3 Sami Health – a Summary of Published Results of Population Studies in Norway

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3.1 Introduction

This chapter presents and comments on data from published works based on health surveys conducted among Sami populations in Norway. The chapter focuses on works that look at disease and disease risk factors as well as include information on Sami ethnicity.

3.1.1 Health Research among Northern Indigenous Populations

Health research among indigenous populations in northern areas has focused on themes which have been perceived as especially relevant for these population groups. Despite the large geographical span and significant variation in socioeconomic factors and living conditions, the literature presents several common features in health research on northern indigenous populations.

Much of the earlier research on northern indigenous populations focused on how living in cold climates could affect health. Incidence rates of various infectious diseases have also been studied, especially in countries with poorer living conditions and health care than, for example, Nordic countries. Inspired by the hypothesis of the protective effects of traditional seafood consumption such as seal, whale and other sources rich in marine fat, studies regarding cardiovascular disease were also conducted. Research from Greenland has been especially cited in this context.

More recently, research on chronic diseases has been updated in light of observed changes in lifestyle, activity level and diet. Increased rates of diabetes type II, cardiovascular disease and obesity have caused worry and initiated studies about changing patterns of nutrition and health among indigenous populations in northern areas.

Some research has focused on surveying the level of contamination in traditional diets and the possible health effects of this. This has been a special focus of research among indigenous groups with a high intake of food containing so-called persistent organic pollutants.

Studies on suicide and the use of alcohol and other intoxicants have also been of current interest to health researchers in northern areas.

3.1.2 Eugenics Perspectives in Medical Research

In the first half of the 1900s, measuring skull length and width of both the living and dead was common practice in eugenics research. The idea was that humankind could be divided and placed into an evolutionary hierarchy. This scientific interest in races had its roots in the 1700s, when pioneers in natural history began to divide people into biological categories based on external physical features. In the 1800s, this was a large and prestigious scientific field and the European populations were therefore divided into races. Northern European researchers placed blond, blue-eyed Germanic or Nordic races with elongated faces at the top of the evolutionary scale. An underlying ideology that characterized this philosophy was the idea that mixing races could degrade the upper layer of the hierarchy. Some eugenicists considered the main goal of the research to safeguard the purity of the Nordic race.

In the interwar period, eugenics research was conducted throughout Norway. In Northern Norway, the research concentrated on Samis and Kvens who received the screenings with strong scepticism and reluctance.

Understandably, head measuring is still a delicate subject in many places and has become a part of a negative collective historical memory. Even though today's research milieu is opposed to the ideology that characterized eugenics, this historical burden requires health researchers who work with Sami populations to ensure that research conducted today is ethically justifiable and conforms to current legislation.

Reference
[1]

3.1.3 Ethnicity and Medical Research

A major challenge for Sami health research is how to ascertain a person of Sami heritage. Many aspects complicate this. First, many areas have a mixed ethnic population. Furthermore, language cannot necessarily be used as an indicator of Sami ethnicity. Long-standing Norwegianization policies have resulted in geographical variations of Sami language survival. Language affiliation is not enough to identify Samis in areas where the Sami language is weak**.**

Norway has no Sami ethnicity registry and it is prohibited to use the Sami Parliament's voter registry for health research. Consequently, the various studies that form the basis of this chapter have used different ways of identifying ethnicity. This may be confusing, but it is also a manifestation of how categorizing populations by mutually exclusive ethnic categories is problematic. The results presented here must therefore be interpreted in light of this limitation in the research.

In the main, three different categories of questions have been used to collect data on ethnic affiliation: kinship, language and self-reported ethnicity. Each subchapter explains how ethnicity is classified in the various studies referenced.

3.1.4 Data Sources

Generally, few published health studies in Norway include Sami ethnicity. This chapter is mainly based on results from the following health studies: *Finnmarksundersøkelsene, Ung i Nord, the SAMINOR-study (the Health and Living Conditions Study in Areas with Mixed Sami and Norwegian Communities*) and some epidemiological registry studies connected to the census of 1970. In all of these studies, health data has been analysed using different classifications of ethnicity. This chapter also refers to other selected studies that include ethnic data.

Finnmarksundersøkelsene (The Finnmark Surveys)

In the period between 1974 and 2003, the Department of Community Medicine at the University of Tromsø conducted six different population-based screenings in Finnmark of risk factors for cardiovascular disease. Gradually, the surveys were expanded to include other diseases as well.

All municipalities in Finnmark were surveyed with people between the ages of 20 and 68 participating, but some surveys were conducted in only a few of the municipalities with selected age groups. Information about ethnic affiliation was collected, based mainly on responses to questions regarding the participant's and/or grandparents' ethnicity as well as parents' and grandparents' language background.

Ung i Nord (Young in the North)

Data collection for the *Ung i Nord* study was conducted in 1994/1995 with a follow-up study three years later in 1997/1998. The purpose of the research was to study ethnicity, problem behaviour, mental health and use of intoxicants among youth in Northern Norway. Twenty-one upper secondary schools in Nordland, Troms and Finnmark were invited to participate.

All the schools were in larger or smaller communities. No schools in larger cities were invited. In total, 3,186 people participated in the first study (response rate: 85%) and 1,670 (55% of the original participants) participated in the follow-up study. Sami ethnicity was categorized based on one parent or grandparent reporting Sami heritage or Sami language skills.

SAMINOR studien (The SAMINOR Study)

The Centre for Sami Health Research at the University of Tromsø, in cooperation with the Norwegian Institute of Public Health, conducted t*he Health and Living Conditions Study in Areas with Mixed Sami and Norwegian Communities* (SAMINOR study) in 2003/2004.

The study used questionnaires combined with a medical examination, including the collection of a blood sample. This study followed the screenings for cardiovascular disease which the Norwegian Institute of Public Health had conducted several times in various areas of Norway. In addition, with the help of a questionnaire, several extra questions were posed about, among other things, ethnicity and Sami cultural ties.

The survey was carried out in 24 selected municipalities in Finnmark, Troms, Nordland and Trøndelag. Based on information from the 1970 census, all the municipalities had at least a

5% Sami population. In a few municipalities, only some districts were included. All people in the survey area born between 1925 and 1967/68 as well as 1973/74 were invited to participate in the study. The study included 16,865 participants, constituting a response rate of 61%.

Ethnicity data from the *SAMINOR* is based on reported ethnic background, own, parents' and grandparents' language as well as participants' self-defined ethnicity.

Population Studies based on National Databases

The national Cause of Death and Cancer Registries are often used for population studies in Norway. They have also been used in some studies to look at diseases and death in the Sami population. Data from these registries, after approval from the Data Inspectorate and medical ethics committees, have been linked to ethnicity registries mainly from the 1970 census. Questions used to determine ethnicity from this census were own, parents' and grandparents' language as well as self-defined ethnicity. These questions were put into the census from 1970 in selected areas in Nordland, Troms and Finnmark.

Statistics Norway has also made available data on mortality rates in the Sami population. These have been studied in relation to geographical residence defined as within or outside of *samisk forvaltningsfondet* (SUF), Sami administrative areas.

3.1.5 Disease/Risk Factors Included in the Chapter

The contents of this chapter are mainly guided by published quantitative population-based health research on Samis in Norway. With few exceptions, the studies referred to have used a large amount of data, i.e. have had many participants. This chapter, therefore, also exposes the need for further study in order to obtain reliable and representative numbers on health in the Sami population of Norway.

The chapter contains data relating to widespread public health diseases such as cancer, cardiovascular disease and diabetes II, as well as mortality patterns. Incidents of asthma and allergies among children, as well as incidents of hip dysplasia and Bechterew's disease among adults, are also included. Studies on diet and nutrition are referred to, as are studies on the use of alcohol and tobacco. Mental health, including suicide and use of sleep medications are also included. The chapter concludes with several results from health care studies, and then a summary and update on the need for further study.

3.2 Mortality

Summary

Data show little difference in mortality rates for Sami and non-Sami populations. Nonetheless, some studies suggest a slightly higher mortality rate in the Sami population. Higher incidents of death and cerebral haemorrhages among Sami women and accidental death and suicide among Sami men may be a possible reason for this. Women living in inland Sami areas have had a low and stable mortality rate over time. There is still reason to be cautious however about the relatively high mortality rate among young men in Sami areas and about possible geographical differences in infant mortality.

3.2.1 Introduction

Mortality rates have been used as a measurement of a population's living conditions and state of health. Mortality rates can be given in different ways. Most used is the number of deaths per 1000 or 100 000 inhabitants in various age groups.

Infant mortality is defined as all deaths under one year per 1000 total live births. Life expectancy is also a measurement of mortality in the population. In Norway, there is a cause of death registry which can be used for population studies.

3.2.2 Sources

Until 1998, mortality in the Sami population of Norway had been studied based on connecting numbers from the Cause of Death Registry to ethnicity reports from the 1970 census. Sami ethnicity was defined as having at least one grandparent who spoke Sami or the respondent self-identifying as Sami.

Total deaths within and outside SUF has been used as a surrogate measurement of Sami ethnic affiliation, and has been compared in the period 1991-2006.

3.2.3 Mortality Rates

The combination of mortality statistics from the period 1970-1998 and ethnicity reports from the census of 1970 have shown a slightly higher mortality rate for Sami men (6%) and women (10%) compared to the regional reference population. Higher mortality rates due to cerebral haemorrhage, especially among women, can explain some of the difference. Men had a higher incidence of so-called violent deaths, especially accidents and suicide.

Figures 1 and 2 show the calculated probability of 15 year-old men and women reaching the age of 75, based on mortality patterns in various time periods. The figures differentiate between populations within and outside SUF, as well as coastal and inland.

These figures show that there is no big difference for women in relation to geographical areas or time. For men, however, there appears to be an increase in life expectancy. This can be explained by the decrease in cardiovascular disease which has affected men more than women. Further, it appears that men in SUF areas have had a somewhat higher mortality rate than both the national and non-SUF area rates (Figure 3). This may be explained by the high mortality rates of so-called 'violent deaths' in SUF areas.

Figure 3.1 Probability of 15 year-old men reaching the age of 75 in various geographical areas, based on mortality rates from various time.
Source: Brustad et al 2009, Scandinavian Journal of Public Health.

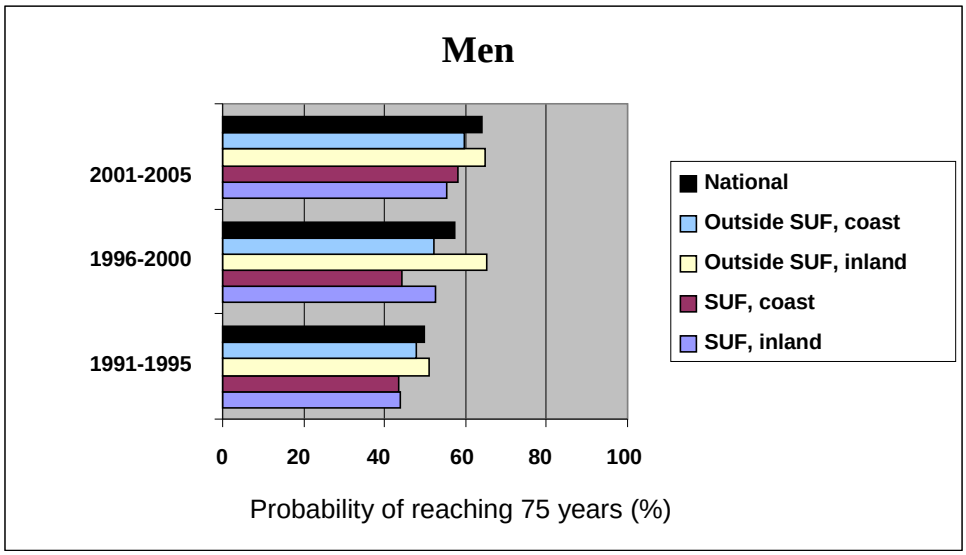


Figure 3.2 Probability of 15 year-old women reaching the age of 75 in various geographical areas, based on mortality rates from various times.
Source: Brustad et al 2009, Scandinavian Journal of Public Health.

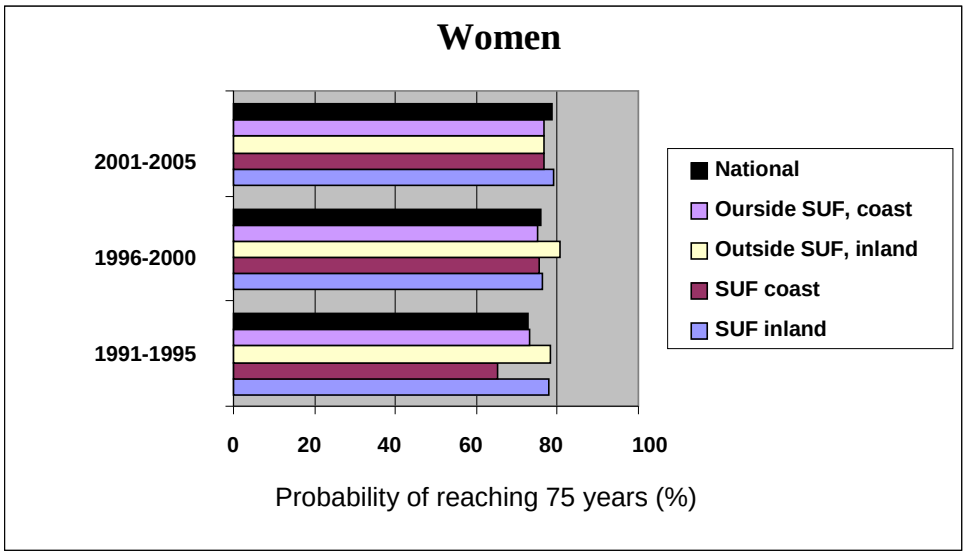
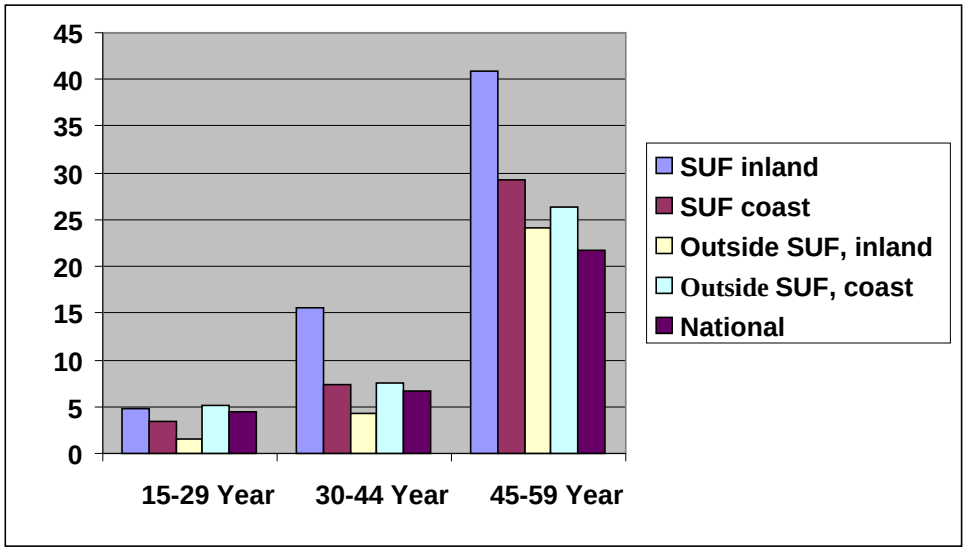


Figure 3.3 Mortaligy Rates for Men ages 15-59 in various geographical areas (2001-2005).
Source: Brustad et al 2009, Scandinavian Journal of Public Health.



Generally, one can say that the existing mortality figures show small differences between Sami vs. non-Sami populations. This can indicate that mortality patterns have evened out between geographical areas with low versus high density of Sami populations. This has been explained by similar living conditions, education and access to health care which is in contrast to the situation for other indigenous groups in the circumpolar region.

However, there is still reason to be careful about the relatively high mortality rate among young men in Sami areas.

3.2.4 Infant Mortality

Studies from Kautokeino from the 1940s and 1950s showed a very high infant mortality rate compared to the rest of the county and country. No ethnicity-based data on infant mortality is available from this period.

Table 1 shows infant mortality per 1000 live births within and outside SUF areas between 1991 and 2006. The table is further divided for inland and coastal Norway, north of Saltfjellet. The cities of Alta, Tromsø and Harstad are excluded from the table. Because the table is based on little data, one has to approach these mortality rates with caution. However, research over a longer period of time is necessary to see if inland areas outside SUF areas actually have a significantly lower infant mortality rate compared to the other areas mentioned.

Table 3.1 Number of births, deaths in the first year of living and infant mortality rates in various geographical areas in Norway, north of Saltfjellet 1991-2006. (The cities of Tromsø, Harstad and Alta are excluded.) ***Sourcee: Brustad et al 2009, Scandinavian Journal of Public Health***

		SUF		**Non SUF**	
	Total	***Inland***	***Coast***	***Inland***	***Coast***
Number of births	49799	1471	6152	2577	39599
Number of deaths in the first year	266	10	35	7	213
Deaths in the first year per 1000 live births	5.3	6.8	5.7	2.7	5.4

References

[2-4]

3.3 Cardiovascular Disease

Summary

Cardiovascular disease has been studied in the Sami population. Some studies have suggested a lower occurrence of these types of diseases in Samis than in the reference population, despite the high incidence of known risk factors. Other studies have not been able to confirm these findings. More research is needed to study the questions related to Samis' risk of cardiovascular disease.

3.3.1 Introduction

Cardiovascular diseases are diseases of the heart and blood vessels in the body. Deaths due to cardiovascular disease have increased substantially in Norway from 1950 to the 1970s. As a consequence of systematic prevention programs started at the beginning of the 1970s in relation to known risk factors, there has been a halving of cardiovascular disease in Norway. The decrease has been especially marked over the last 15 years.

The most important risk factors for cardiovascular disease are fatty substances in the blood, smoking, blood pressure, being overweight and physical inactivity.

3.3.2 Source Material

Cardiovascular disease and Sami ethnicity has been studied in the so-called *Finnmark and Tromsø Surveys* where risk factors were registered. Data from both the *Finnmark Survey* and the 1970 census have also been linked up to the Norweigan Cause of Death Registry.

These studies used mostly language affiliation and Sami kinship to identify Sami participants.

The *SAMINOR Study*, analysed fats in blood in relation to ethnicity. Ethnicity was then divided into four groups: 1) people with three generations of Sami language, 2) people with at least one Sami marker (language, self-reported ethnicity or family background), 3) at least one Kven marker but no Sami marker and 4) Norwegian.

3.3.3 Cardiovascular Disease among Sami

Already in the 1960s, data from Statistics Norway showed a lower frequency of cardiovascular disease in inland Finnmark than on the coast. This led to the hypothesis that Samis were at a lower risk for this type of disease. In the 1970s, a number of studies suggested that Samis had lower risk of death due to heart attack.

The Tromsø Survey of 1974 showed that 8% of men with a Sami background reported cardiovascular disease in the immediate family. The rate was at 16% for men of Finnish decent and 13% for Norwegians.

The Finnmark Surveys from the same period showed that Sami men had a 40% higher risk for cardiovascular disease than Norwegian men. Self-reported cardiovascular disease was, on the other hand, considerably lower in the Sami population. The reason for this was unknown, but

genetic and environmental explanations have been suggested. Language problems, which led to disease and risk factors being systematically misreported across ethnic groups, has also been suggested as an explanation for this finding.

With further analysis of data from the Finnmark Surveys from the 1970s, ethnic differences disappeared when one considered known risk factors for cardiovascular disease. In a similar analysis of the same data, once people with a history of heart disease were taken out, it was found that Sami men had a lower frequency of cardiovascular disease than Norwegian men did.

Health studies that followed in Finnmark, at the end of the 1980s, showed no ethnic difference in the incidence of angina pectoris and heart attack for neither women nor men. At the beginning of the 1990s, clinical studies were conducted in four municipalities in Finnmark (Alta, Tana, Karasjok and Kautokeino) where no differences were found in the level of fat in the blood among Samis and Norwegians. However, Sami heart patients reported lower incidence of family heart disease than Norwegians. It is worth noting that the results in this study are based on a small sample.

By linking ethnic information from 1970 to the Norwegian Cause of Death Registry, studies have been conducted on the incidence of, among others, cardiovascular disease in the northernmost part of Northern Norway, with relation to ethnicity in the period 1970-1998. Results show that Sami men and women have had a higher mortality rate due to cardiovascular disease, 7% and 17% respectively, than those who reported Norwegian ethnicity in 1970. Similar figures were reported for aneurysms, 14% for men and 28% for women. Due to lack of information, it was not possible to study whether this difference could be explained by different incidence of known risk factors in the various ethnic groups.

This study also found that the risk was considerably lower among Sami men with strong ties to reindeer herding than for Norwegian men (approximately 30% lower risk). The risk increased for Sami men with reduced ties to reindeer herding, so that those with no ties had a 20% higher risk of cardiovascular disease than Norwegians. A similar pattern was not found for Sami women.

The SAMINOR study found that of respondents aged 65-79 years, Sami men and women had lower levels of cholesterol than Norwegians. The opposite was found for respondents aged 36-49 years; higher total cholesterol values were found for both Sami men and women.

There are still some unanswered questions regarding the risk of cardiovascular disease among Samis. No studies have been conducted with updated figures from the Cause of Death Registry over the last 10 years. In light of the general increase in weight and inactivity over the last few years, as well as a continued ‘modernization’ of life style, new studies are required on the incidence and risk of cardiovascular disease in the Sami population.

References
[5-9]

3.4 Cancer

Summary

Studies have shown that for most forms of cancer, there was no difference between the Sami and reference population. Nonetheless, Samis had a lower risk of some types of cancer such as colon, prostate, lung and bladder cancer. The reason for this is unknown, but diet and lifestyle have been suggested as an explanation.

3.4.1 Introduction

Cancer is the result of uncontrolled cell growth or division. Cancer, in addition to cardiovascular diseases, is the most common cause of death in Norway and is the most important cause of potential years of life lost in the population. It is believed that a third of all cancer occurrences can be prevented.

Important risk factors for cancer are diet, smoking and physical activity, in addition to genetics.

Several Nordic studies have looked at the occurrence of cancer in Sami populations. Samis have been considered as a relatively 'closed' genetic group, and some Samis still lead a traditional lifestyle which separates them from the reference population.

Two important motivating factors for cancer research in this population have been the health-related consequences of atomic testing at Novaya Zemlya in the 1950s and 1960s and the nuclear reactor accident at Chernobyl in 1986.

3.4.2 Source Material

Cancer studies in Nordic Sami populations have used data from national cancer registries linked to language reporting in the 1970 census.

3.4.3 Types of Cancer

Cancer studies have shown an overall lower incidence of cancer for Sami men and women compared to both national and regional figures for the reference population. Generally, this can be explained by a lower incidence of some of the most common types of cancer in Norway such as breast, colon and prostate cancer.

Based on ethnicity reporting from the 1970 census, Haldorsen and Tynes have studied the incidence rate of various types of cancer in the Sami population of Northern Norway versus the regional reference population. A summary of the results is given in table 2. It appears that the pattern of a lower incidence of cancer among Samis in relation to the reference population is clearer among Sami men than women.

Table 3.2 Summary of Research on the Incidence of Cancer among Samis in Northern Norway compared to the regional reference population. *Reference: Haldorsen and Tynes (2005), European Journal of Cancer Prevention*

Type of Cancer	*Men*	*Women*
All types	Samis have lower risk	Samis have lower risk
Stomach	No difference	No difference
Colon	Samis have lower risk	Samis have lower risk
Bladder	Samis have lower risk	No difference
Breast	-	No difference
Prostate	Samis have lower risk	-
Lung	Samis have lower risk	Samis have lower risk

3.4.4 Possible Explanations for Differences in Incidence of Cancer

It has been suggested that the relatively low rate of colon cancer among Samis is due to genetics and higher physical activity.

Prevalence of smoking is considered to be quite similar among the Sami and Norwegian populations. Lung and bladder cancer are both so-called smoking related types of cancers. Therefore, lower rates of these diseases cannot be explained by smoking habits.

It has been suggested that the lower rates of prostate cancer among Samis is due to diet and physical activity. However, it is also possible to suppose that Samis participate in screenings and examinations less frequently than the reference population and therefore have a higher portion of undiagnosed prostate cancer.

3.4.5 Cancer and the Environment

Since nuclear testing in Novaya Zemlya, northern Russia in the 1960s, the Norwegian Radiation Protection Authority has conducted full-body inspections of caesium-137 in reindeer herders and in reindeer meat. Breast and thyroid cancer, as well as leukaemia, are the types of cancer which can be related to exposure to ionized radiation. However, higher rates of these types of cancers have not been demonstrated among Samis, even when considering consumption of reindeer meat.

Since Chernobyl, no systematic analysis of the prevalence of cancer has been carried out in South Sami areas, though they were the hardest hit with radioactive fallout.

References
[2]

3.5 Diabetes Mellitus Type II

Summary

No differences have been demonstrated between Samis and Norwegians in the rates of type II Diabetes. Nonetheless, there are indications of varying effects of known risk factors between the ethnic groups. Not enough research has been conducted to say something definitive about this.

3.5.1 Introduction

Type II diabetes mellitus is usually prevalent among people over the age of 40 and it is estimated that there are approximately 7000 new cases of type II diabetes in Norway each year. About 120,000 Norwegians have the disease. It is assumed that there are approximately 50,000-70,000 undiagnosed cases of type II diabetes in Norway.

In contrast to type I diabetes, patients with type II diabetes produce insulin, but not in sufficient amounts. In addition, many have resistance to insulin, which means that the body's cells do not absorb insulin and can therefore not absorb sugar from the blood, resulting in heightened blood sugar.

Rates of type II diabetes have had a clear increase in the last few years. The diabetes epidemic can be attributed to increased rates of obesity and physical inactivity. Several studies have shown that in the wake of modernisation, an increasing portion of indigenous populations have also contracted the disease.

3.5.2 Sources

Based on data from the Finnmark Surveys of the 1970s, analyses have been carried out on the rates of self-reported diabetes among Samis. In these analyses, Sami ethnicity was established based on two or more grandparents having a Sami background.

Another study looking at the risk of diabetes linked the Cause of Death Registry with ethnicity reporting in the 1970. However, this study made no distinction between the two types of diabetes. The criteria for Sami ethnicity in this study was that the respondent identified themselves as Sami or had at least one grandparent who spoke Sami.

3.5.3 Type II Diabetes among Samis

Studies show no ethnic differences between the Sami and reference population with regard to the rate of type II diabetes, neither for self-reported cases nor for diabetes as the cause of death. It is interesting to note that many of the studies showed that Sami women had a higher body mass index[1] (BMI) which is one of the most important risk factors for type II diabetes. Nonetheless, this did not correlate with an increase in rates of the disease.

A possible explanation for this has been that BMI does not reveal fat distribution on the body, which could be significant when determining risk. There is also discussion around the suitability of using BMI when one compares populations with relatively large height differences.

More research is needed to determine if being overweight disposes Sami women to type II diabetes to the same degree as those of Norwegian decent.

It would also be interesting to study the development of type II diabetes among Samis in Norway with regard to changes in physical activity and diet. No such studies have been conducted thus far.

References
[8;10;11]

[1] Measurement of the relationship between height and weight.

3.6 Asthma and Allergies

Summary

Studies conducted in Northern Norway have shown higher rates allergies and asthma among Sami children than Norwegian children. There are no corresponding studies for the adult population. The findings for children are interesting but need to be confirmed before one can reliably say something.

3.6.1 Introduction

Asthma is a chronic lung disease which leads to fits of wheezing, shortness of breath or coughing. Asthma often co-occurs with eczema and allergies, and can be triggered by various environmental factors such as tobacco smoke, pollution and mould in people with a predisposition for the disease. When in contact with allergens such as house dust, pollen or fur-bearing animals, allergies can cause afflictions such as itchiness, eczema, conjunctivitis, stuffy nose, coughing and difficulty breathing. One hypothesis is that 'too-strict hygiene' can increase the risk of asthma and allergies.

It is believed that both asthma and allergies are genetic. Studies have also shown that different ethnic groups in a country can have different rates of asthma.

3.6.2 Sources

Studies on the rates of asthma and allergies among Sami versus Norwegian children in Northern Norway have been conducted over a period of 10 years, from 1985 to 1995. These studies defined Sami ethnicity as children with minimum two grandparents with Sami as a mother tongue.

3.6.3 Asthma among Samis

Over all, there has been an increase in the rates of asthma and allergies among children in Northern Norway from 1985 to 1995. Sami children had a higher rate of asthma and allergies than Norwegian children. Rates were highest among Sami boys (Tables 3 and 4).

Table 3.3 Rates (%) of Asthma and allergies among Sami and Norwegian children in Northern Norway in 1985 and 1995.

Source: Selnes et al (2002) Pediatric Allergy Immunology

	1985 (n=10 093)	1995 (n=8 676)
Asthma		
Sami	6,0	13,6
Norwegian	5,1	8,2
Allergic conjunctivitis		
Sami	19,4	32,6
Norwegian	16,1	21,6

n= number of people

As far as we know, no population studies have been conducted in the adult Sami population regarding the rates of asthma and allergies in Norway.

Table 3.4 Rates (%) of Asthma and allergies among boys and Girls in Northern Norway in 1985 and 1995 with relation to ethnicity.

Source: Selnes et al (2002) Pediatric Allergy Immunology

	1985 (n=10 093)	1995 (n=8 676)	1985 (n=10 093)	1995 (n=8 676)
	Boys		Girls	
Asthma				
Sami	8,0	17,5	4,0	9,8
Norwegian	6,5	9,8	3,6	6,6
Allergisk conjunctivitis				
Sami	21,7	37,6	17,0	27,8
Norwegian	18,4	24,9	13,7	18,5

n= number of people

References

[12]

3.7 Hip dysplasia and Bechterew's disease

Summary

High rates of hip dysplasia in the Sami population have been reported over a long period. There is however only limited data to clarify this. Comparative studies on Samis and Norwegians have not been conducted with regard to the rate of hip dysplasia. Research of Sami populations in selected Sami rural districts has shown a high frequency, but representativeness with relation to the population in this data is uncertain.

The same studies have found a heightened incidence of a gene called HLA-B27, which has been tied to increased risk of Bechterew's disease. More research is necessary to determine the risk and rate of Bechterew's disease in the Sami population of Norway.

3.7.1 Introduction

Hip dysplasia is a congenital defect of the hip socket. The hip joint is a ball and socket joint where the upper part of the thighbone (femur) is formed as a ball. This ball should fit into the hip socket in the pelvis. People with hip dysplasia have a socket that is too shallow which leads to the thighbone slipping out more easily. Causes of the disease are unknown but it is believed to be hereditary. Big variation has been found when comparing rates in different ethnic groups.

Bechterew's disease is an inflammation in the spine and large joints which results in stiffness and pain. Causes for the disease are currently unknown but it occurs in families, which indicates a hereditary reason. Ninety percent of those with the disease also carry the HLA-B27 gene. Generally, high rates of this gene occur in arctic populations.

3.7.2 Sources

Recently, a study has been conducted on the rates of hip dysplasia and Bechterew's disease in Sami populations. This study is based on examinations of 348 Samis living in Kautokeino and Karasjok. In this study, Sami heritage was determined for participants with at least two Sami grandparents.

3.7.3 Hip Dysplasia among Samis

Since the first half of the last century, higher rates of hip dysplasia have been reported in the Sami population compared to the reference population. It has been suggested the Sami tradition of letting children lie in a *komse*, a traditional cradle, has been a contributing factor to this high rate.

Table 3.5 Rate (%) of Hip Dysplasia among a Sami population (1987)
Kilde: Johnsen K et al (2008) International Journal of Circumpolar Health

	Number of people	Severe dysplasia	Mild form of dysplasia
Men	150	14	17
Women	165	21	24
Total	315	17	21

The rates of hip dysplasia given in table 5 are based on the study carried out in Karasjok and Kautokeino in 1987. In total, the study found that 38% of those who participated had mild or severe hip dysplasia. Women had higher rates than men and the rates of hip dysplasia increased with age.

More population-based research is needed in order to study the rates and possible causes of hip dysplasia in the Sami population.

3.7.4 Bechterew's Disease among Samis

Already in the 1970s, a relatively high rate (26%) of the gene HLA-B27 was reported among Samis in Northern Norway. The rate for the population in Southern Norway was found to be at 10%.

In studies from Northern Norway, where responses were not divided into ethnic groups, the rate of the gene was at 16% while the incidence of Bechterew's Disease was at 1.1-1.4%. Studies of Sami populations in Karasjok and Kautokeino from 1987 found a rate of Bechterew's Disease of 1.8%, with 91% of those having the HLA-B27 gene. According to this study, the total rate or HLA-B27 for the population was 24%. Compared with most of the population-based studies, the incidence of both Bechterew's Disease and HLA-B27 were high. This data, however is based on a small selection (348 people) and this, in addition to differences in diagnostic methodology, could explain the large differences in finding.

More research is needed to obtain reliable figures regarding the rates of Bechterew's Disease and the HLA-B27 gene in the Sami population of Norway.

References
[13]

3.8 Diet and Nutrition

Summary

According to new dietary studies, dietary patterns in the population are more strongly related to geography than to Sami/Norwegian ethnicity. In addition, there seems to be a clearer correlation between ethnic affiliation and dietary patterns inland than at the coast.

Research has indicated a significantly lower rate of iron deficiency in the inland Sami population, which may be explained by the higher consumption of reindeer meat. Reindeer meat has been found to have a protective effect, even for the most vulnerable groups such as women of fertile age.

3.8.1 Introduction

Chronic diseases such as cancer, cardiovascular disease and diabetes are the cause of more than half of all deaths in the world. An increase of these diseases has been registered, in addition to increased body weight and obesity. Research has shown that to a large extent, these conditions are diet and nutrition related and therefore can be prevented by making healthier choices.

Research on diet and nutrition is an important tool in assessing the risk for chronic disease in a population.

This chapter presents data on eating habits and the status of dietary iron in the the Sami population.

3.8.2 Source Material

The dietary data referred to in this chapter comes from the population-based SAMINOR study. Beyond this, few diet studies exist for the Sami population and those that do are based on a small sample. In addition to collecting data, the SAMINOR study also analysed blood samples for iron content in order to see whether there were variations in iron levels concerning geography, dietary practices and/or ethnic groups.

Ethnicity in the dietary study from SAMINOR is divided into four categories. “Sami I” were people who had Sami as a mother tongue for three generations. “Sami II” were people with at least two grandparents who spoke Sami. “Sami III” were people with at least one Sami identity marker (language, self-reported Sami ethnicity or family background). “Non-Samis” were all those who did not fit one of the other categories.

Dietary Practice Analysis

Data from the SAMINOR study was used to study dietary practices among the Sami population. The classical way to study nutrition and health has been to analyse certain factors in a diet such as nutrients, specific foods or energy intake and then see how they affects health. In a dietary practice analysis, diet is studied as a whole. In some cases, this method may be more appropriate because it requires a smaller number of questions and the results can be easier to interpret. It is

easier because diet is actually made up of the consumption of many different foods, *not* specific nutrients, and because diet in population studies can be revealed by defined dietary patterns.

The dietary practice analysis in the SAMINOR study grouped participants according similarity of answers to the dietary questions. These dietary groups or dietary patterns were further analysed with regard to ethnicity, geography and health behaviour.

Dietary Patterns

Five different dietary patterns were defined for the diet questions in the SAMINOR study. They were named after what characterized the dietary patterns best: 1) reindeer meat, 2) fish, 3) average, 4) fruits and vegetables and 5) western/traditionally marine.

The 'reindeer meat group' consumed high amounts of reindeer, reindeer meat products, elk, smoked and salted fish as well as boiled coffee. This group was characterized as people with three generation of Sami language (Sami I), being overweight and less physically activity.

'Fish' consisted of people who often consumed all of the marine food products mentioned in the questionnaire. This group was dominated by women, but also by people who reported their health as 'not so good', which may be explained by the fact that the group had the highest average age.

The dietary pattern called 'average' was characterised by an average intake of all the dietary questions except for whole milk, salted and smoked fish as well as coffee, pork sausage and lamb. Men dominated this group.

'Fruits and vegetables' was designated as such due to the high intake of these foods in addition to chicken, pasta, tea and water. This group had a large portion of women and people with a health-conscious lifestyle, as well as people who reported their health to be 'quite good'.

The last dietary category called 'western/traditionally marine'. People in this group reported frequent consumption of so-called western foods such as hamburger, pizza, sausages, casseroles, pork and beef. In addition, this group had the most frequent consumption of traditional foods such as fish liver and roe, whale, seabird eggs and filtered coffee.

Table 3.6 Dietary Patterns with relation to different characteristics. Figures given in percent. (2003/2004)

Source: Brustad et al 2008 Int J Circumpolar Health

	Dietary groups based on a total of 12,816 people				
	Reindeer meat	*Fish*	*Average*	*Fruits and vegetables*	*Western, traditional marine*
Sex					
Men	50	42	55	29	55
Women	50	58	45	71	45
Age					
36-49	42	18	37	39	39
50-64	42	45	41	43	44
65-79	16	37	22	18	17
Location					
Coast	17	82	80	77	91
Inland	83	18	20	23	9
Ethnicity[2]					
Sami I	72	9	8	7	6
Sami II	12	12	14	12	19
Sami III	5	7	7	6	8
Non-sami	11	72	70	75	67

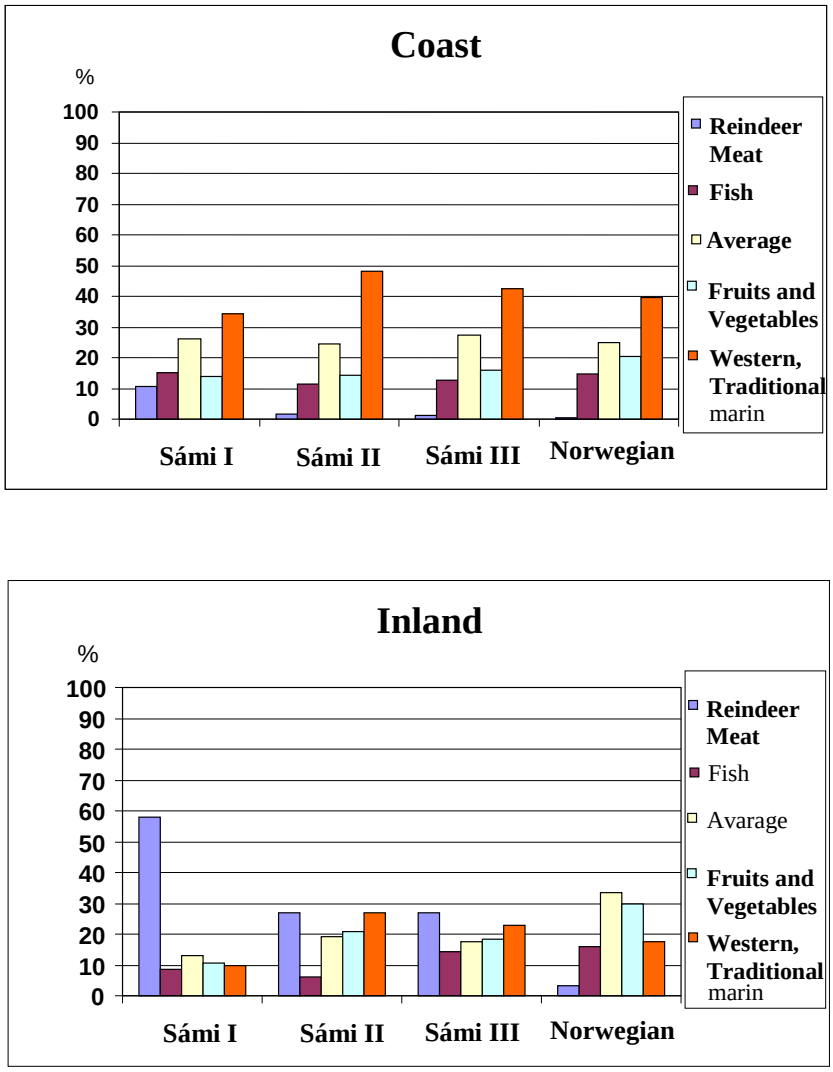
While approximately 80% of the sample in the study lived on the coast, a little over 80% of the 'reindeer meat group' lived inland. Affiliation to the different dietary categories was more dependent on geography than ethnicity (Figure 4), except for Sami I where more than 70% of people belonged to the 'reindeer' group.

For coastal populations, ethnicity had little impact on dietary patterns. Inland, diet was found to a large degree to be associated with ethnicity (Figure 4).

[2] 'Sami I' are people who have Sami as a mother tongue for three generations. 'Sami II' are people with at least two grandparents who speak Sami. 'Sami III' are people with at least one Sami identity marker (language, self-reported Sami ethnicity or family background). 'Non-Sami' refers to all who do not fall into one of the Sami groups.

Figure 3.4 Distribution of Dietary Pattern Groups on the in relation to Ethnicity[3]. (2003-2004)

Source: Brustad et al 2008 Int J Circumpolar Health



[3] 'Sami I' are people who have Sami as a mother tongue for three generations. 'Sami II' are people with at least two grandparents who speak Sami. 'Sami III' are people with at least one Sami identity marker (language, self-reported Sami ethnicity or family background). 'Non-Sami' refers to all who do not fall into one of the Sami groups.

Iron Deficiency and Diet

Internationally, iron deficiency is a significant deficiency disease caused by, among other things, poor nutrition and chronic disease. Iron deficiency can cause a diminished overall condition, especially among women of menstruating age, as well as the aged and children. Sources of dietary iron are animal products but iron is also found in plants, grains and vegetables.

Iron deficiency is the most common dietary deficiency in Norway. Iron deficiency anaemia (low blood count due to too little iron) reduces the body's ability to carry oxygen. It develops slowly and can occur because of an increased loss of iron, often due to bleeding, an increased need for iron, for example during pregnancy, or a low intake of iron.

Early symptoms may be listlessness or fatigue, pallid skin, headaches, tinnitus, dizziness and a decreased capacity for work. Signs of severe iron deficiency are short-windedness, rapid pulse and heart failure.

This chapter refers to measurements of both free iron in the blood and stored iron in the body.

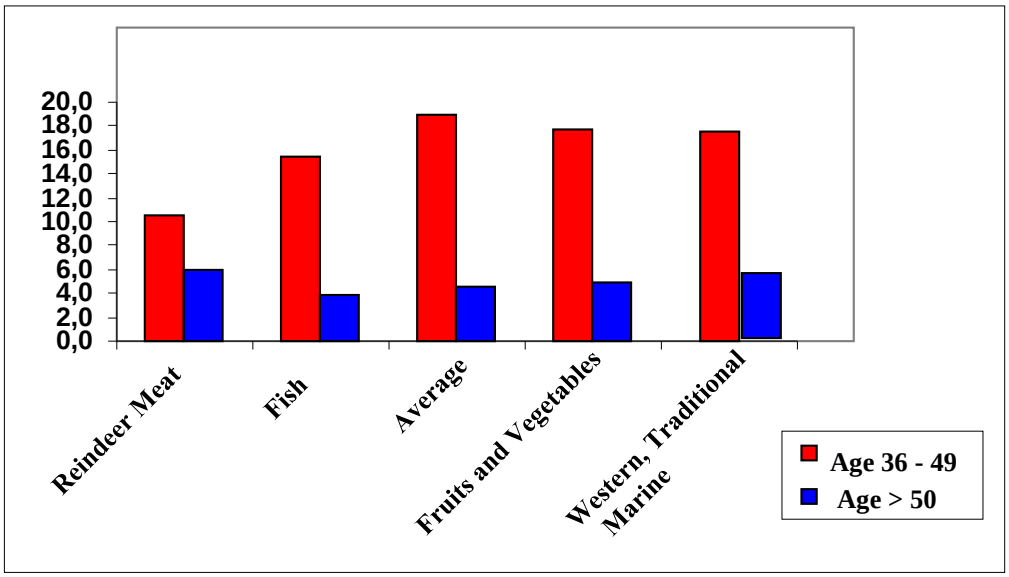
Iron Levels in the Sami Population

Results from the SAMINOR study showed that the average measurement for stored iron in the body was higher among men than among women. The study showed that the portion of the population who spoke Sami for three generations had the highest average iron levels. Iron levels for men fell with increased age after the age of 60 years. Among women, iron levels increased for those in the age group 50-70, after menopause. After 70 years of age, iron levels began to fall also among women.

Regardless of ethnic affiliation, iron deficiency appeared seldom among men who participated in the SAMINOR study. Few participants had iron deficiency, especially in the 'reindeer meat' group. None of the men over the age of 50 had empty iron stores in the body.

Iron deficiency was up to nine times more common among women than men, regardless of ethnic affiliation. Members of the 'reindeer meat' group, also women, had the lowest portion of empty iron stores in the body (Figure 5). When comparing the various dietary pattern groups, no differences in irons levels where shown for participants over the age of 50.

Figure 3.5 Portion of Women with Empty Iron Stores with relation to Dietary Patterns. *Source: Borderstad et al (2007) European Journal of Haematology*



Diet and Lifestyle Affect Iron Stores

Iron stores in the body are affected by many different factors such as gender, age, health, and not least, nutrition. Iron content analysis conducted during the SAMINOR study has shown that people living on the coast had lower iron levels than those living in other areas. Iron levels were also higher in the inland Sami population compared to the non-Sami population in the same area. However, no difference in iron levels were found between Samis and the rest of the population living on the coast.

Iron level differences among participants can be explained by many factors. The most important factor which affects iron levels is diet. The inland Sami population ate significantly more reindeer meat than the rest of the participants in the SAMINOR study. Reindeer meat contains a lot of so-called bioavailable iron (3.8mg per 100g of raw meat), meat which is easily absorbed by the body. A diet rich in iron protects again iron deficiency. Coastal populations generally ate less meat and more fish, regardless of ethnic background.

References
[14-16]

3.9 Smoking and Alcohol

Summary

Generally, no significant differences in smoking habits have been demonstrated between Sami and Norwegian adults or youth. For those living inland, studies have shown a slightly higher rate of smoking for Samis than non-Samis. Similar findings have not been established for women. Among youth, it appears that Sami youth start smoking earlier than Norwegian youth.

Both Sami men and women have reported a higher rate of total abstinence from alcohol than the non-Sami population. This tendency is especially pronounced among elderly Sami women. Sami youth have also reported a lower alcohol consumption rate that youth of Norwegian descent.

3.9.1 Smoking

Smoking increases the risk of a series of diseases such as lung cancer, cardiovascular disease and chronic lung disease. Statistics Norway (Statistisk sentralbyrå - SSB) carries out annual studies on tobacco use. In 1973, over half of Norwegian adult males smoked while in 2006, only around 21% of the adult male population did so. The portion of daily smokers among women has also decreased from 32% in 1973 to 22% in 2006.

While smoking was previously widespread in all social classes, daily smokers are now strongly overrepresented by people with a lower level of education. When it comes to occasional smoking, the inverse relationship applies.

Earlier population studies have demonstrated a higher rate of daily smokers in Finnmark compared to other counties in Norway. Figures for 2004-2008 show significant differences among the various counties. According to Statistics Norway, the lowest portion of daily smokers was found in Oslo with 19%, while the highest was in Finnmark with 32%.

3.9.2 Alcohol

Alcohol is the most widely used intoxicant in the population and probably the one that results in the highest level of abuse. Additionally, there is an increased risk of accident, injury and death associated with the consumption of alcohol.

The overall alcohol consumption rate in Norway has increased since 1990, from 4.55 litres per inhabitant in 1993 to 6.37 litres in 2005. Over the last 20 years, wine and beer consumption has increased the most. The increase in wine sales is tied to a so-called ‘continental’ drinking habit where one drinks often but consumes less in each drinking situation. These habits have not replaced Nordic weekend drinking binges, but have come in addition to it.

3.9.3 Source Material

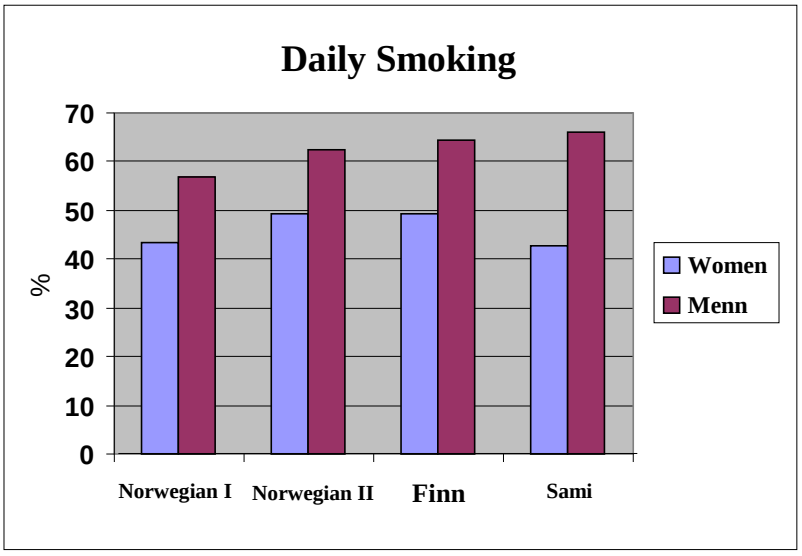
Both the *SAMINOR* and *Ung i Nord* studies have collected information about the use of alcohol and tobacco. Data on smoking and ethnicity based on the Finnmark Surveys have also been published.

Smoking among Samis

Data from the first Finnmark Surveys from 1974/75 showed that fewer Samis than Norwegians born in Finnmark were daily smokers. Samis and Norwegians living in Finnmark, but born outside of the county, had similar rates of daily smoking (Figure 6).

Figure 3.6 Daily Smoking in relation to Ethnicity, based on figures from the Finnmark Survey 1974/75

(Norsk I = people living in the county, but born outside of Finnmark, Norsk II = people born in Finnmark, Finsk = Finns born in Finnmark, Samisk = at least two grandparents with Sami language) *Source: Njølstad I et al (1998) Epidemiology*



Data on smoking habits from the SAMINOR study did not show marked ethnic differences for women, either on the coast or inland (Figures 7 and 8). For men, the pattern was clearer. A higher portion of Sami men smoked more than non-Sami men, especially those living inland (Figure 3.9).

Figure 3.7 Smoking Habits for men living inland in relation to ethnicity, based on data from the SAMINOR study of 2003/04.
(Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) *Source: Broderstad et al 2007 European Journal of Haematology*

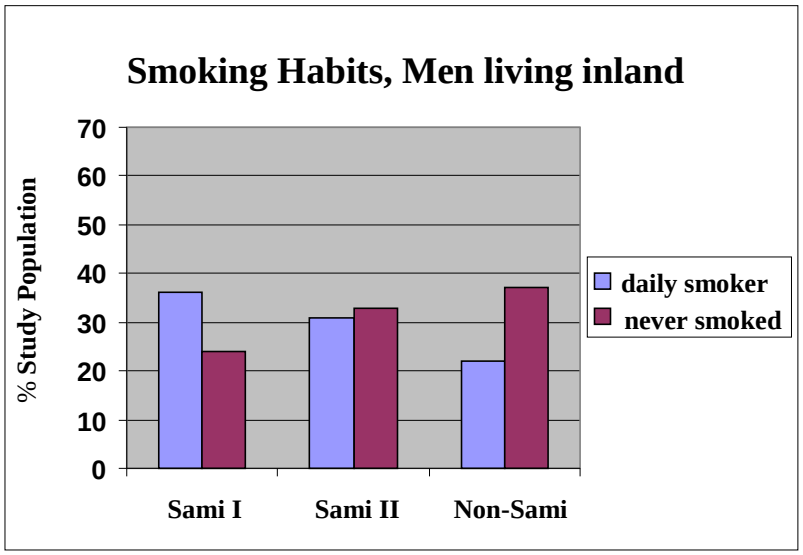


Figure 3.8 Smoking Habits for women living inland in relation to ethnicity, based on data from the SAMINOR study of 2003/04.
(Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) *Source: Broderstad et al 2007 European Journal of Haematology*

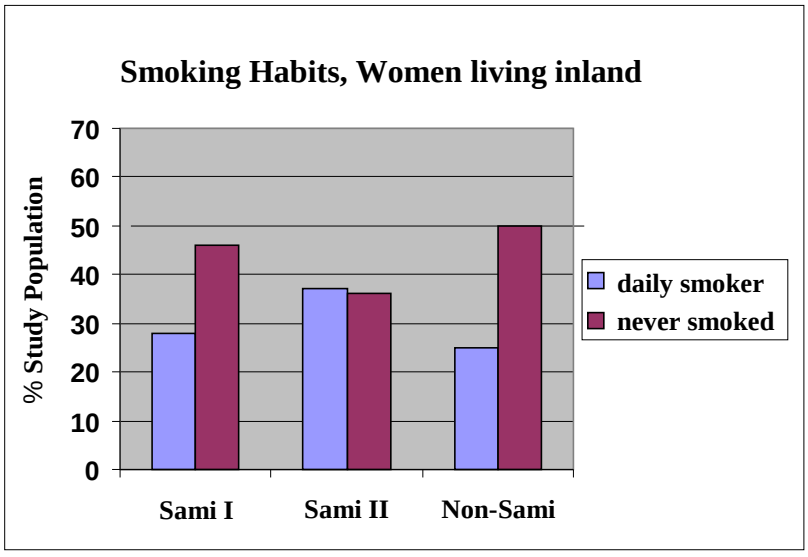


Figure 3.9 Smoking Habits for men living on the coast in relation to ethnicity, based on data from the SAMINOR study of 2003/04.
(Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) *Source: Broderstad et al 2007 European Journal of Haematology*

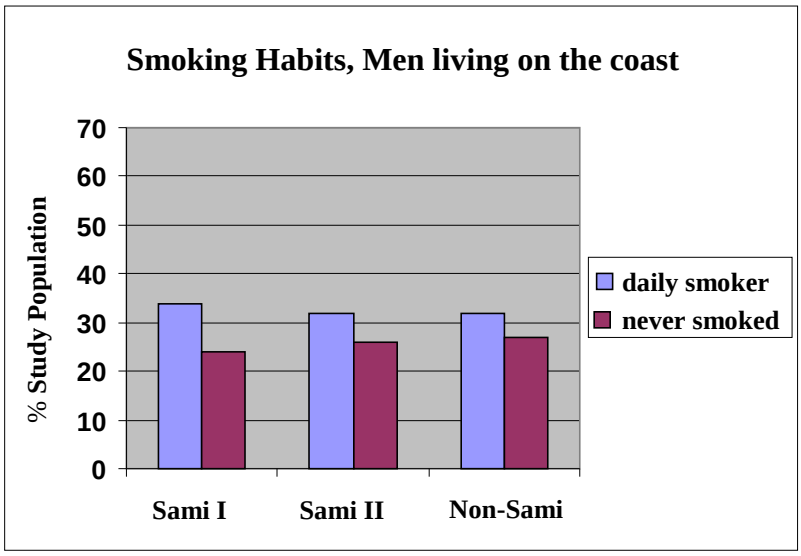
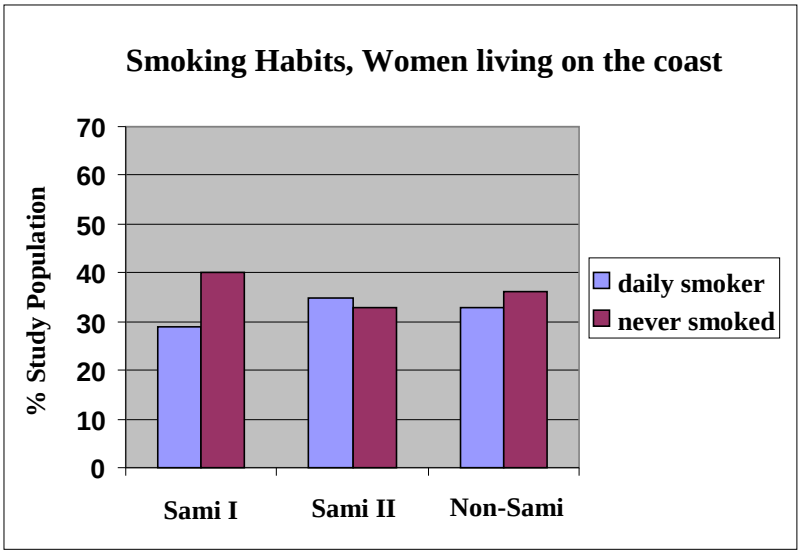


Figure 3.10 Smoking Habits for women living on the coast in relation to ethnicity, based on data from the SAMINOR study of 2003/04.
(Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) *Source: Broderstad et al 2007 European Journal of Haematology*



The youth survey *Ung i Nord* showed that there was no significant ethnic differences in smoking habits of youths attending high school in 1994/95. Thirty-five percent of Sami youth (defined as having at least one Sami marker such as language or family background) smoked more than 15 cigarettes per day versus 30% of Norwegian youth. Twenty-six percent of Sami

youth also responded that they had stopped smoking compared to 22% of Norwegian youth. It appeared that Sami youth began to smoke earlier than Norwegian youth. Otherwise, there were small or no ethnic differences.

In the follow-up study three years later, in 1997/98, no significant ethnic differences were found between the smoking habits of Sami and Norwegian youth. The most important difference was found between boys and girls. Girls smoked more than boys at the start of the study (1994/95). A larger portion of boys smoked more than 15 cigarettes at both the beginning and end of the study.

Alcohol Use

Figures from the *SAMINOR* study show ethnic differences with regard to alcohol consumption. Figures 11, 12, 13, and 14 show that the portion who answered that they were 'total abstainers from alcohol' or 'did not drink during the previous year' was quite a bit higher among Sami men and women. The portion of those who reported drinking more than twice a week was a bit lower among Samis with three generations of Sami language compared to the other groups. The tendency of lower alcohol consumption was more marked among Sami women than men.

Figure 3.11 Alcohol Consumption among men living on the coast with relation to ethnicity. (SAMINOR study 2003-04).
(Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) Source*: Broderstad et al 2007 European Journal of Haematology*

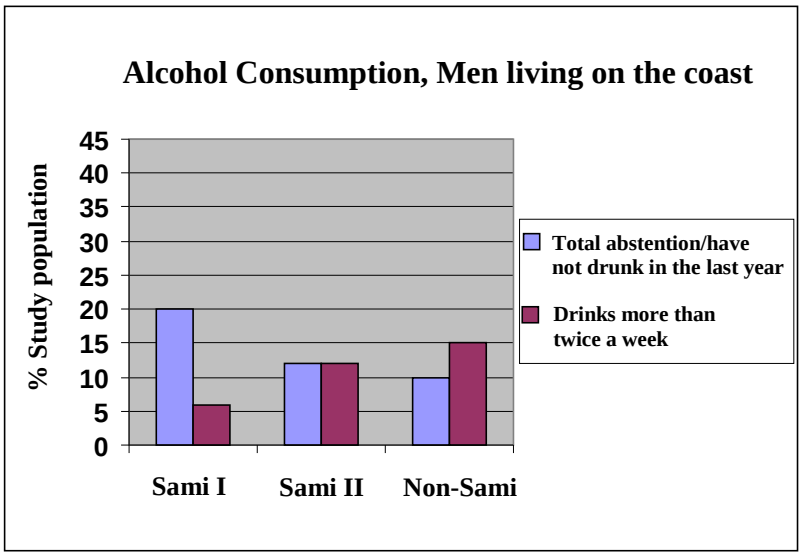


Figure 3.12 Alcohol Consumption among men living inland with relation to ethnicity. (SAMINOR study 2003-04).
(Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) Source*: Broderstad et al 2007 European Journal of Haematology*

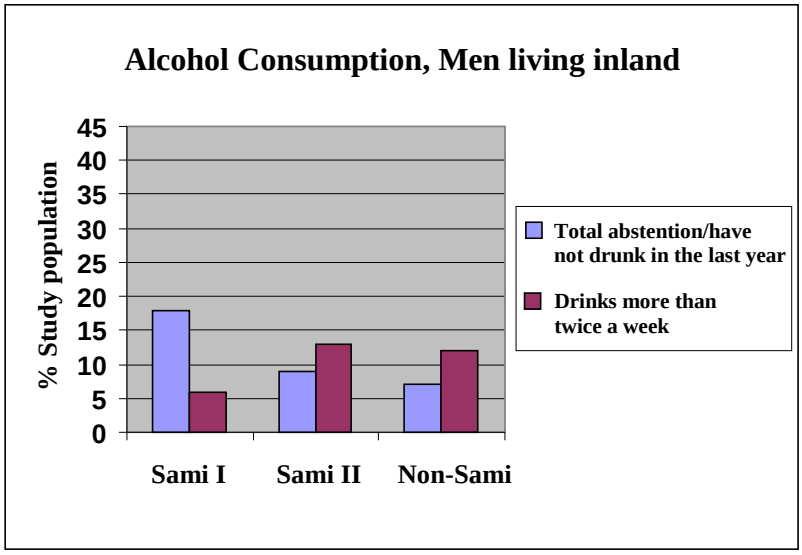


Figure 3.13 Alcohol Consumption among women living on the coast with relation to ethnicity/ethnic affiliation. (SAMINOR Study 2003-04). (Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.) Source*: Broderstad et al 2007 European Journal of Haematology*

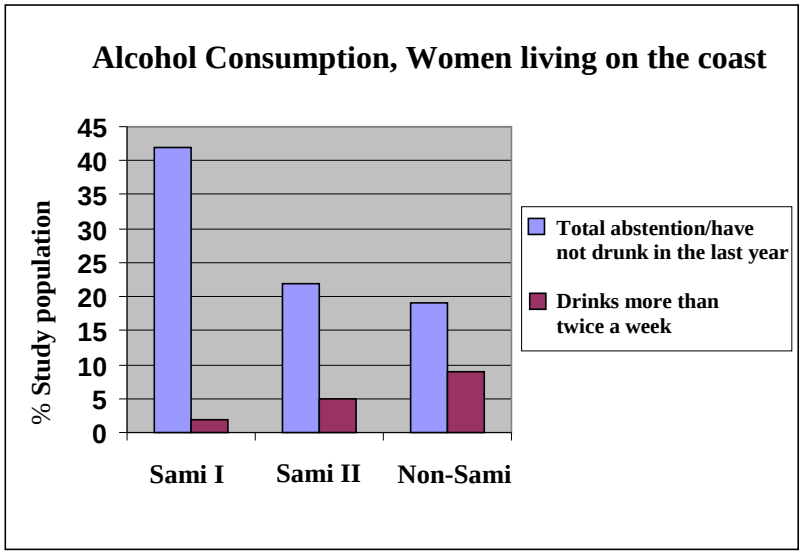
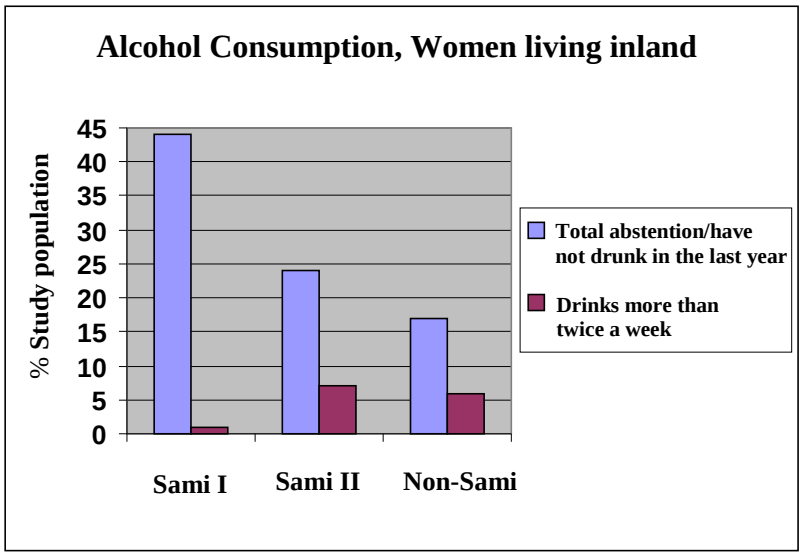


Figure 3.14 Alcohol Consumption among women living inland with relation to ethnicity. (SAMINOR Study 2003-04). (Sami I = three generations Sami language, Sami II = at least one Sami marker such as language or family background.)
Source*: Broderstad et al 2007 European Journal of Haematology*



Figures from the *Ung I Nord* survey have shown that Sami youth (defined as those with at least one grandparent who speaks Sami) drank less than non-Samis when considering both frequency and amount. A larger portion of Sami youth also reported that their parents were total abstainers from alcohol. Thirty-two percent of Sami youth reported that their mother was a total abstainer versus 16% of Norwegian youth. Seventeen percent of Sami youth reported that their father did not drink alcohol versus 8% of non-Sami youth.

Geographical differences in alcohol consumption were also found among the parents of Sami youth. In inner Finnmark, 49% of Sami youth reported that their mother was a total abstainer versus 22% on the coast. The corresponding numbers for fathers were 24% total abstainers in inner Finnmark versus 13% on the coast.

Generally, as is known from several studies, there is a big chance that many of the participants underreport their alcohol consumption and that people who consume large amounts of alcohol are less willing to participate in health research. The results on alcohol consumptions must therefore be interpreted with these limitations in mind. Nevertheless, there is still reason to believe that the figures of lower alcohol consumption among Samis are reliable seen in light of Læstadianism's (conservative Lutheran revival movement) restrictive view on alcohol. It is reasonable to assume that these findings reflect that this Christian movement, which received special acceptance in the Sami population, still influences the population's use of alcohol.

References
[11;17;17-19]

3.10 Mental Health

Summary

There are no published population-based studies on the rate of mental illness among the adult Sami population of Norway. Studies on youth generally show no ethnic differences in the rate of mental illness. However, they do show a higher frequency of mental illness among Sami youth from South Sami areas compared to Norwegian youth. Sami mothers reported lower rates of mental problems among their children than the children's teachers did. Norwegian mothers and teachers displayed a greater correspondence in rates of reporting.

Studies on the effect of psychiatric treatment at psychiatric hospitals found no differences for Sami versus Norwegian patients, neither in the types of treatments or nor symptom changes in the course of their hospital stay.

3.10.1 Introduction

It is estimated that approximately half of the Norwegian population will experience a mental illness at some point in their life. Risk factors that increase the chance of mental illness may be hereditary, while crises such as death, accident or a difficult family or work situation can also trigger mental illness. In many cases, the reasons may be uncertain. A number of studies have shown variation in the rates of different mental illnesses between various ethnic groups. In some studies, ethnic minorities have shown worse mental health than the majority population. This has often been explained by socioeconomic differences.

3.10.2 Sources

There are no population-based studies on the rates of mental illness among the adult Sami population in Norway. However, such studies have been carried out on children and youth.

Based on data from the *Ung i Nord* study, rates of mental illness among youth of different ethnicities have been studied. Behaviour and emotional problems among 11 to 12-year-old Sami children born between 1991 and 1994 have been compared with those of Norwegian children. Other studies have looked at the treatment of mental illness in relation to Sami and Norwegian ethnicity.

3.10.3 Mental Health in the Sami Population

Youth

The *Ung i Nord* study found no differences between the rate of self-reported mental illness among Norwegian and Sami youth (defined as having at least one Sami marker such as language, family background or self-reported Sami ethnicity). In this study, youth were asked to answer 112 questions on different types of mental illnesses such as anxiety, depression, psychosomatic afflictions, withdrawal, social problems, attention deficit, thought disorders, aggression and so-called abnormal behaviour. This study found no ethnic differences.

When the data was divided into various geographical areas, it appeared that South Sami youth had a significantly higher rate of mental illness compared to Norwegians from the same area. This study also found that a strong understanding of oneself as Norwegian positively affected the health of boys.

Children

The study on behavioural and emotional problems of children in five Sami municipalities in Norway was based on information received from 71 Sami and 77 Norwegian mothers, as well as the children's teachers. Mothers identified as Sami were those of a monoethnic Sami background, while Norwegian mothers had a monoethnic Norwegian background. Mothers of mixed ethnicity were purposefully excluded. This study found that agreement between the mothers' and teachers' reporting of the children's emotional and behavioural problems was stronger for Norwegian mothers than for Sami mothers. Sami mothers reported lower rates of these types of problems than the teachers did. Since this study is based on a small sample, the results should be interpreted with caution.

Tabell 2.7 Mothers' and Teachers' reporting of behavioural or emotional problems among 11-12 year-old children. Figures given in per cent. (2002-2003) *Kilde: Javo C 2009 Nordic Journal of Psychiatry*

	Sami Children	Norwegian Children
Teachers' Assessment		
Boys	24,7	29,1
Girls	17,4	11,4
Mothers' Assessment		
Boys	14,0	18,6
Girls	11,8	15,6

Psychiatric Treatment

A study conducted about the effect of psychiatric hospital treatment on Sami versus Norwegian patients found no difference in the types of treatment or symptomatic changes in the course of the hospitalization. The study was conducted from 2000 to 2002 on 31 Sami and 37 Norwegian patients. In this study, Sami ethnicity when self-reported in conjunction with questions relating to language and Sami culture.

One study conducted between 1999 and 2001 related to five psychiatric policlinic treatment institutions in Finnmark and their treatment of Sami and Norwegian patients. The study was based on 347 patients and 32 therapies. No ethnic differences in demographic and psychosocial characteristics was found among the patients. No ethnic differences in mental health was found

among these patients either. Further, no ethnic difference was found between those who did not attend, or quit, planned treatment. However, the study found that therapists prescribed more appointments and more socially focused treatments for Sami patients compared to non-Sami patients. The study also showed that an ethnic **mach** between client and therapist was associated with increased use of medication and less use of verbal therapy. The data could indicate that there were ethnic differences in treatment plans and treatment goals.

References
[20-22]

3.11 Suicide and Attempted Suicide

Summary

A registry-based follow-up study found a higher frequency of suicide among Samis in Northern Norway than in the rest of the North Norwegian population. The Ung i Nord study, carried out among youth in Northern Norway, found no ethnic differences in self-reported attempted suicide rates. When considering gender, there were significant differences in the rates of attempted suicide in both ethnic groups.

3.11.1 Suicide in Norway

From the end of the 1960s until the middle of the 1980s, there was an increase in the number of suicides in Norway for both men and women. The number of suicides in this period doubled to a rate of 16 per 100,000 inhabitants for both sexes. This corresponds to 650 suicides per year. Later, a rapid decrease was registered, and in the period 1988-1994, the registered mortality rate by suicide was reduced by 25%. Since 1994, the suicide rate in Norway has stayed relatively stable with an average of 12 per 100,000 inhabitants for men and women combined. This corresponds to approximately 550 suicides per year. Generally, there is a high rate of suicide among indigenous peoples in northern areas such as Greenland, Canada and Alaska.

3.11.2 Sources

In a registry-based follow-up study, the 1970 census was linked to the cause of death registry in order to study the rate of suicide mortality among Samis in Northern Norway between 1970 and 1998. In study, a participant was categorized as Sami if a grandparent, parent or the participant him/herself had Sami as a first language or the participant self-identified as Sami.

Questions about suicidal behaviour (thoughts and attempts) among Sami youth in Northern Norway was a part of the *Ung i Nord* study. In this study, the definition of Sami ethnicity was based on whether the youth reported that their parents had a Sami background, one of the grandparent's or parent's language was Sami and/or whether the youth considered him/herself to be Sami.

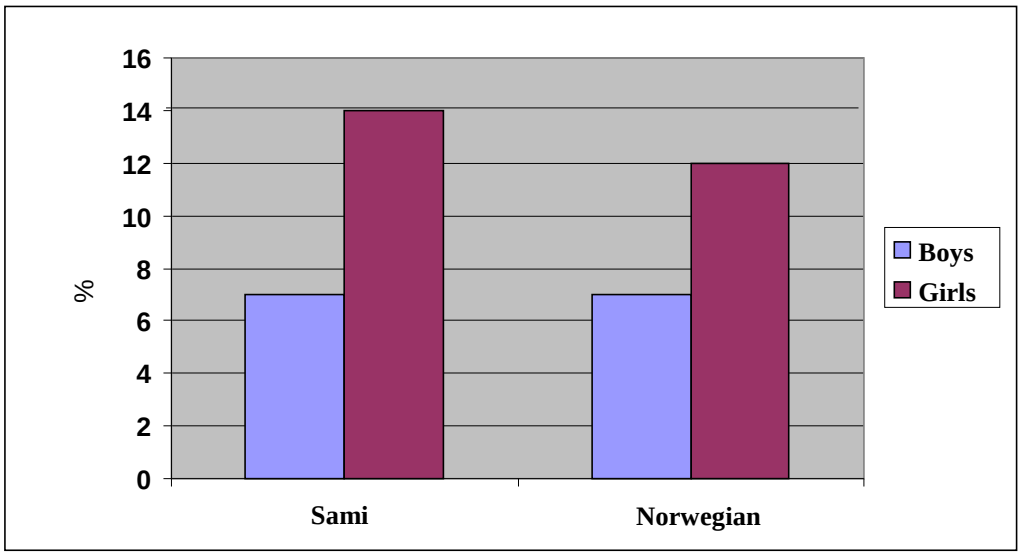
3.11.3 Suicide among Samis

Between 1978 and 1990, the suicide mortality rate for Samis was 27% higher than that for the rest of the North Norwegian population. There was an especially high risk of suicidal death among Sami youth and young adults (15-24 years) for both men and women. Approximately 30% of all suicides were carried out in this age group, with 3.5 times higher death rates for men than for women. A higher risk of suicidal death was also found among Sami men living in Finnmark, as well as for those living in inner Finnmark. On the other hand, Sami men and women with ties to reindeer herding did *not* have a higher risk of suicidal death than the rest of the North Norwegian population.

The *Ung i Nord* study found no ethnic differences for self-reported attempted suicides. Both ethnic groups displayed significant differences with relation to gender. Fourteen percent of Sami girls reported having tried to commit suicide while 7% of boys reported the same.

Figure 3.15 Attempted Suicide among Sami youth based on data from the Ung i Nord study (1994/1995)

Source: Silviken og Kvernmo (2007) Journal of Adolescence, Curtis et al (2006), INUSSUK, Arktisk forskningsjournal 1, Grønlands Hjemmestyre



References
[20;23;24]

3.12 Drug Use (sleep medicine)

Summary

An older study from Finnmark found no ethnic variations in the use of medications.

A population-based study found lower use of sleep medicine in the Sami population than in the Norwegian. The portion participants reporting sleeping problems was also lower in the Sami population.

3.12.1 Introduction

The use of medicine in a population can be an indicator of illness. Studies have also shown that the use of medicine can be explained by different lifestyle factors and use of medical services.

3.12.2 Sources

Medicine use has been studied with respect to Sami ethnicity in two population-based studies in Norway. The first is based on the *SAMINOR* study. The goal with this work was to compare the use of sleep medicines in the Sami population with that of the rest of the population groups in Northern Norway. Another work, based on the Finnmak Survey from 1987-88, studied the use of medicine with relation to ethnicity.

3.12.3 Use of Medicine in the Sami Population

We know little about the use of medicine in the Sami population. The 1987-88 study from Finnmark did not find big variations in the use of medicines in different ethnic groups. This study found that a higher percentage of women used medicine than men, but this difference decreased with age. Participants in this study were defined as Sami if they had two or more grandparents of Sami heritage.

Table 3.8 Use of medicine in Finnmark, according to ethnicity (n=11,061). Figures are given in percent. 1987-1988.
Source: Furu K, 1997. Journal of Clinical Epidemiology

Ethnicity	Men	Women
Norwegian	43,4	56,9
Finnish	42,4	58,4
Sami	43,0	54,9
Sami/Finnish	49,4	58,9

[4] Medicine is defined as a substance made for or given to treat or prevent illness. In order to market a substance as a medicine, the substance must have documented effect, safety and technical quality. (Source: www.lovdata.no)

3.12.4 Sleeping Problems and the Use of Sleep Medicine

According to studies conducted by the Norwegian Institute of Public Health, use of sleep medicine is relatively common in Norway. There is only one study on the use of sleep medicine in relation to Sami ethnicity. This study is based on data from the *SAMINOR* study.

The portion of people reporting sleeping problems was smaller in the Sami population than in the non-Sami one. Use of sleep medicine in the Sami population corresponded to half that used in the Norwegian. The lowest rate of use was found among those with the strongest Sami ties who lived in Finnmark. Regardless of ethnicity, women used twice as much sleep medicine as men. The study concluded that the stronger the Sami identity, the lower the use of sleep medicine. The frequency of sleep problems was perceived to be lower in the Sami population, but it was suggested that this was may be due to a different attitude to sleep as a phenomenon.

Figure 3.16 Portion who use Sleep medicine with regard to Ethnicity. 2003-2004.

Sami = three generations of Sami language, Mixed = at least one Sami identity marker such as language, self-experienced Sami ethnicity or family background. Non-Sami = all who did not have a Sami affiliation. *Source: Bakken K et al (2006) International Journal of Circumpolar Health*

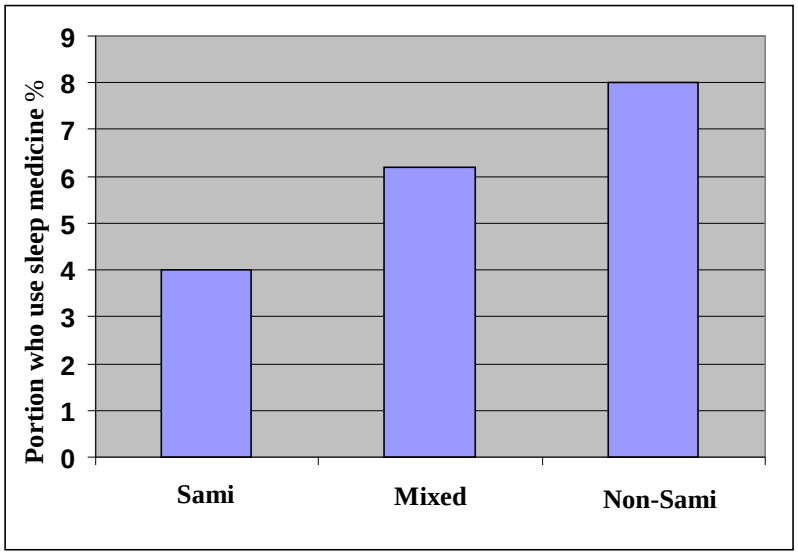


Figure 3.17 Sleeping problems in relation to Ethnicity. SAMINOR, 2003-2004.

Sami = three generations of Sami language, Mixed = at least one Sami identity marker such as language, self-experienced Sami ethnicity or family background. Non-Sami = all who did not have a Sami affiliation. *Source: Bakken K et al (2006) International Journal of Circumpolar Health*

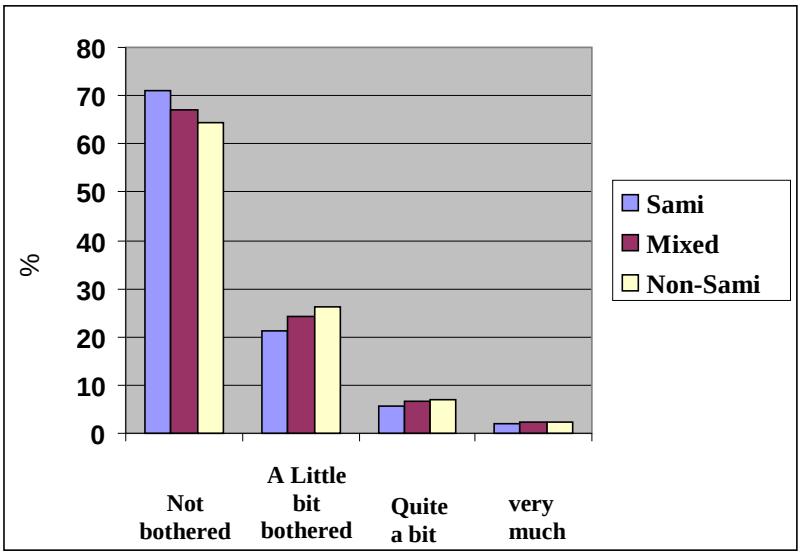
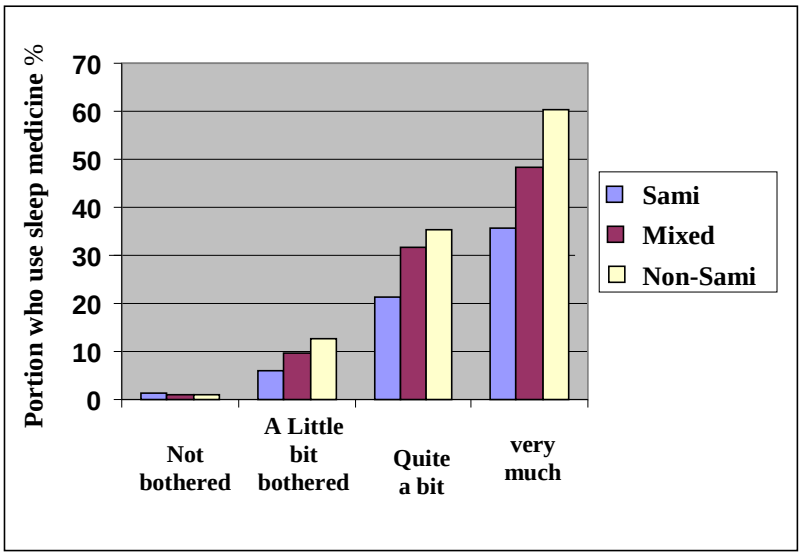


Figure 3.18 Use of Sleep Medicine in relation to Sleeping Problems and Ethnicity. SAMINOR, 2003-2004.

Sami = three generations of Sami language, Mixed = at least one Sami identity marker such as language, self-experienced Sami ethnicity or family background. Non-Sami = all who did not have a Sami affiliation. *Source: Bakken K et al (2006) International Journal of Circumpolar Health*



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[25]
[26]

3.13 Sami Population's Satisfaction with Medical Services

Summary

Comparative studies of Sami-speaking patients' satisfaction with medical services have shown that a relatively large portion of those who used only Sami at home were dissatisfied with primary care services when compared to Norwegian-speaking patients and to those who spoke both Norwegian and Sami at home. Sami patients admitted to psychiatric institutions were also less satisfied with the treatment than Norwegian patients.

3.13.1 Introduction

According to *NOU 1995*, the plan for health and social services, Samis experience substantial problems when in contact with health and social services. Language barriers make exams, diagnosis, treatment, nursing care and gathering of information difficult.

Insufficient knowledge on Sami culture among health and social services personnel often resulted in unsuccessful follow-up of Sami patients. Most of the information in this report is based on the practical experience of health and social service workers in Sami areas as well as a few qualitative and quantitative user surveys from the 1980s.

3.13.2 Source Material

The *SAMINOR* study collected information about satisfaction with medical services. A published work studies this with relation to language affiliation. Participants' answers were divided according to whether Sami or Norwegian was used at home, and to whether participants lived within or outside *SUF*.

Studies have also been conducted about Sami patients' satisfaction with psychiatric treatment and stay in psychiatric hospitals.

3.13.3 Patient Satisfaction with Health Services

Primary Care Services

Table 9 show satisfaction with health care services in the total sample, based on the *SAMINOR* study. Of Norwegian speakers, 86% answered that they were 'very satisfied/satisfied' with health care services. Seventy-five percent of bilingual speakers were 'very satisfied/satisfied' with the services provided while only 59% of Sami speakers answered the same. The portion of Sami speakers who were 'very dissatisfied' with health care services was 12%, while only 1% of Norwegian speakers answered the same.

This study found geographical differences. Of Sami speakers inside SUF, 32% were 'very dissatisfied/dissatisfied', while outside this geographic area, 13% were 'dissatisfied'.

Table 3.9 Health Care Satisfaction based on answers from 15,612 men and women living in areas where more than 5% of the population reported Sami ethnicity in the 1970 census. Figures are given in percent. 2003-2004.
Source: Nystad T et al 2006 Tidsskrift for den Norske Lægeforening

Ethnic Group	Very Satisfied N= 2978	Satisfied N=8726	Dissatisfied N=1250	Very Dissatisfied N=391	Don't Know N=915
Sami	8	51	18	12	11
Bilingual	15	60	12	5	8
Norwegian	23	63	7	1	6

Figure 3.19 Health Care Satisfaction according to home language, within SUF
Source: Nystad T et al 2006 Tidsskrift for den Norske Lægeforening

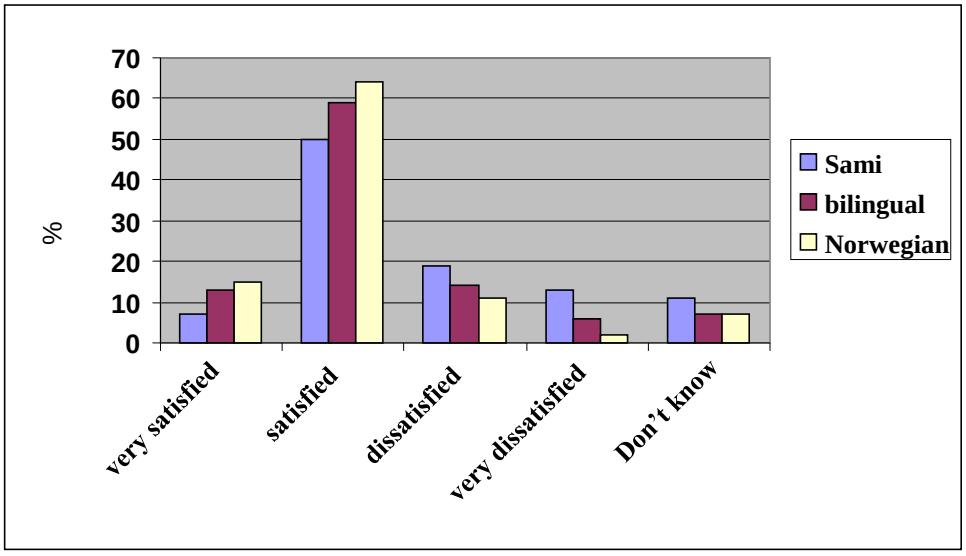
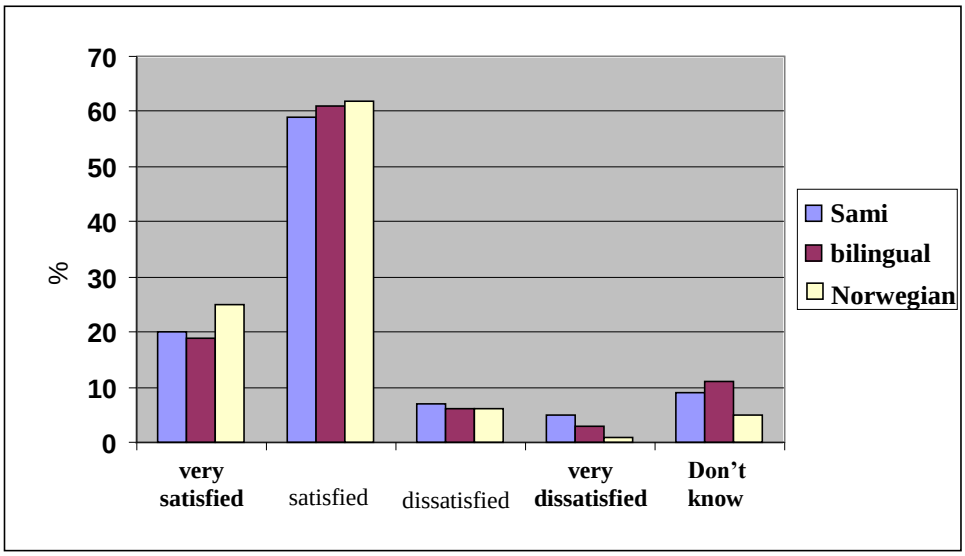


Figure 3.20 Health Care Satisfaction according to home language, outside SUF. *Source: Nystad T et al 2006 Tidsskrift for den Norske Lægeforening*



Psychiatry

Studies of patients in psychiatric hospitals found ethnic variation with regard to treatment satisfaction. Sami patients (identified by Sami psychiatric nurses based on information from patients' self-definitions, language and traditions) experienced contact with therapists as less effective than the therapists thought. For Norwegian patients, there was a clearer agreement between patients' and therapists' experience. Sami patients were generally more dissatisfied with the treatment than the therapists thought. They were also less satisfied than Norwegian patients regarding contact with therapists, treatment information and general quality of care. This study is based on a relatively small group (31 Sami and 37 Norwegian patients) and the results should be interpreted with these limitations in mind.

References
[21;27]

3.14 Summary, Challenges and Need for Further Study

Results presented in this report show that no marked differences in health were found between Sami and non-Sami populations, such as reported for other indigenous groups. An extended period of equal rights, educational opportunities and health care services have been used to explanation the lack of variation between the Sami and the non-Sami population's health and living conditions in Norway.

All population-based health studies have varying degrees of methodological weaknesses which can affect the results. These weaknesses can be related to the methodology used to gather and work with the data or the data itself not being representative. The general understanding is that concurrent results from a series of studies, especially with different designs and parameters, form the basis of an argument of scientific bearing.

Research results relating to Sami health, like all other research, must be interpreted in light of the limitations and weaknesses in the research.

The main challenge in Sami health research is finding an appropriate definition of who the Sami population is. In a multicultural society like ours, there is no definitive answer for this challenge. This chapter also reflects the many different ways to divide the population with relation to ethnicity. More research is needed to study how the phenomenon of ethnicity is used in medical research from a Sami-health context.

Continued improvements in research methodology and design are necessary to conduct better population-based health studies for the Sami population. Follow-up studies are the most recognized way to conduct population studies. In these studies, information regarding aspects such as lifestyle, habits and diet are systematically collected from a representative sample of the population over a long period. Information from healthy informants is then compared with information about new incidences of disease among the participants. Such studies are time consuming and expensive. It is nevertheless necessary to conduct these types of studies in order to conduct good health research in the Sami population.

Results from population studies are based on results from the people who choose to participate in the study. Studies have shown that those who do not participate in such studies can differ in many regards from those who do. Limited information about 'no-respondents' make it difficult to representatively study the participants. New studies should therefore strive to include a sample as representative of the Sami population as possible.

Some of the studies referred to in this chapter are based on a small sample. This means that the results from the studies should be interpreted with caution and new studies are needed to collect more reliable data. This is especially applicable to the results on Hip Dysplasia, Bechterew's Disease and mental health among children.

Rates of overweight and obesity were not considered in the chapter due to lack of data, but will have special relevance to public health and therefore deserve increased research. The same applies for type II diabetes, which is considered in the chapter but the results are based on old figures.

Research on the causes and prevention of suicide and sudden death, including accidents among young Sami men, should be prioritized. The hypothesis on possible geographical differences in infant mortality deserves further attention.

Additionally, health services research should also be prioritized. The results given in this chapter suggest interesting variations which should be elaborated further. Such a study would also be worthwhile in offering health care services which serve the Sami population in a more satisfactory manner.

The effect of preventative health work has not been studied in the Sami population. Increased knowledge about this could be meaningful with relation to prevention. This is especially important with regard to widespread diseases such as cancer, cardiovascular disease and diabetes which can be prevented, to a large degree,

The health consequences of increased modernization, changes in lifestyle, diet, and lower physical activity have been the focus of a series of studies of other arctic populations, but not among the Samis in Norway. The development of studies to shed light on these areas are desirable.

It is worthwhile to note that food safety and consumption of environmental poisons when eating traditional foods from nature is an area which should be studied. Risks should be studied and communicated to the population. We can especially point out that there have never been studies on the South Sami population with regard to health outcomes after exposure to radioactive fallout from the Chernobyl disaster.

Generally, there is reason to claim that all problems illuminated in this chapter deserve more research. A portion of these results is based on old data and more studies regarding the same themes would strengthen the quality of the results.

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