

# Demography of colonisation and the ageing population: population profiles and mortality in Swedish Sápmi, 1750–1900

LENA KARLSSON\*

## **ABSTRACT**

This paper examines population trends, age-specific death rates and causes of death for the elderly Sami and settlers during the colonisation era (between 1750 and 1900). The source material is a set of data files from the Demographic Data Base (DDB) at Umeå University that covers parish records from three different parishes. Early in the colonisation period (1750–1840) the Sami had a lower proportion of the elderly population ( $\geq 60$  years old), compared to the non-Sami and the rest of Sweden. At the end of the colonisation period (1841–1900), the proportion of elderly Sami increased and was above the proportion of elderly non-Sami and more similar to the rest of Sweden. The analysis also reveals that the differences in mortality rates among the elderly Sami and their non-Sami counterparts diminished during the entire colonisation era (1750–1900), mainly because of an increased infant mortality among the non-Sami. Rather than ethnic differences in causes of death, the results show larger differences between the parishes. The study can conclude that the Sami population's mortality declined, the health improved, and the Sami advanced more rapidly in the model of epidemiologic transition, a milestone not yet reached by other indigenous people around the world.

**KEY WORDS** – Sami, mortality, causes of death, demography, colonisation.

## **Introduction**

This study focuses on the ageing population in an area of northern Sweden occupied by indigenous groups and colonisers. Previous research shows that the demographical pattern for indigenous people follows a different path compared to non-indigenous groups living in the same area with higher mortality, shortened life expectancy at birth, poverty, and increased vulnerability to diseases (Gracey and King 2009; Stephens *et al.* 2006; Trovato 2001). The Sami living in Sweden today have an equally good life

\* Centre for Sami Research, Umeå University, Umeå, Sweden.

expectancy compared to the rest of the Swedish population (Hassler 2005). Life expectancy at birth was 74.9 years for the Sami men compared to 74.6 for non-Sami men, and 80.0 years for Sami women compared to 80.3 for non-Sami women (Hassler *et al.* 2005). This was not the case during the 18th and 19th centuries when the Sami experienced higher death rates, especially among infants (Brändström 2007; Sköld and Axelsson 2008). While we know that the general mortality and infant mortality were high, we do not know much about the elderly population or which members of the Sami population lived to old age during the era of colonisation. During the beginning of the 17th century and before the Swedish state established population statistics, a common belief was that Sami either died very young or very old (von Düben 1873).

This study aims to compare population trends among older people (60 years and above), age-specific mortality rates and causes of death between the Sami and the non-Sami population. The main source material for this study is a set of data files from The Sápmi Population Database. The results are discussed in relation to the colonisation process, epidemiological and demographic transitions as well as in relation to the source material.

### **The epidemiological transition**

The theory of epidemiological transition by Omran (1971) implies that over time societies experience three stages of development regarding the pattern of health and disease dominance. The first stage is the 'age of pestilence and famine', and the second stage is the 'age of receding pandemics'. Western society reached the third stage by the turn of the 20th century. The third stage, 'man-made and degenerative diseases', is characterised by diseases associated with demographic ageing, longevity and lifestyle habits (*e.g.* cancer and heart disease) (Omran 1971). In Omran's study, Sweden was among the countries that had reached this final stage, whereas the health development for countries in Latin America, Asia and Africa were delayed. Indigenous people were not explicitly addressed in Omran's article; however, their health development is seen as delayed compared to non-indigenous groups (Kunitz 1990). In 1998, Omran revised his theory of the epidemiologic transition by adding one and possibly two stages (Omran 1998).

### **The demographic transition**

The demographic transition entails declining death rates from the 19th century to the beginning of the 20th century (Willner 2005). The decline of fertility and mortality rates resulted in a demographic transition in Sweden

towards a growing proportion of elderly. In 1751, 44 per cent of the Swedish population lived to be 50 years of age or older and 100 years later this proportion was 51 per cent (Dribe and Stanfors 2005). In the mid-18th century, the proportion of the Swedish population above 65 years of age was 6 per cent and 150 years later it was approximately 8 per cent (Statistiska Centralbyrån (SCB) 1969; Willner 2005). During the second half of the 18th century, life expectancy at birth was 33.7 years for men and 36.6 years old for women; these low ages were a result of high infant mortality rates. The mortality rates were highest among infants and the elderly; and when infant mortality rates started to decline, life expectancy apparently increased.

There is a lack of studies concerning life expectancy at birth among the Swedish Sami during the 18th and 19th centuries. From previous studies we know that infant mortality among the Sami population was high during the 18th and 19th centuries (Brändström 1990; Sköld and Axelsson 2008). The few studies involving fertility patterns display a constant fertility, regardless of the age of the mother, for Sami and non-Sami women which resulted in a relatively high average age for child bearing (Sköld 2004; von Düben 1873; Wahlund 1932). The Sami women were seen as giving birth to fewer children than the non-Sami women, explained by a higher abortion level among the Sami women (Wahlund 1932).

### **The colonisation and assimilation process**

The health disadvantages of contemporary indigenous people can be explained by their trajectory of colonisation and assimilation (Fur 2006). Colonisation is a process shared by all indigenous people. The way colonisation is expressed differs, but whenever it occurs indigenous people and newcomers experience complex and very difficult relations (Loomba 2005). Acculturation is a process that takes place over a period of time and entails changing the culture and the individual (Berry 1990). The word 'changing' does not necessarily imply leaving a culture or adopting another, it can also be a mutual process whereby something new is created (Berry 2006). How this process affects indigenous groups depends on the cultures involved and the quality of the relationships between the groups (Kvernmo 2006). Acculturation of indigenous groups can give rise to positive effects, although negative effects have been more commonly observed throughout history.

During the mid-16th century, the Swedish king Gustav Vasa started to intensify the tax levy in Sweden. This resulted in individual taxes for those living in the Sápmi area, for farmers as well as the Sami. The Swedish state used different ways to contribute to the colonisation and development

of Sápmi. According to the Settlement Act of 1673, settlers were promised 15 years of freedom from taxes (Lundmark 1998). The settlers arrived in Sápmi at the end of the 17th century, but it was not until the mid-18th century that in-migration really started. At this time, the colonisation process began and during the forthcoming 150 years the Sami shifted from the majority to the minority in the area. During the colonisation process taxes, rights to land, school systems, practice of religion and living arrangements were all factors that strongly affected the living conditions of the Sami population.

Colonisation caused many conflicts between the Sami and non-Sami population including damage caused by reindeer and questions about fishing rights, but there was also an interchange of services. Some of the elderly Sami population lodged with settlers since they were too old to follow the reindeer to the winter settlement. In exchange, the Sami gave the settlers meat and skins (Kjellström 2000/2003). In the aftermath of colonisation, the assimilation process of the Sami population began. The assimilation policy included reduced opportunities for reindeer herding and restrictions on the use of their native language (Alex *et al.* 2006).

## **Data and method**

The source material for this study is a set of data files from the Demographic Data Base (DDB) at Umeå University. DDB is the largest historical database in Europe and since 2002 parish records from the Sápmi area have been digitised from the 18th and 19th centuries. The Sápmi Population Database is the first indigenous database of its kind in the world and spans approximately 150 years (1750–1900). The results of this combination of sources: records of births, deaths, marriages, migration, and catechetical examination register means that every individual in the parishes is included and can be followed from cradle to grave (Sköld and Axelsson 2008).

## **The parishes and their population developments**

This study includes the northern parishes of Jokkmokk and Jukkasjärvi and the southern parishes of Föllinge and Föllinge Sami parish. From 1607, the parish of Jokkmokk included the four Sami villages of Sjöksjokk, Jokkmokk, Tourpon and Sirkas.<sup>1</sup> According to the data, the Sami were in the majority in Jokkmokk until 1872 at which time the non-Sami population started to increase rapidly. During the end of the 19th century, the non-Sami population in Jokkmokk was almost two and a half times as large as the Sami population.

Jukkasjärvi, the northernmost of the parishes, was established in 1673 (Nordin 2009). In 1763, the Sami population in Jukkasjärvi was four times as large as the non-Sami population. A high proportion of the Sami population out-migrated into Norway at the end of the 18th century as an effect of difficulties in the reindeer herding (Lundmark 2008). In 1845 the non-Sami population started to increase and at the end of the colonisation era the difference between the two populations had diminished. A significant proportion of Norwegian Sami moved into the parish of Jukkasjärvi in 1860 since the border with Finland was closed. In the parish of Jukkasjärvi, the Sami population remained as the majority during the period 1763–1900.

In the South, Föllinge Sami parish was established in 1746 as the first Sami parish and included the Sami from Jämtland and Härjedalen (Nordin 2009). Föllinge Sami parish was a non-territorial, administrative parish exclusively for the Sami, whereas the parish of Föllinge included settlers. The Sami population changed from around 550 individuals in the year 1776 to 150 individuals in the year 1866. Because the Föllinge Sami parish was divided into two parishes and later into four Sami parishes, the Sami population size changed during the period. The settler population of Föllinge increased from around 500 individuals in the beginning of 1805 to 2,500 individuals in 1885. The catechetical examination ends the year 1866 in Föllinge Sami parish.

This dataset allows for making comparisons between Sami and non-Sami, and the North and South. There are some differences between the parishes when their catechetical examination starts and ends. In order to make the parishes comparable some analysis has 1780 as its starting point, otherwise the data begin from 1750. For Föllinge Sami parish some analysis ends in the year of 1866. The reader is informed in the results section when this happens. Another approach would have been to study the parishes together, which would give a more stable dataset. Since a previous study has shown that geographical and cultural mortality differed in the Sami area the parishes are studied separately (Sköld and Axelsson 2008).

## **The sample and variables**

### *Age*

The ageing process varies considerably between different time-space contexts and older people are defined and positioned differently in different cultures (Brändström 2007). It is a challenge to analyse the concept of ageing because it is difficult to decide when a person has reached ‘old age’ (Högman 1999). Furthermore, it becomes even more difficult to identify

the start of 'old age' for indigenous populations because age is more than a chronological etiquette and becoming elderly is not necessarily related to a certain chronological age (Coates 2004; Hetzel 2000; Pollitt 1997). For the purpose of this study, we use 60 years of age as the starting point for examining the ageing population; however some analyses will also include younger cohorts (*see* the section 'Mortality pattern'). When studying the proportion of the ageing population (aged 60 and older) the data focuses on the years 1780, 1810, 1840, 1870 and 1890. The proportion of elderly in Sápmi is compared to the same proportion in the Swedish population.

### *Ethnicity*

Ethnicity was not registered in the church records; however, the database provides opportunities to find information about a person's ethnicity. Ethnic information can be found in several ways: occupation; mortality records; geographical information; name; and family relations. The material separates the indigenous Sami population from the settler population through a system of ethnic indicators designed and implemented by the historian Gabriella Nordin (2009). Even if the transformation of the ethnic variable is well suited to capture the Sami, it is possible that some Sami are included in the non-Sami group, especially the Sami who settled at an early stage (Sköld and Axelsson 2008).

### *Mortality pattern*

In order to compare the mortality between the Sami and the non-Sami population age-specific mortality rates are calculated as the total number of deaths per 1,000 people of a given age. To construct more stable rates, which are not sensitive to small populations and fluctuations between years, the data are summarised in two broad time periods: 1780–1840 and 1841–1900. For the Föllinge population, the selected time period is 1780–1866, as registration in Föllinge Sami parish ended in 1866. The total population in each parish is included in the analyses. There are two reasons for this approach. First, it allows for a broader picture of the mortality pattern, and second, we were able to relate the age mortality rate for elderly people to other age cohorts. For infants (under one year old), the *infant mortality rate* is calculated.<sup>2</sup>

### *Causes of death*

In this study, the basis for coding is the ICD-10 system.<sup>3</sup> It is important to note that some problems occurred during the classification phase. First, some of

the reported causes are incomplete and difficult to interpret. Second, there could have been several causes of death for one individual.<sup>4</sup> Third, the same cause could have been reported in different ways in the three parishes, due to local terminology. In order to classify different terms for the same disease, we used the Lagerkranz dictionary on Swedish diseases in previous times (Lagerkranz 1988). The causes of death are classified as: *tuberculosis; infectious diseases; cancer; circulatory diseases; respiratory diseases; accidents/ external causes; ageing; unknown diseases; and others.*<sup>5</sup>

### *Missing cases*

Unreported out-migration is a general problem when analysing historical data (Gley, Lundström and Wilmoth 2008). As a result of difficulties related to reindeer herding (diseases and extreme weather conditions), the Sami had a high proportion of out-migration but they often returned when conditions improved (Kvist 1989). There is no significant difference between the parishes, except for the parish of Föllinge where the proportion of out-migration was higher.<sup>6</sup> Compared to the elderly Sami in Föllinge (aged 60 and above), the proportion of non-Sami with reported causes of death is notably higher, 79 per cent compared to 58 per cent. This difference in proportion of reported causes of death is not seen between ethnic groups for the parish of Jokkmokk and Jukkasjärvi.<sup>7</sup> Gender is a key variable when examining ageing and age at death. In the dataset, the majority of the individuals can be distinguished by gender. A small proportion is registered as ‘unknown’ or ‘indefinite’.<sup>8</sup> When comparing gender, these are treated as missing cases.

## **Results**

### *The ageing population*

In all three parishes at 1780 and 1810, the Sami population aged 60 and above was considerably lower than the non-Sami population living in the same area. In 1780, the proportion of elderly Sami ( $\geq 60$  years old), to non-Sami in Jokkmokk was 9.0 to 19.4, respectively; as compared to 8.2 for Sweden in general. [Table 1](#) shows that the Sami had a higher proportion of elderly ( $\geq 60$  years old), from the year 1870 and onward, as compared with the non-Sami living in the same area and with the total population of Sweden. Among the Sami in Jokkmokk parish, the proportion of elderly ( $\geq 60$  years old) increased to 14.8 at the end of the 19th century, causing a laterally reversed situation compared to 1780. As is evident from [Table 1](#), there was a shift in the proportion of elderly ( $\geq 60$  years old) among the

TABLE 1. *Proportion of elderly ( $\geq 60$  years old) in Jokkmokk, Jukkasjärvi (1780–1890), Föllinge (1780–1866) and Sweden (1780–1890)*

	1780		1810		1840		1870		1890	
	%	N	%	N	%	N	%	N	%	N
Jokkmokk:										
Sami	9.0	535	8.1	506	9.9	1,015	11.1	1,051	14.8	1,149
Non-Sami	19.4	314	13.0	299	11.4	517	8.9	956	6.8	2,121
Jukkasjärvi:										
Sami	7.1	1,219	7.7	953	9.0	977	8.4	1,322	9.4	1,464
Non-Sami	12.6	294	16.2	204	8.6	280	7.6	553	8.4	811
Föllinge:										
Sami	8.5	553	9.2	358	8.4	308	–	–	–	–
Non-Sami	8.7	275	10.5	679	10.4	1,236	10.4	2072	10.5	2,115
Sweden	8.2	2,118,281	8.4	2,396,351	7.8	3,138,887	8.2	4,168,525	11.5	4,784,981



TABLE 2. *Proportion of elderly ( $\geq 60$  years old) in Jokkmokk, Jukkasjärvi (1840–1895) and Föllinge Sami parish (1840–1866)*

	60+	70+	80+	90+	N
	<i>Percentages</i>				
Jokkmokk:					
Sami	11.7	5.1	1.2	0.1	61,542
Men	10.4	3.8	0.7	0.0	30,050
Women	13.0	6.2	1.8	0.1	31,490
Non-Sami	7.8	3.5	0.8	0.1	65,896
Men	6.8	2.7	0.6	0.0	33,555
Women	8.9	4.2	1.1	0.1	32,329
Jukkasjärvi:					
Sami	8.7	3.5	0.9	0.1	69,627
Men	7.6	2.8	0.5	0.0	337,599
Women	9.7	4.3	1.3	0.1	35,842
Non-Sami	7.8	3.1	0.6	0.1	30,933
Men	8.0	3.3	0.6	0.0	15,651
Women	7.6	2.9	0.6	0.1	15,271
Föllinge:					
Sami	11.0	4.7	1.4	0.1	6,072
Men	11.6	5.0	1.0	0.1	3,037
Women	10.3	4.4	0.8	0.1	3,013
Non-Sami	10.2	4.7	1.5	0.1	108,005
Men	9.1	3.8	1.0	0.1	55,034
Women	11.5	5.7	1.9	0.2	52,878

Sami and non-Sami around 1840. The question arises whether this increased proportion of elderly people is distributed across all age groups.

In all three parishes, the proportion of the Sami population over the age of 60 is higher than for the settler population, especially in the parish of Jokkmokk. When the population reaches 70 years of age, the difference between the Sami and the settlers decreased, and once the population is above 90 years of age there is no difference between the two groups. The Sami showed greater difference between the sexes with a surplus of older women, whereas the opposite was found in the settler population. The Sami seem to be more likely to reach ages above 60 years old, especially in the case of women and those living in Jokkmokk or Föllinge. Table 2 shows that there is no evidence that the Sami reached extremely high ages.

### *Mortality patterns*

During the period 1780–1840, the largest difference between Sami and settlers in Jokkmokk is found in infant mortality rate, almost three times higher for the Sami (Table 3). The age-specific mortality shows generally higher rates for the Sami in Jokkmokk, compared to the non-Sami

TABLE 3. *Age-specific death rate and infant mortality in Jokkmokk (1780–1897), Jukkasjärvi (1780–1900) and Föllinge (1780–1866), by age groups and ethnicity*

	Age group									
	0	1–9	10–19	20–29	30–39	40–49	50–59	60–69	70–79	80+
Jokkmokk, 1780–1840:										
Sami	219.3	14.4	5.9	8.2	10.6	14.5	18.3	37.4	71.9	119.6
Non-Sami	83.6	9.6	4.4	3.3	8.5	14.1	12.4	31.1	61.2	150.3
Jokkmokk, 1841–1897:										
Sami	213.8	15.2	7.0	9.9	8.8	6.2	14.0	27.9	57.7	155.2
Non-Sami	123.3	16.4	5.5	6.7	5.5	7.3	14.3	23.1	40.5	157.0
Jukkasjärvi, 1780–1840:										
Sami	222.9	18.2	7.3	6.6	7.3	10.2	15.1	25.0	71.0	71.1
Non-Sami	110.4	8.5	4.4	8.1	6.9	9.6	12.9	25.5	62.2	82.2
Jukkasjärvi, 1841–1900:										
Sami	165.5	19.8	5.3	7.2	8.0	8.3	12.0	28.1	65.1	126.2
Non-Sami	173.3	20.0	5.4	5.0	7.8	9.1	15.5	35.1	71.1	196.2
Föllinge, 1780–1866:										
Sami	100.7	11.2	6.1	6.2	2.0	8.4	12.7	24.7	34.7	28.6
Non-Sami	70.3	6.4	2.6	3.8	4.6	6.4	10.9	21.4	54.5	167.8

population. The only exceptions were people older than 80, where the Sami had a small advantage. During the period 1841–1897, the infant mortality rate was still higher for the Jokkmokk Sami; it was twice as high because the infant mortality rate for the settlers also increased. During the second half of the 19th century, the differences in mortality rate diminished between the two populations in Jokkmokk. Concerning the elderly population ( $\geq 60$  years old), the mortality rate is still higher for the Sami, except in the oldest age category ( $\geq 80$  years old).

Age-specific mortality during the period 1780–1840 reveals generally higher rates for the Sami in Jukkasjärvi. The largest difference between Sami and settlers in Jukkasjärvi is found in the infant mortality rate, twice as high for the Sami. The age-specific mortality shows higher rates for the elderly Jukkasjärvi Sami aged 70–79 years old. This does not hold true for the oldest members of the population ( $\geq 80$  years old). For the Sami living in Jukkasjärvi the mortality pattern changed during the period 1841–1900. The death rates of elderly Sami (aged 70–79 years old) decreased compared to the non-Sami. The infant mortality rate for the settlers increased at the same time as it decreased for the Sami, leading to a higher rate of infant mortality amongst the settlers. For the period of 1841–1900, the differences in the mortality rates of Jukkasjärvi Sami and their non-Sami counterparts generally diminished. At the same time, the mortality rate for the oldest individuals (aged 80 and above) largely increased.

The Sami in Föllinge have higher mortality rates than the settlers, especially among infants and children (aged 1–19 years old). Lower rates are seen among the elderly Föllinge Sami aged 70 and above. The parish of Föllinge shows considerably lower rates (age-specific death rates and infant mortality rate) than Jokkmokk and Jukkasjärvi. According to contemporary observers and official statistics, the county of Jämtland (including the parish of Föllinge) shows extremely low mortality rates during the mid-19th century (BiSOS A 1892).

The age-specific mortality rate for Sami in Sápmi reveals that the Sami generally have higher mortality rates among the elderly (aged 60–70 years old) during the period 1780–1840, compared to the non-Sami population. During the period 1841–1900, the mortality rate among the Sami in Jokkmokk (aged 60–70 years old) was still higher than for the non-Sami population, whereas the pattern changed among the two populations in Jukkasjärvi. During the entire period 1780–1900, the Sami in Sápmi had lower mortality rates among the oldest members of the population (aged 80 and above) compared to the non-Sami population. Age-specific mortality for the Sami older than 80 in Jukkasjärvi was considerably lower during the entire period 1780–1900, than that of the Sami in Jokkmokk.

### Causes of death

There is a lot of research on causes of death during historical periods in Sweden. However, we know less about the differences in causes of death as it pertains to indigenous groups and the Sami. It is believed that the Sami lived a healthy life in a favourable climate with good eating habits (von Düben 1873). As a nomadic group, the Sami differed from settled populations in their access to the medical system, as well as in how they viewed different diseases and illness. Some of the mortality during these periods can be attributed to a lack of immunity against diseases and certain epidemics brought to the population from missionaries travelling to the area (Whitehead 1999). In the case of smallpox, the Sami showed a lower mortality rate than in the rest of Sweden at the same time as the epidemics reached a similar size in the Sami area as in Sweden in general. Sköld describes the phenomenon in terms of the Sami's *cultural perception* of the smallpox; avoidance of exposure to the disease, both in a physical and cultural way (Sköld 1997). The Sami distinguished between natural and supernatural diseases, and when their own cures did not work they attempted to escape the disease, as was their method with smallpox (Sköld 2004). Among causes of death, the Sami had higher mortality rates for diseases such as pneumonia, nerve fever, influenza and diarrhoea; whereas, the settlers had higher mortality rates for dysentery, laryngitis and typhus (Sköld 2004). To a higher degree, the Sami suffered from eye diseases due to the extreme weather conditions associated with snow and sunshine, and as a result of smoke in their huts (von Düben 1873). The smoke was also said to cause respiratory diseases. Other factors assumed to cause health problems were alcohol and coffee consumption, especially among women.

Based on previous research about causes of death among the Sami population, the views about the health status among the Sami, and the general causes of death during this era, we make the following hypotheses: the Sami had more respiratory-related causes of death, less infection-related causes of death, and to a higher degree, the Sami died from 'ageing'.

During the period 1750–1900, the two most common causes of death recorded for the Sami and settlers living in Jokkmokk were respiratory illness (31 and 35%, respectively) and age-related causes (26 and 35%, respectively) (Figure 1). As previously shown, the proportion of elderly settlers was extremely high in Jokkmokk, especially during the first period 1750–1840. The Sami had a small surplus of individuals dying from cancer, accidents and tuberculosis, compared to the non-Sami population.

For the Sami and settlers living in Jukkasjärvi the two most common causes of death were age-related causes (40 and 37%, respectively) and unknown diseases/death (22 and 21%, respectively) (Figure 2). The Sami population

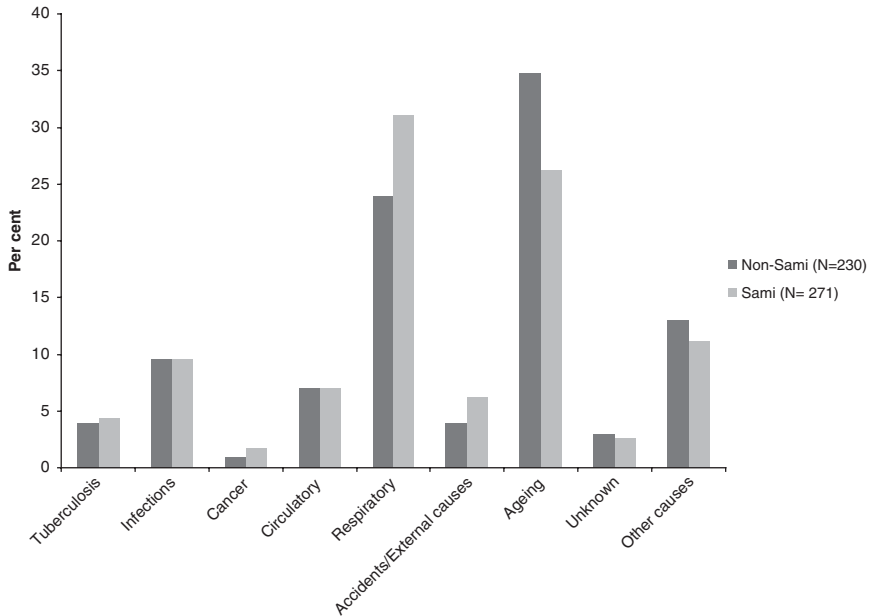


Figure 1. Leading causes of death for elderly ( $\geq 60$  years old) in Jokkmokk, by ethnicity, 1750–1900.

had a surplus of deaths due to accidents and/or external causes, infections and circulatory diseases, whereas respiratory illness was more common among the settlers.

For the Sami and settlers living in Föllinge, by far most common causes of death were age-related causes (42 and 60%, respectively) (Figure 3). The Sami population had a surplus of deaths due to accidents and/or external causes, tuberculosis, infections and respiratory diseases, whereas circulatory illness was more common among the settlers.

In all three parishes, deaths due to accidents and external causes were more common among the Sami population. The analysis showed that respiratory diseases were hardly more common among the Sami population in Jokkmokk and Föllinge than among the non-Sami population. In contrast to what was expected, deaths due to infections were more common among the Sami population, at least in Jokkmokk and Föllinge. Only in Jukkasjärvi did the Sami population show a greater proportion of deaths due to old age. Figures 1–3 show that the differences in causes of death are larger between the three parishes than between the Sami and the non-Sami (note that the Sami population in the parish of Föllinge was small). In Jokkmokk, the Sami population had a higher proportion of elderly (aged 60 and above) dying as a result of respiratory illnesses (31%).

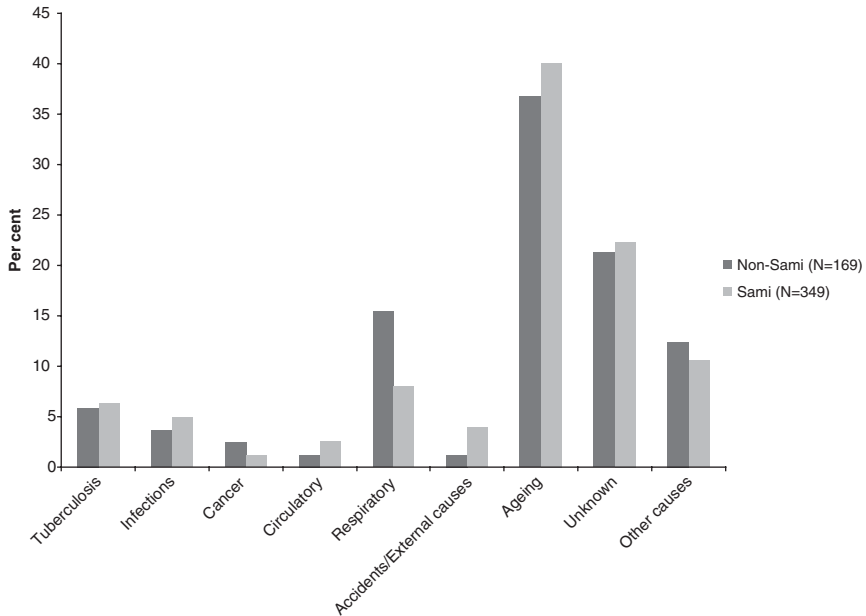


Figure 2. Leading causes of death for elderly ( $\geq 60$  years old) in Jukkasjärvi, by ethnicity, 1750–1900.

The same proportion for the Sami populations in Jukkasjärvi and Föllinge were 8 and 15 per cent, respectively. In Jukkasjärvi and Föllinge around 40 per cent of the Sami population aged 60 and above died because of old age, whereas the same proportion among the Sami in Jokkmokk was 26 per cent. It is worth noting that the second greatest proportion of deaths in the category, ‘unknown’ in Jukkasjärvi, accounts for a very small part of the causes of death in Jokkmokk. Does this indicate that the people living in Jukkasjärvi died from unknown diseases to a higher degree? Or is it attributable to the clergy’s inability or oversight in classifying the causes of death? Or did the clergy in Jokkmokk refuse to classify a death as ‘unknown’? These questions are difficult to answer, but there is continuity over time in reporting causes such as ‘unknown’ in Jukkasjärvi, indicating that there could have been some cultural differences in the way the causes were reported in the parishes.

### *Long-term development*

During the period 1750–1849, the most common cause of death for the Sami living in Jokkmokk was respiratory illness and the most common for the settlers were age-related causes. From 1850 onwards, the pattern is the same

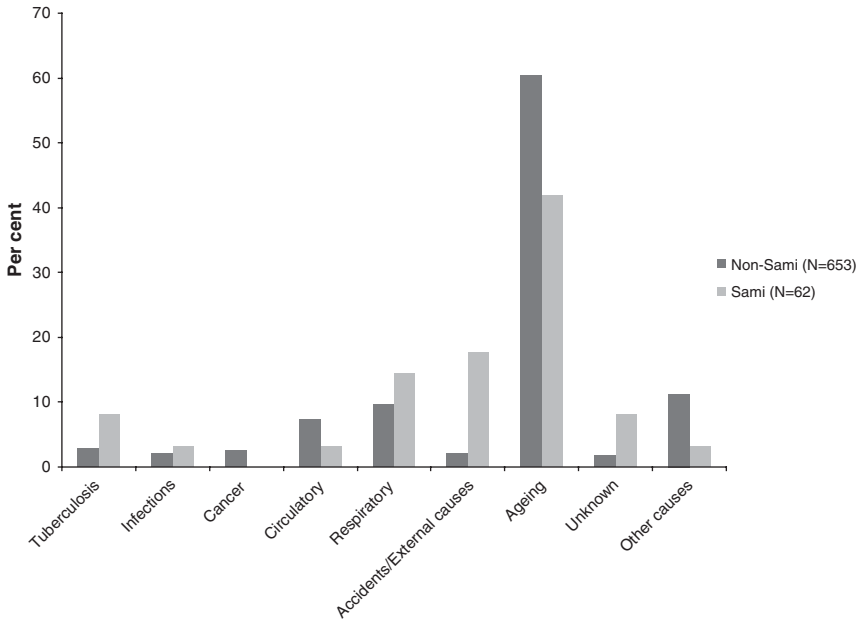


Figure 3. Leading causes of death for elderly ( $\geq 60$  years old) in Föllinge, by ethnicity, 1750–1866.

but the differences between the causes diminished somewhat, and causes like cancer made their debut as the fifth most regular cause of death amongst the Sami. In Jukkasjärvi between 1750 and 1849, almost half of the Sami and non-Sami deaths are classified as age-related; this changes during the period of 1850–1900 when ‘unknown’ diseases constituted around 40 per cent of the classified causes. In Föllinge, old age-related deaths remained the leading cause throughout the 18th and 20th centuries.

## Discussion

The analysis has shown that earlier in the colonisation period (1780–1840), the Sami had a lower proportion of elderly people (over 60 years old) as compared to the non-Sami population, and the Swedish population in general. During the mid-19th century, the proportion of elderly Sami ( $\geq 60$  years old) significantly increased and at the end of the colonisation era (1841–1900), the proportion of elderly Sami was well above the proportion of elderly non-Sami and more similar to the rest of Sweden. The data did not show that the Sami had a high proportion of the oldest age group ( $\geq 80$  years old) or that they reached extremely old ages.

Differences existed between Sami and non-Sami, but differences within the Sami area were also shown among mortality rates and causes of death. Accidents and external causes of death were more common among the Sami population. 'External causes' such as drowning among the Sami population may be explained by the importance of fishing and transportation on water. During the colonisation process and structural transformation, the most vulnerable groups were small children and older people, and this is reflected in higher rates of infant and elderly mortality. During the early era of colonisation (1780–1840) the oldest segment of the Sami population (above 80 years of age) were in a better position compared to the non-Sami population, but this changed during the second era (1841–1900). One of the causes of the apparent increase in the mortality rate amongst older people was probably because the information about age at the time of death after 1840 was more accurate.

The most dangerous period was apparently the first year of life, and this is most obvious among the Sami population during the early era of colonisation. During the second era (from 1840), the rate of infant mortality increased among the settlers, whereas it decreased for the Sami in the parish of Jukkasjärvi. The result of this change meant that the infant mortality rate among the settlers was more pronounced than among the Sami. The major change in the population profile started in 1830 when the non-Sami population began to increase at a more rapid rate than the Sami population. This rapid increase in population left its mark in higher infant mortality rates, especially among the non-Sami living in Jukkasjärvi. The lower mortality rates before 1840 can be explained by the fact that the first settlers who moved into the Sami area were mostly adults and older individuals and family formation was delayed. Increased levels of family formation and fertility among the non-Sami population can explain the dramatic decrease in the proportion of older people (aged 60 and above).

According to Omran's study, Sweden entered the third phase of epidemiologic transition in the beginning of the 20th century, a time when this study ends. The results project a complex picture of the epidemiologic transition in the Sápmi area. By using decrease in age-specific mortality rates as indicators of a positive shift in the epidemiological transition, we can draw some conclusions. Firstly, and compared to the rest of Sweden, the Sami as well as the non-Sami population seem to have met this third phase with a delay. The negative consequences of colonisation left their mark in an increase of the mortality rate among the indigenous population, but also among the settlers.

Secondly, we can conclude that the Sami population advanced more rapidly in the model of epidemiologic transition. Mortality rates were generally higher for the Sami population throughout the first period



(1780–1840). However, during the second period (1841–1900) the differences between the Sami and non-Sami became more equal, not because of the decrease in mortality rates among Sami, but because of the increased infant mortality rates among the non-Sami.

Finally, the demographic transition was different between the three parishes, especially between the two parishes in the north. The Sami who were living in the parish of Jukkasjärvi had a lower mortality rate than the Sami living in Jokkmokk, whereas the opposite was true for the non-Sami population. Can this difference be explained by the way the population developed in the two parishes? The Sami population in the parish of Jukkasjärvi remained in the majority during the entire period, whereas the Sami population in Jokkmokk lost their majority position. These differences within the Sami population need further analyses to be explained. As previous studies have shown, the parish of Föllinge in the county of Jämtland showed extremely low mortality rates (BiSOS A 1892). What makes the rates in Föllinge significantly lower than those in the two northern parishes? Is there a geographical and/or a cultural explanation for this phenomenon? Or, does the difference have more to do with the way the data are handled? First, we need to remember that the population size differs considerably between the three parishes, especially among the Sami population. The Sami population is small in Föllinge Sami parish, which means that the mortality rate is subject to fluctuations. Second, the Föllinge parish and Föllinge Sami parish have a higher proportion of out-migration. These two factors can make the mortality rates for the southern parishes more ambiguous. Forthcoming research will continue to focus on the differences in mortality rates in the Sápmi region, such as comparing the long-term life expectancy at birth between the Sami and non-Sami population.

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### **NOTES**

- 1 The villages of Tourpon and Sirkas are excluded from the Jokkmokk data between the years of 1782 and 1814, because these villages were administrated in the parish of Kvikkjokk. In 1815, Tourpon and Sirkas were once again

included in the parish of Jokkmokk and from this date onward are included in the analysis; however, the result of the exclusion creates a gap in the Sami population between 1782 and 1814. There are differences between the villages within Jokkmokk parish. For example, the Sami living in Tourpon and Sirkas were mountain Sami and had a higher proportion of out-migration to Norway (Kvist 1989). When examining those individuals who returned to Jokkmokk in the year of 1815 there is no clear difference between them and the remaining population in Jokkmokk with regard to gender or age. There is a small over-representation of young people (under 21 years old) in the population who returned in year 1815 (50%) than in the remaining population (40%).

- 2 Infant mortality is calculated by the number of deaths within the first year of living during a time period divided by the number of live births during the same period. Stillbirths are excluded as well as children not born in the parish.
- 3 ICD-10: International Statistical Classification of Diseases and Related Health Problems – Tenth Revision.
- 4 Starting in 1749, the clergy used a certain number of predefined categories (around 30) to record causes of death in the parish records. As of 1831, the clergy were no longer required to enter causes of death in the books, with the exception of deaths related to smallpox, suicide, accidents, childbirth and major epidemics (SCB 1999). The clergy had some medical training which allowed them to identify illnesses and to some extent even provide cures, and were aided by medical books and articles in their diagnoses (Brändström 1990; Persson 2001). In the past, deaths were often described by their symptoms, such as ‘fever’ or ‘convulsion’, rather than the main cause of death (Alter and Carmichael 1996; Sundin 1996). ‘Unknown disease’ and ‘ageing’ were common registered causes of death in previous times. More vague causes, such as ‘ageing weakness’ or ‘*andtäppa*’ (shortness of breath) often masked the real, but unknown causes of death or were used when clergy were unable to identify the exact cause of death (SCB 1999).
- 5 Examples of cancer are: cancer of the stomach and rectal cancer. Examples of circulatory diseases are heart attack, heart failure and stroke. Examples of respiratory diseases are: pneumonia, angina and influenza. Examples of common infectious diseases are: smallpox, scarlet fever, whooping cough and measles. Examples of ‘others’ are symptoms like coughing and pain, stomach trouble, digestive system trouble, muscular diseases and kidney diseases.
- 6 Registered out-migration in the parishes: Jokkmokk 13 per cent; Jukkasjärvi 11 per cent; and Föllinge 21 per cent.
- 7 In the parish of Jokkmokk the proportion of Sami with reported causes of death are 46 per cent, compared to 54 per cent among the non-Sami population. In the parish of Jukkasjärvi the same proportion are 60 per cent among the Sami, compared to 62 among the non-Sami population.
- 8 Jokkmokk parish records show 250 registered individuals as “unknown” sex; Jukkasjärvi parish records show 11 such individuals; and Föllinge parish records show 52 individuals.

## References

- Alex, L., Hammarström, A., Norberg, A. and Lundman, B. 2006. Balancing within various discourses – the art of being old and living as a Sami woman. *Health Care for Women International*, 27, 10, 873–92.

- Alter, G. and Carmichael, A. 1996. Studying causes of death in the past. *Historical Methods*, **29**, 2, 44–8.
- Berry, J. W. 1990. Acculturation and adaption: health consequences of cultural contact among circumpolar people. *Arctic Medical Research*, **49**, 3, 142–50.
- Berry, J. W. 2006. Acculturation. In Grusec, J. E. (ed.), *Handbook of Socialization: Theory and Research*. Guilford Publications, New York, 543–58.
- BiSOS, A. 1892. *Folkmängdernas förändringar i Sverige åren 1881–1890* [Population Changes]. Statistiska Centralbyrån [Central Bureau of Statistics], Stockholm.
- Brändström, A. 1990. Från förebild till motbild. Spädbarnsvård och spädbarnsdödlighet i Jokkmokk [From a role model to a counterpart picture. Infant care and infant mortality in Jokkmokk]. In Åkerman, S. and Lundholm, K. (eds), *Älvdalen i norr. Människor och resurser i Luledalen 1300–1800* [River Valley in the North. People and Resources in the Lule Valley 1300–1800]. Almqvist & Wiksell, Stockholm, 307–51.
- Brändström, A. 2007. Ageing—a cross-cutting research and policy challenge. *Scandinavian Journal of Public Health*, **35**, 3, 225–7.
- Coates, K. S. 2004. *A Global History of Indigenous Peoples: Struggle and Survival*. Palgrave Macmillan, New York.
- Dribe, M. and Stanfors, M. 2005. *Demografins grunder* [Elementary Demography]. SNS förlag, Stockholm.
- Fur, G. 2006. *Colonialism in the Margins: Cultural Encounters in New Sweden and Lapland*. Brill Academic Publishers, Leiden.
- Gley, D., Lundström, H. and Wilmoth, J. 2008. *About Mortality Data for Sweden*. University of California, Berkeley and Max Planck Institute for Demographic Research. Available online at <http://www.mortality.org/hmd/SWE/InputDB/SWEcom.pdf> [Accessed 26 August 2009].
- Gracey, M. and King, M. 2009. Indigenous health part 1: determinants and disease patterns. *The Lancet*, **374**, 49, 65–75.
- Hassler, S. 2005. *The Health Conditions in the Sami Population of Sweden 1961–2002*. Umeå University, Umeå, Sweden.
- Hassler, S., Johansson, R., Sjölander, P., Grönberg, H. and Damber, L. 2005. Causes of death in the Sami population of Sweden, 1961–2000. *International Journal of Epidemiology*, **34**, 3, 623–9.
- Hetzel, B. S. 2000. Historical perspectives on indigenous health in Australia. *Asia Pacific Journal of Clinical Nutrition*, **9**, 3, 157–63.
- Högman, A. K. 1999. *Ageing in a Changing Society: Elderly Men and Women in Urban Sweden 1830–1930*. Report No. 15, Demographic Data Base, Umeå University, Umeå, Sweden.
- Kjellström, R. 2000/2003. *Samernas liv* [The Sami Lifestyle]. Carlssons, Stockholm.
- Kunitz, S. J. 1990. Public policy and mortality among indigenous population of Northern America and Australia. *Population and Development Review*, **16**, 4, 647–72.
- Kvernmo, S. 2006. Indigenous people. In Sam, D. L. and Berry, J. W. (eds), *The Cambridge Handbook of Acculturation Psychology*. Cambridge University Press, Cambridge, 233–46.
- Kvist, R. 1989. *Rennomadismens dilemma. Det rennomadiska samhällets förändring i Tuorpon och Sirkas 1760–1860* [The Dilemma of Nomadic Reindeer Pastoralism: The Changing Reindeer Pastoralist Society of Tuorpon and Sirkas 1760–1860]. Umeå University, Umeå, Sweden.
- Lagerkranz, G. 1988. *Svenska sjukdomsnamn i gångna tider* [Swedish Names of Diseases in the Past]. Sveriges släktforskarförbund, Göteborg, Sweden.
- Loomba, A. 2005. *Kolonialism/Postkolonialism—en introduktion till ett forskningsfält* [Colonialism—Postcolonialism]. Tankekraft förlag, Stockholm.

- Lundmark, L. 1998. *Så länge vi har marker* [As Long as We Have Lands]. Rabén Prisma, Stockholm.
- Lundmark, L. 2008. *Stulet land- svensk makt på samisk mark* [Stolen Land – Swedish Power on Sami Land]. Ordfront förlag, Stockholm.
- Nordin, G. 2009. *Åktenskap i Sápmi- Giftermålsmönster och etnisk komplexitet i kolonisationens tidevarv, 1722–1895* [Sápmi Marriages. Marriage Patterns and Ethnic Complexity During the Era of Colonisation]. Umeå University, Umeå, Sweden.
- Omran, A. R. 1971. The epidemiology of population change. *Millbank Memorial Fund Quarterly*, **49**, 4, 509–38.
- Omran, A. R. 1998. The epidemiologic transition theory revisited thirty years later. *World Health Statistics Quarterly*, **51**, 99–119.
- Persson, B. E. B. 2001. *Pestens gåta- Farsoter i det tidiga 1700-talets Skåne* [The Riddle of Plague. Pestilences in Early Eighteenth-century Scania]. Nordic Academic Press, Lund, Sweden.
- Pollitt, P. A. 1997. The problem of dementia in Australia and Torres Strait Islander communities: an overview. *International Journal of Geriatric Psychiatry*, **12**, 2, 155–63.
- Sköld, P. 1997. Escape from catastrophe: the Saami's experience with smallpox in eighteenth and early nineteenth century Sweden. *Social Science History*, **21**, 1, 1–25.
- Sköld, P. 2004. Liv och död i Lappmarken. Aspekter på den demografiska utvecklingen i Arjeplog under 1700- och 1800-talen [Lives and deaths in Lapland. Aspects on the demographical development in Arjeplog during the eighteenth and nineteenth century]. In Lantto, P. and Sköld, P. (eds), *Befolkning och bosättning i norr. Etnicitet, identitet och gränser i historiens* [Population and Settlement in the North. Ethnicity, Identity and Borders in the Light of the History]. Publication from Centre for Sami Research 1, Umeå University, Umeå, Sweden, 85–105.
- Sköld, P. and Axelsson, P. 2008. The northern population development. Colonization, and mortality in Swedish Sápmi 1786–1895. *International Journal of Circumpolar Health*, **67**, 1, 29–44.
- Statistiska Centralbyrån (SCB) [Statistics of Sweden] 1969. *Historisk statistik för Sverige. Del 1. Befolkning 1720–1967* [Historical Statistics of Sweden. Part 1. Population 1720–1967]. Second edition, SCB, Örebro, Sweden.
- Statistiska Centralbyrån (SCB) [Statistics of Sweden] 1999. *Befolkningsutvecklingen under 250 år- Historisk statistik för Sverige* [Population Development in Sweden in a 250-Year Perspective – Historical Statistics of Sweden]. Demografiska rapporter 1999:2, SCB, Stockholm.
- Stephens, C., Porter, J., Nettleton, C. and Willis, R. 2006. Disappearing, displaced, and undervalued: a call to action for indigenous health worldwide. *The Lancet*, **367**, 9527, 2019–28.
- Sundin, J. 1996. Child mortality and causes of death in a Swedish city, 1750–1869. *Historical Methods*, **29**, 3, 93–106.
- Trovato, F. 2001. Aboriginal mortality in Canada, the United States and New Zealand. *Journal of Biosocial Science*, **33**, 1, 67–86.
- von Düben, G. 1873. *Om Lappland och lapparne, företrädesvis de svenske* [About Lapland and the Laps, Preferentially the Swedish Ones]. Nordstedts, Stockholm.
- Wahlund, S. 1932. *Demographic Studies in the Nomadic and Settled Population of Northern Lapland*. Dissertation Stockholm University, Uppsala.
- Whitehead, N. L. 1999. Native peoples confront colonial regimes in northeastern South America. In Salomon, F. and Schwartz, S. B. (eds), *The Cambridge History of the Native Peoples of the Americas*. Volume 3, South America. Cambridge University Press, Cambridge, 382–442.

Willner, S. 2005. Hälsa- och samhällsutvecklingen i Sverige 1750–2000 [Health and social progress in Sweden 1750–2000]. In Sundin, J., Hogstedt, C., Lindberg, J. and Moberg, H. (eds), *Svenska folkets hälsa i historiskt perspektiv* [*The Health of the Swedish Population from a Historical Perspective*]. R 2005:8, The Swedish National Institute of Public Health, Stockholm, 35–79.

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*Address for correspondence:*

Lena Karlsson, Centre for Sami Research,  
Umeå University, SE- 901 87 Umeå, Sweden.

E-mail: [lena.karlsson@cesam.umu.se](mailto:lena.karlsson@cesam.umu.se)