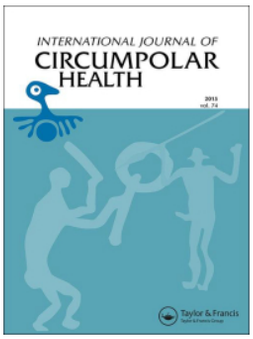

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Prevalence and factors associated with healthcare avoidance during the COVID-19 pandemic among the Sámi in Sweden: the SámiHET study

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ABSTRACT

The aim of this population-based cross-sectional study was to assess the prevalence of healthcare avoidance during the COVID-19 pandemic and its associated factors among the Sámi population in Sweden. Data from the "Sámi Health on Equal Terms" (SámiHET) survey conducted in 2021 were used. Overall, 3,658 individuals constituted the analytical sample. Analysis was framed using the social determinants of health framework. The association between healthcare avoidance and several sociodemographic, material, and cultural factors was explored through log-binomial regression analyses. Sampling weights were applied in all analyses. Thirty percent of the Sámi in Sweden avoided healthcare during the COVID-19 pandemic. Sámi women (PR: 1.52, 95% CI: 1.36–1.70), young adults (PR: 1.22, 95% CI:1.05–1.47), Sámi living outside Sápmi (PR: 1.17, 95% CI: 1.03–1.34), and those having low income (PR: 1.42, 95% CI:1.19–1.68) and experiencing economic stress (PR: 1.48, 95% CI: 1.31–1.67) had a higher prevalence of healthcare avoidance. The pattern shown in this study can be useful for planning future pandemic responses, which should address healthcare avoidance, particularly among the identified vulnerable groups, including the active participation of the Sámi themselves.

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Introduction

According to the United Nation's 2021 report on COVID-19, Indigenous peoples worldwide have been disproportionately affected by the pandemic [1]. In Colombia, New Zealand, and the United States of America (USA), a higher mortality burden was seen among the Indigenous compared to non-Indigenous populations [2]. This pattern has been seen during previous public health emergencies, such as the 1918 influenza and the 2009 H1N1 pandemics [3,4]. Since its start in December 2019, the pandemic has posed numerous direct and indirect challenges, including healthcare avoidance, resulting in a reduced healthcare utilisation for non-COVID-19 cases globally [5]. To the best of our knowledge, there are few studies shedding light on healthcare access and utilisation during the COVID-19 pandemic among Indigenous people. A comparative study done in Canada on changes related to healthcare utilisation during the pandemic showed a decreased healthcare utilisation and an increased service disruption among Indigenous people compared to non-Indigenous people with disabilities or long-term conditions. There was a 54% disruption of medical and dental care, 38% of non-medical testing, and 32% of counselling among Indigenous people [6].

The 2020 World Health Organization (WHO) survey report showed that 76% of 105 countries had reported a decreased healthcare utilisation owing to healthcare avoidance by patients during the COVID-19 pandemic [7]. Furthermore, studies from South Korea and Australia showed that 73.2% and 32.9% of adults avoided healthcare utilisation, respectively [8,9]. An excess of non-COVID-19 mortality of 62% and around 66%-67% were seen in Greece and Portugal, respectively, during the first nine months of the pandemic, which can be explained by the avoidance of healthcare utilisation [10,11]. In addition, a study done in Norway and Sweden showed a 517 and 4329 excess all-cause mortality over the pandemic year, July 2019- July 2020, respectively [12]. More than half of those avoiding healthcare in the USA experienced harmful health consequences [13]. This avoidance has affected population groups differently. A study from the Netherlands showed

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that sociodemographic and economic factors, such as gender, age, and level of education, were associated with healthcare avoidance [14]. Similarly, a study from South Korea identified that women, older people, those with lower income level, and those living in highly affected residential areas were more likely to avoid healthcare utilisation than other groups [8].

The Sámi, inhabiting their homelands (Sápmi) in Fenno-Scandinavia and the Kola peninsula (in the Russian federation), are the only recognised Indigenous people in western Europe. Today, it is estimated that there are 20,000–40,000 Sámi in Sweden [15,16]. Sámi culture, language, and traditions are still maintained in spite of historical oppression by nation states and churches. Today, a minority of the Sámi are fluent in their own language(s) or make a living out of traditional subsistence forms, such as reindeer herding. However, reindeer herding is still a vibrant part of Sámi culture, with about 3,750 reindeer owners organised in mountain and forest Sámi reindeer herding communities (RHCs). During the last 50 years, Sámi revitalisation has taken place, and the Sámi Parliament was established in 1993 as a democratically elected body representing the Sámi in Sweden. In addition, five Sámi languages are spoken in Sweden, but all Sámi in the country can read and understand Swedish [17].

A study by Tiwari et al. examining the spatiotemporal dynamics of the COVID-19 pandemic "Delta wave" during the second year of the pandemic in the Arctic regions showed that cumulative confirmed cases of COVID-19 were 58,609 while the cumulative confirmed deaths were 502 with a case fatality ratio of 0.9% in Northern Sweden [18]. However, due to lack of data disaggregated by ethnicity, no specific data is available on case numbers of COVID-19, deaths from COVID-19, or any other aspects related to the COVID-19 pandemic among the Sámi in Sweden.

This study aimed to: i) assess the prevalence of healthcare avoidance during the COVID-19 pandemic and ii) explore the sociodemographic, material, and cultural factors associated with this avoidance among the Sámi population in Sweden.

Understanding the prevalence and the factors associated with healthcare avoidance is important to develop targeted strategies to improve the preparedness of the healthcare system during similar public health emergencies, with emphasis on vulnerable populations.

Methods

Study design

The study used data from the cross-sectional "Sámi Health on Equal Terms" (SámiHET) survey conducted among the Sámi population in Sweden in 2021. The study was part of an agreement of collaboration between the Sámi Parliament, the Department of Epidemiology and Global Health at Umeå University, Sweden, and the Public Health Agency of Sweden. The study protocol and sampling method are described in detail elsewhere [19].

Sampling procedure and study population

Since ethnicity is not a registered variable in Sweden, three different administrative registers were used to identify the Sámi population: the Sámi electoral roll (SER), the reindeer mark register (RMR; identifying individuals owning reindeer marks), and the "Labour statistics based on administrative sources" register (RAMS; identifying individuals with income from reindeer herding enterprises, as defined through the Swedish Standard Industrial Classification). Extracts from the SER, RMR, and RAMS were cross-referenced with the Swedish population register, utilising the Swedish personal identity number. All identified individuals not registered as deceased, with a valid postal address, currently residing in Sweden and aged 18–84-years-old were invited to participate in the study. Invitations with information about the study and reminder letters were sent out (maximum of four invitations) from February to May 2021 [19].

Among the 9,249 invitations, 3,779 answered the survey but 121 did not unequivocally confirm their Sámi identity and were excluded from the analysis. In total, 3,658 individuals constituted the analytical sample that corresponds to a participation rate of 40.9%, which is slightly below the participation rate of the National Swedish Health on Equal Terms (HET) survey [20].

Measurements

In general, the SámiHET study reflected the same content as the 2021 National Swedish HET study, which was comprised of 10 questions related to COVID-19. Questions such as healthcare seeking, economic conditions, social isolation, and loneliness during the pandemic were included. In addition, specific sections related to the Sámi population, such as access to

healthcare, exposure to violence and discrimination, and Sámi identity and language, were added. In total, 81 questions, only made available in Swedish, were included. Furthermore, demographic and socioeconomic register data were extracted from Swedish registers in the same way as in the Swedish HET [19].

Dependent variable

Healthcare avoidance during the COVID-19 pandemic was the dependent variable. Participants were asked: "During the corona pandemic, have you avoided seeking care (e.g. medical care, dental care, psychologist, or maternal care)?". Respondents chose between "No", "Yes, sometimes", and "Yes, several times". For the purpose of this study, the last two answers were joined.

Independent variables

This study adopted the WHO's "Conceptual Framework for Action on the Social Determinants of Health" as a guide to identify and categorise the factors [21]. According to this framework, the sociodemographic, material and cultural contexts place people in various societal positions based on their education, occupation, income, gender, and race or ethnicity, which determines their health-related behaviours and health status [21]. Using this framework as a guide for organising the data, factors potentially associated with Sámi healthcare avoidance during the COVID-19 pandemic were categorised into sociodemographic, material, and cultural factors. We chose variables from the SámiHET survey which we deemed were relevant to the research question and consistent with previous studies [8,14] and tested their appropriateness for inclusion by multicollinearity test (supplementary table S1).

Sociodemographic factors

Register based variables included under this category were sex/gender (men, women), age (18–29, 30–44, 45–64, 65–84), civil status (married or cohabitating, divorced/widower, unmarried), and place of residence (Norrbotten, Västerbotten, Jämtland-Härjedalen, other). Self-reported sexual identity (heterosexual or other) and living status (living with others or alone) were also included.

Material factors

According to the SDH framework, material factors are linked to conditions of economic hardship as well as to health damaging conditions in the physical environment [21]. Two register-based variables were included under this group. The first one, education, as characterised by Statistics Sweden, was divided into: low level education (codes 100–206), medium level education (codes 310–527), and high level education (codes 530–640) [22]. The second, individual disposable income, defined as the amount left for consumption or savings after taxes have been paid and all positive and negative transfers have been made, was divided into quintiles, ordered from the richest to the poorest. Finally, self-reported difficulties to make ends meet (economic stress) was captured by the question: "During the last 12 months, have you ever had difficulty in managing the regular expenses for food, rent, bills, etc?". Respondents chose between "No", "Yes, at one point", and "Yes, on several occasions". Due to the low frequency in the latter category, the last two answers were combined in the regression analysis.

Cultural factors

Four variables related to the Sámi cultural context were included: if they did or did not own a reindeer mark (register-based variable), if they considered themselves members of a Sámi RHC (mountain, forest, concession, or none), if they spoke a Sámi language fluently, and if they were members of a Sámi organisation. All variables other than RHC were coded as "Yes" or "No".

Statistical Analysis

First, the sociodemographic, material, and cultural factors of participants were described using frequencies and percentages and cross-tabulated with healthcare avoidance during the COVID-19 pandemic. Second, to assess the relationship of the different social factors and the outcome, a log-binomial regression analysis, general mathematical model below, was applied to estimate the crude and adjusted prevalence ratios (PR) using a 95% confidence interval (CI) for inferential purposes [23].

The regression analysis followed a four-step modelling approach. In model 1, the univariable analysis of each independent variable with the outcome was performed; the statistically significant variables at a 5% level of significance were included in subsequent models. In model 2, the sociodemographic factors were included. In model 3, the material factors were included, and finally, in model 4, the cultural factors were included.

Sampling data weighting, based on sex/gender, age, educational level, civil status, and being part of the Sámi Parliament Electoral Register, was applied in all analyses. Variance inflation factor (VIF) was used to

assess multicollinearity among the independent variables, but all had a VIF value of less than 3 (see supplementary table S1), which was below the acceptable cut-off value of five [24,25]. Fitness of model was tested according to the Akaike Information Criterion, which confirmed the better fit of model 4 compared to model 2 and 3 (data not shown) [26]. All statistical analyses were conducted using R version 4.1.1 (R Foundation for Statistical Computing) [27].

$\log p = \sum_{i=0}^{j} \beta i x i$, where p is the probability of success, xi represent the covariates and βi the risk estimate of a given covariate [28]

Ethics and consent

The Sámi Parliament (Sámediggi) authorised the study and allowed Statistics Sweden the linkage of registers, on behalf of the study. All participants in the SámiHET survey gave informed consent to be part of the study. The study was reviewed and approved by the Swedish Ethical Review Authority (Dnr 2020–04803, Ö 70–2020/3.1). In addition, researchers ascribed to the Norwegian Ethical Guidelines for Sámi Health Research [19]. To protect the integrity of participants, the collected dataset was pseudo-anonymised (personal identity number exchanged for serial numbers) by Statistics Sweden and stored at a secure server at Umeå University.

Results

Characteristics of the sample

Table 1 displays the characteristics of the respondents, as well as their healthcare avoidance during the COVID-19 pandemic. A small proportion of the study population (9%) defined their sexual identity as other than heterosexual. Most participants were in the age group of 45–64 (38%) and 46% were unmarried. The majority of the participants lived in Norrbotten (49%). Almost two thirds of the participants had medium level education, and 14% of the population mentioned having experienced economic stress. Furthermore, a majority of the participants (57%) were not members of RHC. Around one-fifth of the participants were fluent in Sámi language and almost half owned a reindeer mark and participated in a Sámi organisation.

Healthcare avoidance during COVID-19

As shown in Table 1, out of 3,658 individuals included in the study, 1,081 (30%) avoided healthcare utilisation during the COVID-19 pandemic. More than one third (36%) of Sámi women and 23% of Sámi men avoided healthcare utilisation. Among those aged 30–44 and 18–29, 36% reported healthcare avoidance in both groups. Similar prevalence was found among the civil status categories and in the living status variable. Sámi living in other regions (36%) showed a higher prevalence of avoidance compared to those living in Norrbotten and Västerbotten (both 28%).

Regarding the material variables, the highly educated (31%), the poorest (34%), and those exposed to economic stress (43%) reported a higher avoidance of healthcare utilisation; however, a similar prevalence (around 30%) was found in the different cultural variables.

Factors associated with healthcare avoidance during the COVID-19 pandemic

Table 2 presents the factors associated with avoidance of healthcare services among the Sámi population during the COVID-19 pandemic. In the univariable analysis, sex/gender, age, civil status, region, education, income quintile, economic stress, and Sámi language were significantly associated with healthcare avoidance. When adjusted for sociodemographic and material factors in models 2 and 3, sex/gender, age, region, income quintile, and having economic stress continued to be statistically significant. In the final model, sex/gender, age, region, income quintile, and having economic stress, but not Sámi language, remained statistically significant when associated with the outcome.

Sámi women were 52% more likely to avoid healthcare compared to Sámi men. Young participants (18–29 and 30–44 years old) (PR = 1.22, 95% CI: 1.05–1.47 and PR = 1.23, 95% CI: 1.08–1.42, respectively) had a higher prevalence of avoidance compared to the oldest group. In addition, Sámi living in other regions (i.e. living outside Sápmi) (PR = 1.17, 95% CI: 1.03–1.34) were more likely to avoid seeking healthcare compared to their reference group.

Regarding material factors, both those in the poorer and poorest income quintiles (PR = 1.43, 95% CI: 1.19–1.67 and PR = 1.42, 95% CI: 1.19–1.68 respectively) and those experiencing economic stress (PR = 1.48, 95% CI: 1.31–1.67) were more likely to avoid healthcare utilisation compared to their reference group.

Discussion

This study described healthcare avoidance during the COVID-19 pandemic and examined the sociodemographic, material, and cultural factors associated with healthcare avoidance. Thirty percent of the Sámi

Table 1. Frequency and percentages of the study participants and healthcare avoidance during the COVID-19 pandemic among the Sámi population, Sweden ($n = 3,658$).

Characteristics	All n (%)	Healthcare avoidance n (%)
Total healthcare avoidance		
Yes	1,081 (30)	—
No	2,577 (70)	—
Sociodemographic factors		
Sex/gender		
Men	1,798 (49)	411 (23)
Women	1,860 (51)	670 (36)
Sexual identity		
Heterosexual	3,248 (91)	966 (30)
Other	312 (9)	102 (33)
Age		
65–84	954 (26)	239 (26)
45–64	1,381 (38)	366 (27)
30–44	861 (24)	312 (36)
18–29	463 (13)	164 (36)
Civil status		
Married	1,377 (38)	373 (28)
Divorced/Widow(er)	586 (16)	158 (28)
Unmarried	1,695 (46)	550 (33)
Living status		
With others	2,882 (79)	850 (30)
Alone	776 (21)	231 (30)
Region		
Norrbotten	1,789 (49)	496 (28)
Västerbotten	845 (23)	239 (29)
Jämtland-(NBS)Härjedalen(/NBS)	268 (7)	79 (30)
Other	756 (21)	268 (36)
Material factors		
Education		
High	865 (24)	267 (31)
Medium	2,258 (62)	680 (30)
Low	529 (15)	131 (26)
Income		
Richest	710 (19)	161 (23)
Richer	716 (20)	202 (28)
Middle	722 (20)	215 (30)
Poorer	718 (20)	241 (34)
Poorest	790 (22)	261 (34)
Economic stress		
No	3,121 (86)	860 (28)
Yes	515 (14)	220 (43)
Cultural factors		
RHC Member		
No	2,051 (57)	615 (31)
Mountain	1,112 (31)	324 (29)
Forest	390 (11)	123 (32)
Concession	50 (1)	9 (19)
Sámi language		
Yes	815 (23)	216 (27)
No	2,741 (77)	838 (31)
Reindeer mark register		
Yes	1,550 (42)	441 (29)
No	2,108 (58)	641 (31)
Sámi organisation		
Yes	1,840 (50)	555 (31)
No	1,818 (50)	527 (29)

population avoided healthcare utilisation during the pandemic. This study also identified that women, younger age, living outside Sámi homelands (Sápmi), low-income, and experiencing economic stress were the factors associated with healthcare avoidance among the Sámi population in Sweden.

The prevalence of avoidance from healthcare utilisation during the COVID-19 pandemic was similar to the 2021 National HET study where 32% of the Swedish population reported to have avoided healthcare utilisation [29]. It is also in line with the findings of studies conducted in Australia (32.9%) and Hong Kong (30.4%) [9,30]. However, the prevalence of healthcare avoidance has varied widely among countries, with studies in the Netherlands, the USA, and South Korea reporting estimates of 20.2%, 40.9%,

Table 2. Univariable and multivariable analysis of the determinants of healthcare avoidance among the Sámi population in Sweden ($n = 3,658$).

	Healthcare avoidance			
Variables	**Univariable analysis**	**Multivariable analysis**		
Dependent variable Healthcare Avoidance	PR (95% CI) Model 1	Adj. PR (95% CI) Model 2**	Adj. PR (95% CI) Model 3***	Adj. PR (95% CI) Model 4****
Independent variables				
SOCIODEMOGRAPHIC FACTORS				
Sex/gender				
Men	1	**1**	**1**	**1**
Women	**1.56 (1.40–1.74)***	**1.50 (1.34–1.68)***	**1.49 (1.34–1.67)***	**1.52 (1.36–1.70)***
Sexual identity				
Heterosexual	1			
Other	1.10 (0.92–1.32)			
Age				
65–89	**1**	**1**	**1**	**1**
45–64	1.04 (0.91–1.20)	0.99 (0.86–1.14)	0.97 (0.85–1.11)	0.93 (0.84–1.01)
30–44	**1.42 (1.23–1.63)***	**1.30 (1.12–1.50)***	**1.26 (1.10–1.45)***	**1.23 (1.08–1.42)***
18–29	**1.38 (1.16–1.65)***	**1.25 (1.03–1.51)***	**1.26 (1.06–1.49)***	**1.22 (1.05–1.47)***
Civil status				
Married	1	1		
Divorced/widow(er)	1.00 (0.85–1.18)	0.99 (0.84–1.16)		
Single	**1.19 (1.06–1.33)***	1.09 (0.96–1.23)		
Living status				
With others	1			
Alone	1.01 (0.89–1.15)			
Region				
Norrbotten	1	1	1	1
Västerbotten	1.02 (0.89–1.17)	1.05 (0.92–1.20)	1.04 (0.91–1.19)	1.02 (0.89–1.17)
Jämtland-Härjedalen	1.06 (0.86–1.31)	1.00 (0.81–1.24)	0.98 (0.80–1.21)	0.99 (0.80–1.23)
Other	**1.27 (1.12–1.44)***	**1.23 (1.09–1.39)***	**1.21 (1.07–1.37)***	**1.17 (1.03–1.34)***
MATERIAL FACTORS				
Education				
High	1		1	
Medium	0.98 (0.87–1.10)		0.95 (0.84–1.06)	
Low	**0.82 (0.68–1.00)***		0.78 (0.63–1.07)	
Income				
Richest	1		1	1
Richer	**1.24 (1.03–1.49)***		1.16 (0.97–1.40)	1.12 (0.87–1.34)
Middle	**1.31 (1.10–1.57)***		**1.23 (1.02–1.49)***	1.21 (0.95–1.25)
Poorer	**1.49 (1.25–1.77)***		**1.46 (1.24–1.73)***	**1.43 (1.19–1.67)***
Poorest	**1.46 (1.23–1.74)***		**1.44 (1.19–1.72)***	**1.42 (1.19–1.68)***
Economic stress				
No	1		1	1
Yes	**1.55 (1.36–1.75)***		**1.44 (1.28–1.63)***	**1.48 (1.31–1.67)***
CULTURAL FACTORS				
RHC Member				
No	1			
Mountain	0.97 (0.86–1.09)			
Forest	1.06 (0.89–1.26)			
Concession	0.62 (0.33–1.15)			
Sami language				
Yes	1			1
No	**1.15 (1.01–1.32)***			1.12 (0.98–1.29)
Reindeer mark register				
Yes	1			
No	1.07 (0.96–1.19)			
Sami organisation				
Yes	1			
No	0.95 (0.86–1.05)			

Note: *$p < 0.05$; 95% CI: confidence interval, PR: prevalence ratio, Adj. PR: adjusted prevalence ratio.
**Model 2: adjusted for sociodemographic factors.
***Model 3: adjusted for sociodemographic, and material factors.
****Model 4: adjusted for sociodemographic, material, and cultural factors.

and 73.2%, respectively [8,14,31]. A possible explanation for these variations may be attributed to the different healthcare systems among the countries and to the distinct periods of the pandemic when the data was collected.

This study showed a higher prevalence of healthcare avoidance among Sámi women than Sámi men. This sex/gender difference has been found in studies conducted in Portugal and South Korea as well [8,32]. Differences in the perception, attitudes and behaviours towards health and

healthcare access, not only due to biological process i.e. sex but also due to biosocial mechanisms i.e. sex/gender entangled, might be involved in explaining these differences [33]. Women may perceive themselves as more vulnerable to illnesses and tend to utilise healthcare services more often than men, which in turn might have led them to avoid the healthcare services more during the current pandemic [34].

The finding that young Sámi avoided more care than older Sámi has also been found in studies from Hong Kong, the USA, and Portugal [30–32]. In contrast, a study conducted in South Korea and the Netherlands identified that individuals in the age groups of 50–59 and above 60 had higher odds of avoidance [8,14]. One possible explanation could be the younger age groups use far less health care services than older adults due to more age-related health needs [35]. Another reason, shown in studies from China and Serbia, is that young adults could have shown more preventive behaviours and adhered more to the COVID-19 mitigation efforts [36,37]. On the other hand, a study conducted among patients admitted to a psychiatric emergency department in Switzerland revealed that fear of dying or getting sick was relatively more frequent among the young as compared to the adult and elderly age groups during the COVID-19 pandemic [38]. This variation in the findings may be due to the diverse social context and shared beliefs in different societies. In our opinion, our finding suggests that Sámi adhered to what was recommended by the Swedish Public Health Agency, that those not in need of urgent medical attention should avoid using healthcare resources, allowing those in most need to use them.

Sámi people who lived outside Sámi homelands (Sápmi) had a 17% higher chance of reporting avoidance of healthcare utilisation. According to the Public Health Agency of Sweden's report on COVID-19, regions outside Sápmi experienced a higher number of confirmed COVID-19 cases, which could have made people avoid seeking care [39]. This result is supported by a study done in South Korea where living in regions where confirmed COVID-19 cases were the highest was one of the strongest factors associated with avoidance of healthcare utilisation [8].

Low income and economic stress were strongly associated with healthcare avoidance, which has also been found previously in the literature [8,2]. This pattern was expected since it is also commonly found in non-COVID -19 times that those with low socioeconomic status refrain from seeking care due to costs and structural barriers in the healthcare system [40]. "Interpersonal trust" theory has been previously highlighted as a protective factor during an economic crisis and has a profound effect on health throughout a person's life span [41]. In our study interpersonal trust can be partly mirrored in terms of strong Sámi identity. However, currently it is a struggle to be connected to the Sámi world and preserve Sámi identity which might have been exacerbated by the pandemic [42]. In fact, this could be an interesting area for further studies.

While previous studies have indicated that cultural factors posed barriers for the Sámi to access healthcare [43,44], none of those variables used in this study seemed to have played a role during the pandemic.

Strengths and limitations of the study

This is the first study assessing healthcare avoidance among the Sámi population in Sweden. The analyses were performed on data from the SámiHET population-based survey, which included an adequate response rate, thus decreasing selection bias. Additionally, sampling weight was applied in all of the analyses to make the findings representative of the total Sámi population in the sample frame.

However, some limitations should be considered. First, the SámiHET study used three registers (SER, RMR, and RAMS) to identify the Sámi people to participate in the study. This register-based definition resulted in the absence of participation by individuals who are Sámi but are not in the registries. Second, the questionnaire being sent out only in Swedish may have limited participation. Third, it was not possible to distinguish between individuals who avoided healthcare utilisation from those really needing healthcare at that specific time. The impact of these three limitations on the study's findings is difficult to assess. Finally, since this study used a cross-sectional study design, it is not possible to establish causality or show trends of healthcare avoidance from a pre-pandemic period.

Conclusion and recommendations

This study found that about a third of the Sámi in Sweden avoided healthcare utilisation during the first year of the COVID-19 pandemic, which is similar to the figures reported among the Swedish population. Being female, young (age groups 18–29 or 30–49), living outside Sápmi, being relatively poor, and experiencing economic stress were risk factors for reporting healthcare avoidance.

During pandemics, avoiding healthcare may be the optimal choice. The pattern shown in this study can be useful for future pandemic response plans in order to target specific vulnerable Sámi populations. Moreover, the active participation and engagement of the Sámi population, by the Swedish Public Health Agency, in

the development of culturally adapted plans during the pandemic and in the post-pandemic recovery efforts are recommended.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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Data availability statement

The raw/processed dataset analysed in this study cannot be shared publicly due to legal and ethical reasons.

Author contributions

MTD conceived the topic, analysed and interpreted the data, and drafted the manuscript. JPS and MSS conceived the original SámiHET study and collected the data, read and commented the article draft. LMN supervised MTD and oversaw the analysis, reviewed the interpretation and findings. All authors approved the final version of article.

Abbreviations and acronyms

WHO: World Health Organization, COVID-19: Coronavirus Disease 2019, USA: United States of America, RMR: Reindeer Mark Register, SER: Sámi Electoral Roll, HET: Health on Equal Terms, RHC: Reindeer Herding Community, VIF: Variance Inflation Factor.

Study design

Cross-sectional population-based study.

Footnote

Overview of education level classification as characterised by statistics Sweden [22].

Low level education (codes 100–206) includes primary education shorter than 9 years [10].

Medium level education (codes 310–527) includes secondary education and post-secondary education shorter than 2 years.

High level education (codes 530–640) includes 3 years post-secondary education up to the level of doctoral education.

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