53% of them smoking 1 to 10 cigarettes per day compared to 36% of men smoking the same amount. Young people remain the biggest cigarette consumers (88% of those aged 18 to 29 compared to 45% of those aged 50 and over) although they tend to smoke a little less number of cigarettes per day.

Daily smokers tend to smoke their first whole cigarette at a very young age. Results from the survey actually showed that close to 50% of them did so before the age of 14. Thus, it would be important to target young adolescents, even starting with those aged 11, in tobaccouse prevention and smoking-cessation campaigns.

The prevalence of smoking revealed in this survey has remained unchanged compared to estimates derived from the 1992 survey. The results concerning women's smoking habits indicate that close to 80% of Nunavik Inuit women currently smoke. Furthermore, the current survey revealed that 82% smoked during their last pregnancy. A more extensive survey on this subject conducted in 1988 among Canadian Indians and Inuit showed that 78% smoked prior to pregnancy, 76% during pregnancy; and 75% in the month after pregnancy (Health and Welfare Canada, 1991). These results suggest that a sustained community awareness campaign, which is ongoing in Nunavik, must be intensified with targeted initiatives to reach young people and also by placing greater emphasis on pregnant women.

Even though there are differences between men and women, the primary reason motivating individuals to stop smoking is their health. From a public health perspective, and in light of recent successful efforts to decrease tobacco use elsewhere in Canada, prevention efforts for the general population should be aimed at demonstrating the harmful, long-term effects of smoking on health.

#### KEY ISSUES

- More than three quarters of the participants surveyed smoked daily or occasionally at the time of the survey, compared to one quarter of residents of the province of Quebec and the same for Canada.
- The proportions of smokers reported in the 2004 survey are basically the same as those derived from the 1992 Inuit survey.
- Inuit women appear to smoke more than their male counterparts (79% vs. 74%) but they smoke on average fewer cigarettes per day than do men.
- When analyzed by age group, results reveal that people aged 18 to 29 smoke the most. Nearly 90% of them are smokers, whereas people aged 50 and over smoke the least (45% are smokers).
- An introduction to cigarettes begins at a very young age, with nearly half of daily smokers having had their first full cigarette before the age of 14. Moreover, half of daily smokers began smoking on a daily basis before the age of 16.
- A high proportion of smokers had tried to stop smoking in the 12 months preceding the survey (about 42% of daily smokers and 65% of occasional smokers).
- Personal health was cited as is the top reason motivating smokers to stop smoking. However, the majority of smokers surveyed do not use any aid to try to stop smoking.
- Smoking restrictions were present in 84% of the Inuit homes surveyed.
- \$\,65\% of women smoked daily and 17\% smoked occasionally during their last pregnancy.

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# **APPENDIX**

Table A1

Type of smokers who tried to quit smoking in the past 12 months and the methods used to quit (%), population aged 15 years and over, Nunavik, 2004

	Type of smokers			
	Daily	Occasional	Non-smoker (ex-smoker)	
Tried to quit smoking in the past 12 months	42.3	64.6	-	
Method used to quit				
No aids	63.9	79.0	79.4	
Nicotine patches	19.8	F	F	
Nicotine gum	4.5 <sup>E</sup>	F	F	
Pills	F	F	F	
Other	10.6	F	11.2	

E Interpret with caution.

Source: Nunavik Inuit Health Survey 2004.

**Table A2**Reasons that prompted former smokers to quit smoking (%), ex-smokers aged 15 years and over, Nunavik, 2004

Reasons for quitting smoking	(%)
Own health	58.5
Just wanted to quit, no reason	10.1 <sup>E</sup>
Cost	9.9 <sup>E</sup>
Got tired of smoking, bad smell, disgusting habit	8.8 <sup>E</sup>
Pregnancy, had a baby	8.7 <sup>E</sup>
Smoking-related illness or death of family member or friend	7.4 <sup>E</sup>
Concern about health of family	7.3 <sup>E</sup>
Allergy or asthma	7.2 <sup>E</sup>
Pressure from family or friends	5.7 <sup>E</sup>
Less stress in life, different job	F
Restrictions on where one can smoke	F
Other	8.0 <sup>E</sup>

E Interpret with caution.

te: It is important to note that the absence of data in certain cells in this table does not mean no individuals; rather, the number of individuals who responded in those categories is too small, thus rendering the results unreliable. In such cases, the numbers were left out of the table.

Source: Nunavik Inuit Health Survey 2004.

F Unreliable estimate.

F Unreliable estimate.

# Sb o A S C? Qanuippitaa? HOW ARE WE?

