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ALCOHOL, DRUG USE AND GAMBLING AMONG THE INUIT OF NUNAVIK: EPIDEMIOLOGICAL PROFILE



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ALCOHOL, DRUG USE AND GAMBLING AMONG THE INUIT OF NUNAVIK: EPIDEMIOLOGICAL PROFILE

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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 self-administered 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 the 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 nurse-completed 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

Lifestyle practices are major determinants of a population's health. Public health care workers are interested in these issues because of the possibility of modifying some of these practices and thus improving the quality of life of populations (Daveluy et al., 1994). Some of these practices constitute significant risk factors for most chronic diseases and severe disabilities. The text that follows is divided into two sections, each relating to a component of the 2004 Nunavik Inuit Health Survey. The first concerns alcohol and illicit drug use, the second gambling.

I. ALCOHOL AND DRUG USE

The Canadian Addiction Survey 2004 (CAS 2004) reveals that alcohol is the most frequently used psychoactive agent among Canadians (Demers & Poulin, 2005). Certain drinking habits increase the risk of alcohol-induced problems (Babor et al., 2003; Demers & Poulin, 2005). In fact, drinking is associated with a number of health issues such as cirrhosis of the liver, cancer, brain damage, Fetal Alcohol Spectrum Disorder. Alcohol consumption also increases the risk of accidents and injuries, and is related to a number of social problems: family problems, crime, psychological stress, violence.

The communities, governments and regional organizations have identified drinking as a serious social problem among the Inuit (Korhonen, 2004). Nevertheless, there is little specific data on alcohol consumption by this population. Some surveys included Aboriginals, but Scott (1995) noted several limitations in these studies, including grouping different Aboriginal populations into a single category. The few studies of Canadian Aboriginal populations reveal that the Inuit stand out from southern populations in terms of the way in which they consume alcohol: a lower proportion of them drink daily or every week, and abstinence is more common. They tend to drink only occasionally, but in episodes of heavy drinking² (Korhonen, 2004). Little information is available on the

¹ 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.

² An episode of heavy drinking is defined as having five or more drinks on one occasion.

use of illicit drugs by Aboriginal people (Health Canada, 1998) and even less among Inuit.

Access to adequate, up-to-date data is vital for the development of effective health policies and programs for the Inuit. The 1992 Santé Québec survey has been the major source of data on alcohol and drug use by this population (Santé Québec, 1994). The Nunavik Inuit Health Survey (NIHS) carried out in fall 2004 throughout the 14 communities in Nunavik permitted an updating of the alcohol and drug use descriptive profile in the population aged 15 years and over, and the identification of socio-demographic characteristics associated with use. Many of the questions used in the NIHS 2004 confidential questionnaire are similar to those used in the Santé Québec survey 1992, allowing for comparisons and the development of a profile of the evolution of alcohol and drug use. The Canadian Community Health Survey 2003 (CCHS) (Statistics Canada, 2003) and the CAS 2004 were also used to compare the situation of the Inuit of Nunavik with those of southern Quebec and of Canada as a whole when the questions in the various surveys were judged equivalent.

As with alcohol use, drug use is associated with a certain number of social and health problems that vary according to the nature of the substance used, the quantity consumed and the preferred absorption method (Chevalier & Lemoine, 2001). Although not all drugs have the same health risks, nevertheless they all have effects that can seriously harm the physical and psychological health of those who use them. For example, marijuana use can damage the lungs and respiratory tracts while injection drug users expose themselves to viral infections such as hepatitis or HIV (Health Canada, 2000; Chevalier & Lemoine, 2001). Most substance use has the potential to reduce physical coordination, distort sensory perception and impair memory, attention and judgment. There is no question that these side effects constitute serious safety risks, especially if the user is driving a vehicle or operating machinery (Health Canada, 2000).

On a psychological level, certain drugs can cause short-term confusion, anxiety or mental disorders. Over the longer term, drug abuse can result in personality changes, learning problems and even, in some cases, mental health problems (Health Canada, 2000). Young people are especially vulnerable in this regard. Those who turn to drugs to deal with anxiety and depression risk establishing a pattern of behaviour that will be hard to break.

METHODOLOGICAL ASPECTS

A confidential questionnaire was used to gather information on alcohol and drug use for the Nunavik Inuit Health Survey 2004. The planned procedure was for participants to complete this questionnaire on their own, however many of them turned to the interviewer to complete part of or the entire questionnaire. Questions on lifetime use and frequency of consumption in the preceding months allowed a determination of the type of drinker: regular drinker, occasional drinker, former drinker or abstainer. Questions on the quantity of alcohol consumed per occasion and the frequency of episodes of heavy drinking provided information on the proportion of drinkers who adopt this mode of consumption. Some questions also explored sources of alcohol supplies in Nunavik, changes in consumption habits over the previous 12 months and the reasons underlying these changes.³

The CAGE questionnaire (Ewing, 1984) was integrated into the confidential questionnaire of the Nunavik Inuit Health Survey. This instrument is composed of the four following questions to which the respondent answers “yes” or “no”: *Have you ever felt that you ought to Cut down on your drinking; have people Annoyed you by criticizing your drinking; have you ever felt bad or Guilty about your drinking, have you ever had a drink first thing in the morning (Eye opener) to steady your nerves or get rid of a hangover.* The CAGE is a widely used instrument for detecting alcohol abuse and alcohol dependence; depending upon the population, its sensitivity varies from 43% to 94% and its specificity from 70% to 97% (Fiellin et al., 2000). A CAGE score of 2 or higher is not equivalent to a diagnosis of alcoholism, but it may be a sign of alcohol consumption that risks having negative impacts on daily life. It may be pertinent to use a cut-off point other than the normal criteria (≥ 2) in certain populations to safeguard the instrument’s specificity. The use of a more severe criterion could be desirable for groups that are less sensitive to social desirability. This is why the proportion of respondents with a score equal to or over three was also examined.

The objective of the questions on drug use was to document the proportion of marijuana, cocaine or crack, solvent, hallucinogen and injectable drug users over the previous year. The respondents had to say if they used or not any of the preceding substances in the past 12 months.

³ The results of these questions are not presented here.

A total of 1056 individuals completed the consent form and participated in at least one activity in this survey. The confidential questionnaire was completed by 969 of these people, 856 adults and 113 minors aged 15 and over. Comparative proportion chi-square tests corrected for design effect were carried out and the differences were declared significant when the p-value was less than or equal to 0.05.

The Nunavik territory has been divided in two regions because place of residence could influence life habits. The Hudson coast includes the villages of Kuujjuarapik, Umiujaq, Inukjuak, Puvirnituq, Akulivik, Ivujivik and Salluit while the Ungava coast includes Kangiqsujuaq, Quaqtac, Kangirsuk, Aupaluk, Tasiujaq, Kuujjuaq and Kangiqsualujuaq.

Some comparisons have been made with results obtained during the 1992 Santé Québec survey where the questions asked are comparable. Results of the present survey were also compared to CCHS 2003 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 is made on a five years age groups basis using Nunavik 2001 census of Statistics Canada as reference population for comparisons with the 1992 survey and Canada 1996 census data for comparisons with Quebec or Canada. However, only raw data is reported in the text and tables to avoid any possible confusion with adjusted proportions. Moreover, the comparisons with other surveys also included an adjustment for survey design (Aguirre-Torres, 1994).

Accuracy of estimates

The data used in this module comes from a sample and is thus subject to a certain degree of error. The coefficient of variation (CV) has been used to quantify the accuracy of estimates and the Statistics Canada scale was used to qualify the accuracy of estimates. 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".

Scope and limitations of data

In terms of the education variable, it is important to specify that the choice of answers for post-secondary

training were not well adapted to the context of the survey's target population. The answers given for this category reveal that there was likely confusion during data collection between training that requires a post-secondary diploma and training that does not (e.g. driver's license, fishing license, etc). Therefore, the number of people with post-secondary education was likely overestimated.

RESULTS

Alcohol consumption

In this study, alcohol was the psychoactive substance used by the largest proportion of individuals: 86.9% of respondents reported having consumed it during their lifetime, and 76.9% had consumed it in the year preceding the survey. The proportion of alcohol users varies significantly depending on gender (Table A1, Appendix). Nearly 6% more men than women had consumed alcohol at some time during their lifetime. There was also a significantly higher proportion of drinkers among participants under 45 years of age, more highly educated, with an annual revenue over \$20 000 and who have a job. The proportion of the population that drinks is higher on the Ungava coast, but this difference, although significant, seems more attributable to the fact that they live in a community where alcohol sales are permitted; the proportion of drinkers is 10% higher in villages where alcohol sales are permitted.

The population of Nunavik has been subdivided into four groups based on the reported frequency of drinking⁴. Among participants, 13.2% were abstainers, i.e. individuals never having consumed alcohol; 9.9% were former drinkers, individuals who previously consumed alcohol but who abstained from doing so in the year preceding the survey; 26.8% were occasional drinkers, respondents who drank less than once a month; and 50.1% were regular drinkers, those who drank once a month or more. Regular consumption of alcohol is more frequent among younger people (57.7% among 15-24 years old and 53.7% among 25-44 years old) than among older people (32.1%; $p < 0.0001$).

Among those who drank alcohol in the year preceding the survey, the quantity consumed per occasion had the following break down: 11.2% have only one drink on days they indulge, 38.4% have two to five drinks, 34.6% have

⁴ These categories correspond to those used by Statistics Canada (2003) to define the type of drinker.

six to ten, and 15.8% usually have more than ten drinks per occasion. The majority of male drinkers (56.9%) had an average of six glasses or more when they drank, compared to 42.8% among their female counterparts ($p < 0.0001$).

Frequencies of heavy drinking episodes during the course of the last year were: never 11.3%; less than once a month 21.3%; one to three times a month 43.3%; at least once a week 24.2%. There was no significant difference in frequencies of heavy drinking episodes based on gender ($p = 0.13$). In contrast, up to 41.8% of drinkers in communities where alcohol sales are permitted experience such episodes at least once a week, compared to 17.2% in dry communities ($p < 0.0001$).

Using a CAGE score of two or more as a cut-off point, 50.8% of participants who had consumed alcohol in the 12 months preceding the survey are considered at risk of experiencing repercussions on their lives as a result of alcohol. The proportion of individuals at risk was significantly higher among women (55.1% vs. 47.1% among men, $p = 0.03$) and among the 25-44 age group (57.1%, $p = 0.008$), compared to the 15-24 and 45 and over age groups (45.6% and 43.9%, respectively). It is possible that the higher rates observed among women and among middle-aged participants is attributable to social desirability differential bias rather than to true differences between the groups. Using a more severe CAGE criterion as a basis, i.e. a global score of three or more, the proportion of drinkers whose level of drinking is likely to have repercussions on their daily lives is 25.7%.

Drug use

Six respondents in 10 (60.3%) stated they had used at least one illicit drug in the 12 months preceding the survey. The most frequently used drug by far is cannabis (marijuana and hashish combined) at a rate of 60.2%. Table A2 (Appendix) provides the socio-demographic characteristics of cannabis users in the year preceding the survey. Men are significantly more prevalent cannabis users than women. Cannabis use is also significantly more frequent among young people, which is a likely explanation for the variations in rate based on education and revenue. Although nearly eight out of 10 young people aged 15 to 19 are cannabis users, this practice is also common among older men and women: 1) men: 15-19 years, 84.6%; 20-24 years, 87.2%; 25-44 years, 79.0%; 2) women: 15-19 years, 69.9%; 20-24 years, 63.3%; 25-44 years, 49.9%.

After marijuana, the most frequently used drug is cocaine: 7.5% of respondents stated having used it in the year preceding the study. Other drugs used in the same period are solvents, hallucinogens and injection drugs, at rates of 5.9%, 2.7% and 2.0%, respectively. Rates of cocaine use are comparable between genders but significantly higher ($p = 0.002$) among younger people: 12.1%^E in the 15-19 age group and 10.6%^E in the 20-24 age group vs. 7.3%^E in the 24-44 age group. Inhaling solvents is also a more widespread practice among young people ($p < 0.0001$): 13.5%^E in the 15-19 age group and 11.0%^E in the 19-24 age group vs. 3.9%^E in the 25-44 age group. The use of solvents is a more frequent practice on the Hudson coast than on the Ungava coast (8.5% vs. 2.4%^E, $p < 0.0001$) and in communities where alcohol sales are not permitted (7.4% vs. too few to report in communities where alcohol sales are permitted). The low rates reported for hallucinogens and injectable drugs do not permit comparisons based on demographic characteristics.

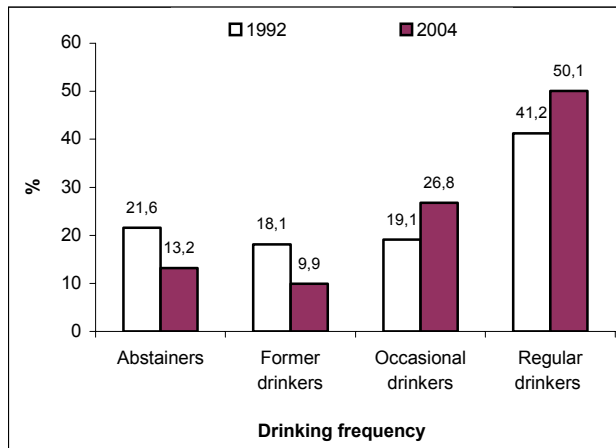
DISCUSSION

Comparisons have been made with rates observed in southern Quebec and for Canadians as a whole using statistics from the CCHS 2003 (Statistics Canada, 2003) and the CAS 2004 (Demers & Poulin, 2005; Adlaf & Ialomnitanu, 2005). Note that Aboriginal reserves were excluded from the CCHS 2003 and that Nunavik was the only region of Quebec not covered by this survey. It was also possible to identify certain trends over time since a similar study, the Santé Québec survey 1992 (Santé Québec, 1994; Jetté & Thibault, 1994), was conducted 12 years earlier within the same population.

The prevalence of drinking in the year preceding the survey in Nunavik was 76.9% in 2004, an increase of nearly 17% compared to the rate observed there in the Santé Québec survey 1992. As shown in Figure 1, the proportions of abstainers and former drinkers in Nunavik had decreased since 1992, with gains in the populations of occasional and regular drinkers. Comparisons between the current survey and the CCHS 2003 show that in Nunavik, the proportion of drinkers was significantly lower than that observed in Canada as a whole (80.5%; $p < 0.0001$), and in Quebec (84.9%; $p < 0.0001$). It was also 5% lower than the proportion observed in Quebec in CAS 2004 (82.3%).

Figure 1

Comparison of drinking frequency in the preceding year (%), population aged 15 and over, Nunavik, 1992 and 2004



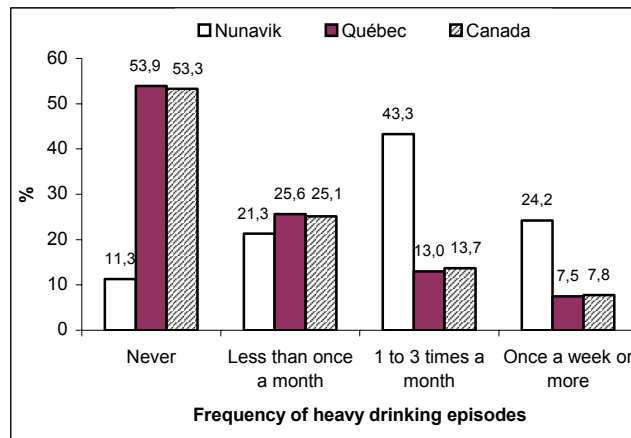
Sources: Nunavik Inuit Health Survey 2004 and Santé Québec survey 1992.

Globally, the prevalence of drinkers is higher among participants under 45 years of age, those with more education, those with a job and those living in a community where alcohol sales are permitted.

In Nunavik in 2004, 88.7% of drinkers reported having had at least one episode of heavy drinking in the previous year, which is twice as high as the rates observed in the CCHS 2003 for southern Quebec (46.1%) and Canada as a whole (46.7%). Such episodes are frequent: over the course of the previous year, 24.2% of drinkers drank heavily at least once a week, which is three times higher than the rates observed among Quebecers (7.5%) and Canadians (7.8%) (Figure 2). The proportion of the population considered at risk for alcohol causing repercussions in their lives appears to remain stable between 1992 and 2004; it is between 25.7% and 50.8% depending on whether a risk index equal to or higher than two or three is used.

Figure 2

Frequency of heavy drinking episodes in the preceding year (%), population aged 15 and over, comparison between the populations of Nunavik 2004, southern Quebec 2003 and Canada 2003



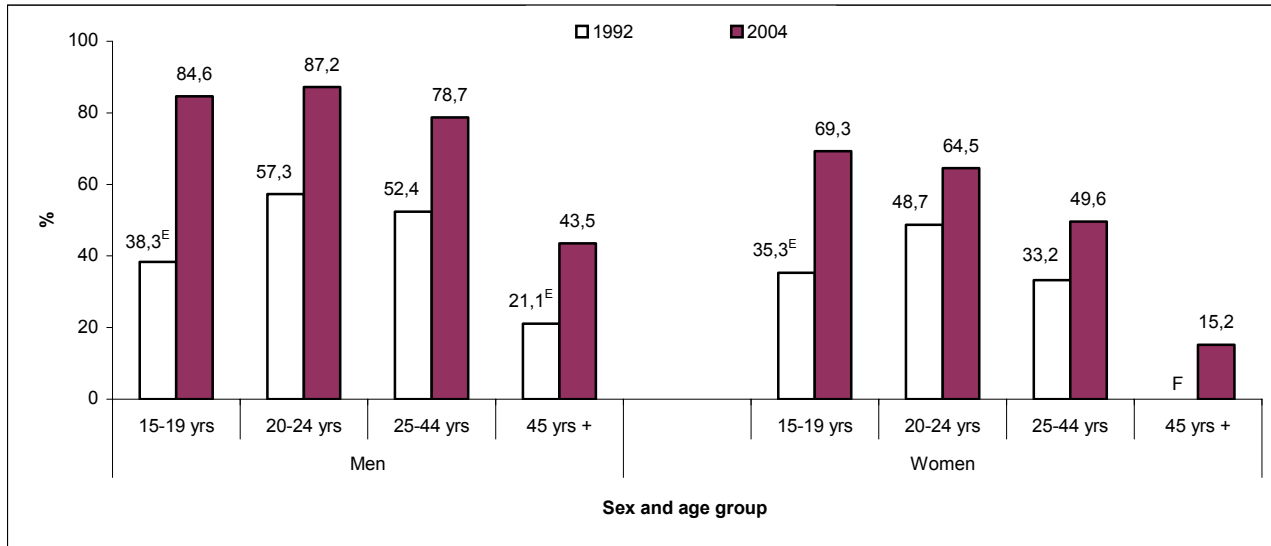
Sources: Nunavik Inuit Health Survey 2004 and CCHS 2003.

In Nunavik, the proportion of illicit drug users was clearly higher in 2004 than that observed in the Santé Québec survey 1992 (60.3% vs. 36.5%, $p < 0.0001$); it was also four times higher than that observed in the CAS 2004 for the rest of Canada (14.5%, Adlaf & Ialomiteanu, 2005). A comparison of the results with the Santé Québec survey 1992 also reveals that the proportion of drug users increased as much among women as among men for all age groups (Figure 3).

Cannabis is by far the most prevalent drug in Nunavik, and there are considerably more users now than in 1992. Between 1992 and 2004 the rates increased from 38.3% to 60.2% in the population as a whole and from 37.5% to 77.7% among 15 to 19 years old ($p < 0.0001$). In comparison, a survey conducted in Nunavut in 1996 reported that 28.7% of respondents aged 15 and over had used cannabis in the 12 previous months (Northwest Territories Bureau of Statistics, 1996). Moreover, there are about four times more cannabis users in Nunavik compared to southern Quebec (15.8%) and to Canada as a whole (14.1%) (Patton & Adlaf, 2005).

Figure 3

Proportion of illicit drug users in the preceding year by sex and age group (%), population aged 15 and over, Nunavik, 1992 and 2004



E Interpret with caution.

F Unreliable estimate.

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

In Nunavik, the proportions of cocaine and solvent users had an increase of 50% and 100% respectively over the last decade (cocaine: 5.1% in 1992 vs. 7.5% in 2004, $p=0.05$; solvents: 3.0% in 1992 vs. 5.9% in 2004, $p=0.001$). The proportion of Nunavik residents that use cocaine is three times higher than that observed in the CAS 2004 for Canada as a whole (Adlaf & Ialomiteanu, 2005). Also of note, the proportion of solvent users is 3.5 times higher on the Hudson coast than on the Ungava coast, and it is 7 times higher in all of the communities where alcohol sales are not permitted when compared to communities where alcohol is sold. Because the Santé Québec survey 1992 did not document the use of hallucinogens or injectable drugs, it is impossible to determine the trends over time for these drugs. It seems probable that the increase in rates observed for the other drugs would be reflected in the use of hallucinogens and injectable drugs as well.

II. GAMBLING

In the last quarter of a century, gambling has developed into a mainstream leisure activity. The prevalence of gambling has increased tremendously in most regions of the world. Government-operated lotteries (instant, sports

and other types) are now accessible in most jurisdictions in North America, casino operations (First Nations, government or privately-operated) have expanded significantly and Internet gambling is knocking at our door.

At the same time, there is growing public awareness of problems associated with gambling. Since the 1990s at least 100 studies of gambling prevalence have been published, targeting most North American populations including adults, youth, veterans, prisoners, young offenders, and alcohol and drug rehabilitation patients. In Quebec, more than a dozen of such studies have already been completed (three Quebec-wide studies of adults, three Quebec-wide studies of secondary school students, at least five regional studies, one study of prisoners and one study of the Cree population).

Some research studies have examined First Nations populations in Canada, the USA, Australia and New Zealand. At this point in time, to our knowledge, no study has provided a global examination of gambling and gambling problems in any Inuit or circumpolar jurisdiction or community.

Very little is known about traditional Inuit gambling activities. Gambling sticks and dice games were once played, but they seem to have completely disappeared from the gambling horizon.

The availability of gambling opportunities is associated with gambling activity and gambling activity is linked to the emergence of gambling problems (Volberg, 2001). Frequent gambling activity and high wagers are directly associated with gambling problems (Chevalier et al., 2004). Research has shown that minorities, ethnic groups and socio-economically disadvantaged groups have greater rates of problem gambling (Volberg, 2001; Chevalier et al., 2004). However, we do not know the degree to which these relationships are culturally bound and therefore the extent to which they apply to the Inuit community.

METHODOLOGICAL ASPECTS

Questions on gambling come from the individual questionnaire of the 2004 Nunavik Inuit Health Survey addressed to adults aged 15 and over. The objective of the gambling section of the survey was to measure the rate of participation in and the amount of time and money spent on gambling activities, including instant lotteries (including pull-tabs), bingo, and a category composed of cards, dice and board games. The questionnaire also included a question assessing whether the respondent felt that they spent too much time or too much money on gambling activities.

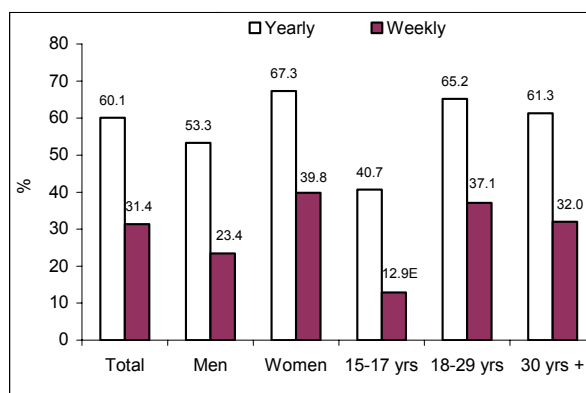
Statistical analysis involved comparisons between socio-demographic characteristics derived from the survey and those from a 2002 survey of southern Quebec. The Quebec data was taken from Chevalier et al. (2004) and was based on gambling activities, which seem more diverse than those in Nunavik. The Quebec data comprise terminal-based lotteries, such as Lotto 6/49[®], which is the most popular game with more than 60% of Quebecers participating annually. The target population of the Quebec study was people aged 18 and over, excluding residents of northern Quebec, Nunavik and Cree territory. Proportions from the Nunavik survey were compared with those from Quebec using a chi-square test corrected for design effect; the differences were declared significant when the p-value was less than or equal to 0.05. Nunavik and Quebec data were also compared using 95% confidence intervals for proportions. Differences between the two surveys were declared significant if the confidence intervals did not overlap.

RESULTS

Globally, three out of five Inuit (60%) gambled in the year preceding the study (Figure 4). Women (67%) were proportionally more likely to gamble than men (53%). Participation rates show no discrepancy by age among adults; minors gamble less than adults. Instant lotteries (42%) and bingo (36%) were the two most popular games (Figure A1, Appendix). Women (50%) play bingo significantly more than men (23%); women (46%) also gamble at instant lotteries more frequently than men (37%). On the other hand, men (27%) were more attracted to cards/dice games than women (20%) and cards/dice games were preferred by adults aged 18 to 29 (Figure A2 and A3, Appendix).

About one in three Inuit (31%) gambled weekly (Figure 4); here again women were more likely to gamble than men and minors less than adults. No difference was observed in weekly participation rates between instant lotteries and bingo but cards/dice games were less played (Figure A1, Appendix).

Figure 4
Yearly and weekly gambling participation rates by sex and by age group (%), population aged 15 and over, Nunavik, 2004



P-values < 0.0001 for all age/sex comparisons.

E Interpret with caution.

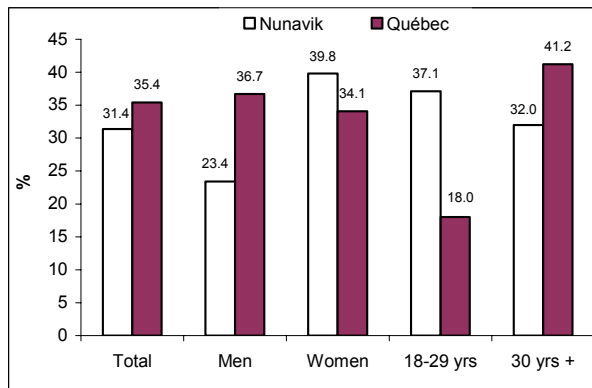
Source: Nunavik Inuit Health Survey 2004.

Fewer Inuit engaged in gambling on a yearly basis compared to people in southern Quebec, (Inuit: 60%; Quebec: 81%) (Figure A4, Appendix). We observed no differences between the Inuit and southern Quebecers in terms of gambling on a weekly basis, 31% Inuit and 35% of Southerners show that type of behaviour (Figure 5); Inuit men and those 30 years and over gambled less than their counterparts in southern

Quebec; Inuit women gambled just as much as women from the south. However, 18 to 29 years old Inuit (37%) were more likely to gamble than those in the same age group in the south (18%).

Figure 5

Weekly gambling participation rates by sex and age group (%), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002

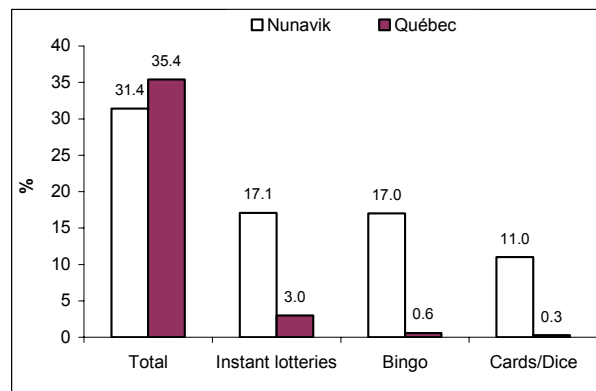


Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Even though, on the whole, Southerners gambled more than the Inuit, bingo and cards/dice participation, on a yearly basis, were much more prevalent in Nunavik than in the south (36% of Inuit played bingo compared to 9% in the south; 24% of Inuit played cards/dice vs. 11% in the south) (Figure A5, Appendix). Weekly gambling through instant lotteries, bingo and cards/dice games was marginal in the south (3% for instant lotteries and less than 1% for bingo and cards/dice games) (Figure 6). In Nunavik, data show a much more widespread behaviour as one in six played bingo (17%) or instant lotteries (17%) and one in nine (11%) gambled at cards/dice weekly.

Figure 6

Weekly gambling participation rates by game (%), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002



Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Inuit involved in gambling spent over \$3300 yearly (Figure A6, Appendix). Those playing cards/dice games spent more than \$4650 on that specific gambling activity and bingo players spent a yearly average of \$1410 on bingo. The level of gambling expenditures in Nunavik was considerably higher than those encountered in the south, where the yearly average was less than \$900. Since means can be sensitive to extreme values, in this case gamblers wagering large amounts of money, we took a second look at gambling expenditures by distinguishing between those who annually spent \$520 gambling, compared to those who wagered more than \$520 (\$520 corresponding to a weekly average of \$10).

About 62% of the Inuit who gambled spent more than \$520 a year on gambling (Figure A7, Appendix). This proportion is significantly higher than that observed in southern Quebec, where only 9% of gamblers wagered more than \$520 per year. More Inuit women (66%) than Inuit men (57%) reached that gambling plateau. This behaviour is the opposite of that observed in the rest of Quebec where men, on average, spend more money gambling than women. The data show no difference by age among adults in terms of gambling expenditures.

An analysis by game demonstrates that those playing cards/dice (55%) and those playing bingo (56%) are more prone to spend more than \$520 per year on these specific activities; 35% of the Inuit playing instant lotteries spent more than \$520 yearly on instant lotteries. Again Nunavik levels of gambling

expenditures were considerably higher than those observed in southern Quebec (Figure A8, Appendix).

When asked if they were spending too much time or too much money on gambling, 22% of Inuit gamblers responded in the affirmative⁵. No difference was observed by gender, age or game (Figures A9 and A10, Appendix).

DISCUSSION

Overall, fewer Nunavik Inuit gamble compared to the population in southern Quebec. Notwithstanding that general trend, certain games are more popular in Nunavik, including bingo and cards/dice games. Involvement in gambling up north seems far greater than in the south as underlined by the level of weekly play and also by the amounts wagered yearly. These findings are similar to those observed in aboriginal communities and among minorities in Australia (Productivity Commission, 1999a & 1999b), New Zealand (Dyall & Morrison, 2002), in North America (Wardman et al., 2001), in Quebec (Chevalier et al., 2004) and among the James Bay Cree (Anctil & Chevalier, 2007).

The available data doesn't allow us to directly determine the levels of problem gambling in Nunavik – no problem gambling scale was used in the present research. Nonetheless we can use pertinent data from the south to estimate the levels of problem gambling. In Quebec, among gamblers who wager over \$520 annually, the prevalence of problem gambling is 21% while the prevalence level was 0.4% among those who spent \$520 or less (Table 1). Among those who play instant lotteries and spend over \$520 per year on that specific gambling activity, 39% showed gambling problems. If these findings from southern Quebec are applicable to the Inuit, then the rates of problem gambling in Nunavik are likely to be significantly higher than those measured in the south.

Table 1

Problem gambling by type of game and annual spending per type of game (%), Quebec, 2002

	\$520 or less	\$521 or more
Total	0.4	21.4
Instant lotteries	2.6	38.8
Bingo	4.2	20.0
Cards/dice	6.4	33.3

Source: Chevalier et al., 2004.

The behaviour of Inuit women in terms of gambling is also rather unusual compared to the results obtained among southern indigenous and minority populations: levels of participation are higher, weekly involvement is greater, and yearly spending is higher. These findings could lend support to the hypothesis that problem gambling is more prevalent among women in Nunavik communities.

Also, adults aged 18 to 29 participate in instant lotteries and cards/dice games more than those aged 30 and over. This could indicate that the situation may deteriorate in the near future and problem gambling rates could increase.

CONCLUSION

The results of this survey indicate that the use of cannabis is a generalized, even commonplace practice in the population of Nunavik. The proportion of Nunavik residents who drink frequently and heavily suggests that alcohol dependency may affect many people and have a major impact on the lives of the Nunavimmiut. It is conceivable that the use of psychoactive substances could be involved in injuries and accidents. Alcohol is also likely to harm the health and optimal development of Nunavik children and families, not only because it is teratogenic, but also because it is generally recognized as being associated with child negligence and abuse, and with loss of control that may result in violent acts within the family or the community.

All data are culturally bound, but we still are unsure of how culturally sensitive they are in the case of gambling. No study has been found that addresses the social connotation of gambling among the Inuit population; this issue is fundamental for any further discussion of gambling problems. Gambling frequency as it relates to time and time measurement is an issue of interest. Inuit time has traditionally been of a different essence than Western time (Saladin D'Anglure, 1990) and we cannot speculate on how accurate or reliable a measurement of gambling frequency is in the Inuit context. Furthermore, traditional indigenous gambling used goods rather than money to wager. Now money is used. Are the social significance of money, the social worth of money and the social consequences of the absence of money in Nunavik comparable to those in the rest of Quebec?

⁵ No such data is available for southern Quebec.

Further research should simultaneously take into account all dependencies and should include a measurement of the social and mental health consequences stemming from those dependencies. Finally, the perceptions of the Inuit population in terms of their own gambling practices and gambling problems should be taken into consideration, and compared with those of educators, health care workers, and politicians.

KEY ISSUES

Alcohol and drug use

- ↪ In Nunavik in 2004, the proportion of drinkers was 77%; lower than the rate observed in Canada and in Quebec. This rate, however, represents an increase of close to 17% compared to that observed in Nunavik in 1992.
- ↪ Globally, the prevalence of drinkers is higher among participants who are under the age of 45, who are more educated, who have a job and who live in a community that permits the sale of alcohol.
- ↪ Heavy drinking is extremely widespread in the population of Nunavik with nearly 9 out of 10 consumers having drunk heavily at least once in the year preceding the survey, a rate that is two times higher than that observed in southern Quebec and in Canada as a whole. Episodes of heavy drinking are also very frequent in Nunavik since nearly a quarter of drinkers have five or more drinks on one occasion on a weekly basis, which is three times higher than the rates observed among Canadians and Quebecers living in regions south of Nunavik.
- ↪ In 2004, the proportion of illicit drug users in Nunavik was 60%, which is more than four times higher than that observed in Canada.
- ↪ The rates of drug users observed in Nunavik clearly increased over the past decade, in the case of cannabis, cocaine and solvents.
- ↪ Cannabis is by far the most commonly used drug in Nunavik. Although it is used by 8 or 9 men out of 10 aged 15 to 24, its use is also widespread among women, as well as in the overall population under the age of 45.

Gambling

- ↪ Three out of five Inuit (60%) gambled in the year preceding the study. Women (67%) were proportionally more likely to gamble than men (53%). Participation rates show no discrepancy by age among adults; minors gamble less than adults. Instant lotteries (42%) and bingo (36%) were the two most popular games.
- ↪ About one in three Inuit (31%) gambled weekly; here again women were more likely to gamble than men, and minors less than adults.
- ↪ Fewer Inuit engaged in gambling on a yearly basis compared to people in southern Quebec. We observed no differences between the Inuit and southern Quebecers in terms of gambling on a weekly basis.
- ↪ Overall, fewer Nunavik Inuit gamble compared to the population in southern Quebec. Certain games are more popular in Nunavik, including bingo and cards/dice games. Involvement in gambling up north seems far greater than in the south as underlined by the level of weekly play and also by the amounts wagered annually.

ACKNOWLEDGEMENTS

The Nunavik Inuit Health Survey could not have been undertaken without the financial support of the ministère de la Santé et des Services sociaux du Québec, the Nunavik Regional Board of Health and Social Services, the Department of Indian and Northern Affairs of Canada, the Canadian Foundation for Innovation (CFI), the Network of Centres of Excellence of Canada (ArcticNet), the Nasivvik ACADRE Inuit Centre and the Canadian Institutes of Health Research. The valuable assistance of Inuit representatives – both members of the survey advisory committee and Inuit leaders from each community – is gratefully acknowledged. Our gratitude is also extended to the staff of the Canadian Coast Guard Ship Amundsen. We are also grateful to all of the professionals, technicians, students, interviewers and clerical staff who worked at each stage of the survey process, particularly Jocelyne Gagnon, Lina Noël, Diane Bélanger and Louise Guyon for their assistance in developing the alcohol and drug component of the study. Thanks to Andrée Demers (Department of sociology, Université de Montréal, Director of the Groupe de recherche sur les

aspects sociaux de la santé et de la prévention) and Kathryn Gill (Director of research, Addiction Unit, Montreal General Hospital and Department of Psychiatry, McGill University) who reviewed the draft manuscript for this booklet and provided valuable insights and suggestions for further analysis. Finally, we wish to thank the Inuit of Nunavik for their extensive cooperation with this survey.

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APPENDIX

Table A1

Prevalence of lifetime alcohol consumption (%), population aged 15 and over, Nunavik, 2004

	EP ^a	Partial non-response (%)	Consumers		P-value ^b
			%	[IC 95%]	
Sex					0.005
Men	2710	3.4	89.6	86.5-92.1	
Women	2420	5.9	84.0	81.3-86.7	
Age group					< 0.0001
15-24 years	1670	4.0	87.9	83.9-91.2	
25-44 years	2380	2.9	91.2	88.1-93.7	
45 years +	1070	8.5	77.0	71.7-82.3	
Marital status					0.059
Single	2010	4.7	87.2	83.4-90.5	
Married or common law	2750	4.4	88.2	85.3-90.6	
Separated, divorced or widowed	300	6.5	77.4	64.2-87.6	
Education level					< 0.0001
Elementary school completed or less	900	10.6	71.9	65.1-78.0	
Secondary school not completed	2930	3.2	89.7	87.5-92.0	
Secondary school completed or higher	1150	1.0	93.4	89.2-96.3	
Income					0.002
Less than \$20 000	2500	4.6	85.4	82.2-88.2	
\$20 000-39 999	1100	4.3	92.5	88.0-95.6	
\$40 000 and over	870	1.7	92.7	88.2-95.9	
Occupation					< 0.0001
Work	3580	3.1	90.8	88.5-92.8	
Other ^c	1340	6.0	79.8	75.3-84.2	
Coastal region					0.002
Hudson	2840	6.7	84.2	80.7-87.3	
Ungava	2290	1.8	90.4	87.8-92.5	
Type of community					< 0.0001
Dry communities	3800	5.9	84.5	82.1-87.0	
Alcohol sales permitted	1320	0.5	94.0	90.2-96.7	

^a Estimated number of Nunavik residents in this situation, according to the prevalence rates and the sampling methods used in this survey.

^b Chi-square test P values.

^c Other: Hunter support program, housework, retired or on pension, unemployment insurance, social welfare, student or other (disability, maternity leave, etc.).

Source: Nunavik Inuit Health Survey 2004.

Table A2

Prevalence of marijuana use in the preceding year (%), population aged 15 and over, Nunavik, 2004

	EP ^a	Partial non-response	Consumers		P-value ^b
			%	[CI 95%]	
Sex					< 0.0001
Men	2200	0.4	72.6	68.8-76.5	
Women	1350	2.0	46.8	43.1-50.5	
Age group					< 0.0001
15-19 years	830	1.6	77.7	71.2-83.3	
20-24 years	630	0.7	75.5	67.9-82.1	
25-44 years	1690	1.2	65.0	60.4-69.5	
45 years +	400	1.1	28.6	22.9-34.3	
Marital status					< 0.0001
Single	1690	1.3	73.1	69.0-77.1	
Married or common law	1630	1.0	52.5	47.9-57.0	
Separated, divorced or widowed	170	2.6	43.5	30.4-56.5	
Education level					< 0.0001
Elementary school completed or less	430	1.8	34.7	27.8-41.5	
Secondary school not completed	2350	1.1	72.2	68.5-75.9	
Secondary school completed or higher	690	0.5	56.2	48.9-63.5	
Income					0.0004
Less than \$20 000	1960	1.1	66.9	63.0-70.9	
\$20 000-39 999	660	1.0	55.6	48.7-62.5	
\$40 000 and over	480	0.6	51.6	43.6-59.6	
Occupation					0.006
Work	2510	1.1	63.7	60.1-67.3	
Other ^c	910	1.4	54.6	49.1-60.0	
Coastal region					0.583
Hudson	2000	1.4	59.4	55.6-63.3	
Ungava	1550	1.0	61.1	56.4-65.9	
Type of community					0.893
Dry community	2700	0.8	60.0	56.6-63.4	
Alcohol sales permitted	850	2.6	60.6	53.3-67.9	

^a Estimated number of Nunavik residents in this situation, according to the prevalence rates and the sampling methods used in this survey.

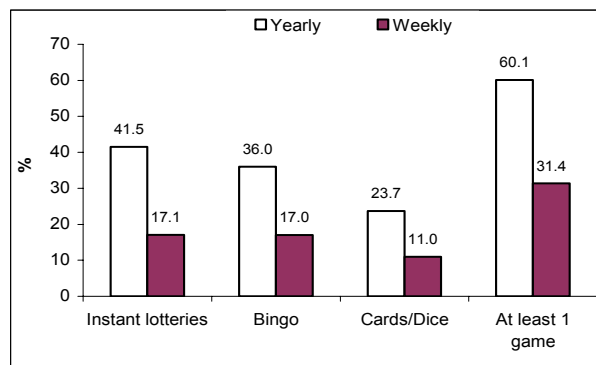
^b Chi-square test P-values.

^c Other: Hunter support program, housework, retired or on pension, unemployment insurance, social welfare, student or other (disability, maternity leave, etc.).

Source: Nunavik Inuit Health Survey 2004.

Figure A1

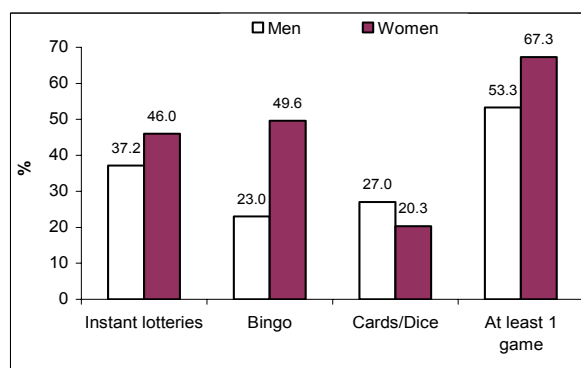
Yearly and weekly gambling participation rates by game (%), population aged 15 and over, Nunavik, 2004



Source: Nunavik Inuit Health Survey 2004.

Figure A2

Yearly gambling participation rates by game and sex (%), population aged 15 and over, Nunavik, 2004

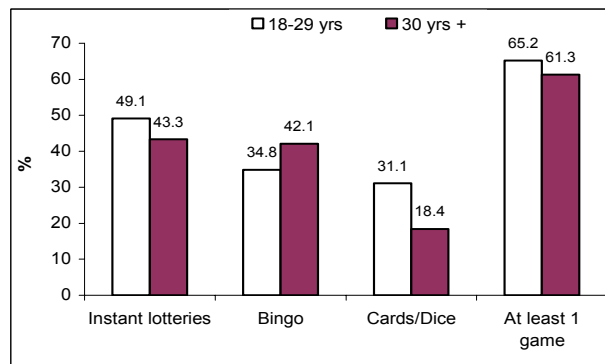


P-value Instant lotteries: 0.004; P-value Bingo: < 0.001;
 P-value Cards: 0.02; P-value At least 1 game: < 0.0001.

Source: Nunavik Inuit Health Survey 2004.

Figure A3

Yearly gambling participation rates by game and age (%), population aged 18 and over, Nunavik, 2004

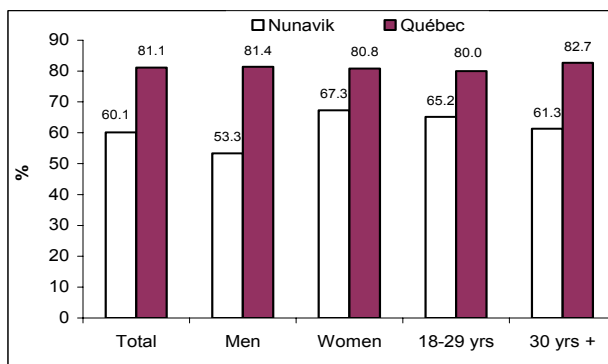


P-value Instant lotteries: 0.09; P-value Bingo: 0.02;
 P-value Cards: < 0.001; P-value At least 1 game: 0.22.

Source: Nunavik Inuit Health Survey 2004

Figure A4

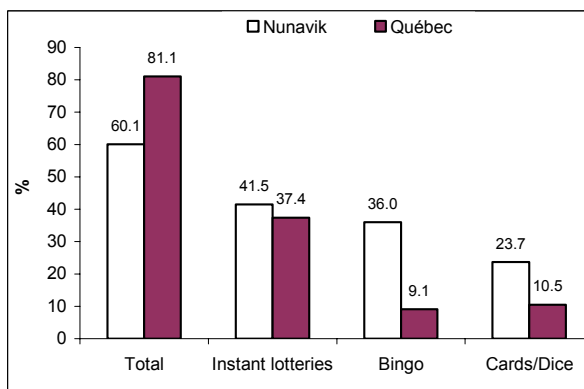
Yearly gambling participation rates by sex and age (%), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002



Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Figure A5

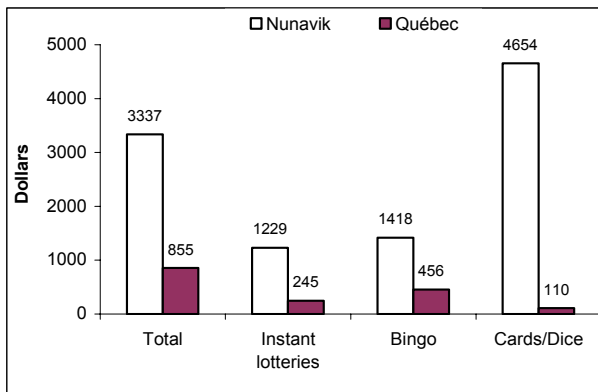
Yearly gambling participation rates by game (%), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002



Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Figure A6

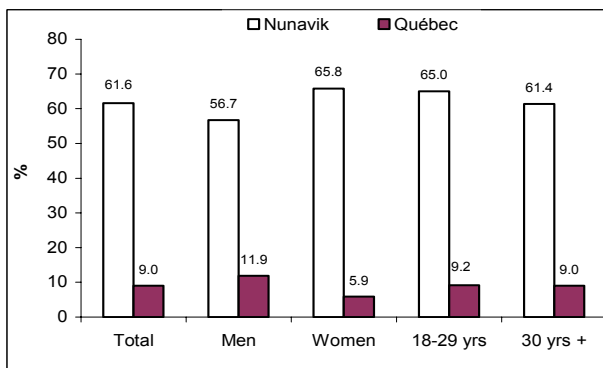
Yearly spending on gambling by game (\$ dollars), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002



Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Figure A7

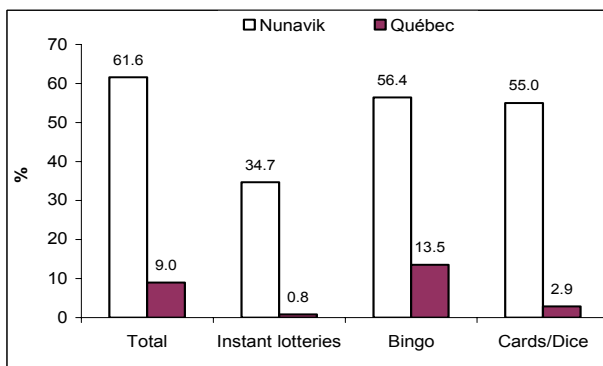
Percentage spending more than \$520 per year on gambling by sex and age (%), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002



Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Figure A8

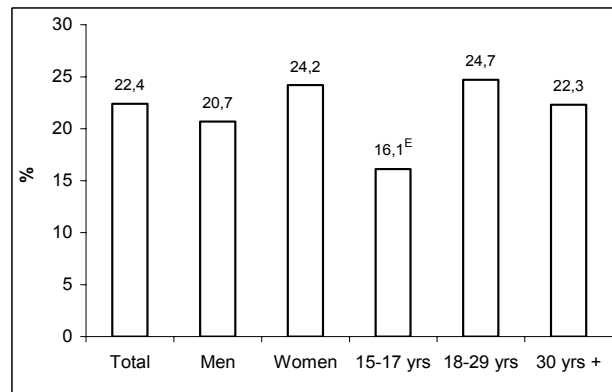
Percentage spending more than \$520 per year on gambling by game (%), population aged 15 and over for Nunavik 2004, and population aged 18 and over for the rest of Quebec 2002



Sources: Nunavik Inuit Health Survey 2004 and Chevalier et al., 2004.

Figure A9

Percentage spending too much money or too much time gambling by sex and by age (%), population aged 15 and over, Nunavik, 2004



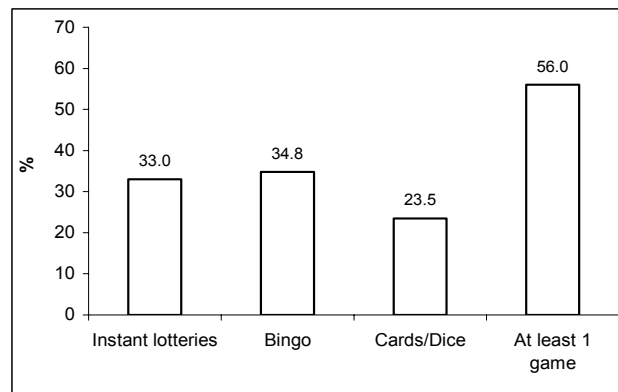
P-value Sex: 0.17; P-value Age groups: 0.16.

E: Interpret with caution.

Source: Nunavik Inuit Health Survey 2004.

Figure A10

Percentage spending too much money or too much time gambling among those gambling weekly by game (%), population aged 15 and over, Nunavik, 2004



Source: Nunavik Inuit Health Survey 2004.

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Qanuippitaa?

HOW ARE WE?

