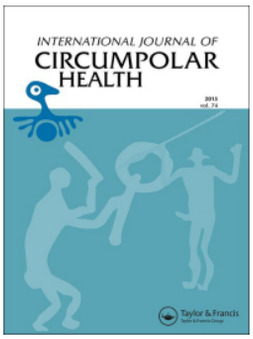

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Sámi traditional medicine and complementary and alternative medicine – a descriptive study of use within the Sámi population of Sweden

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ABSTRACT

Traditional medicine has been practised for millennia in the Sámi population, based on a Sámi worldview and cosmology, which includes natural remedies, prayers, drums and yoik singing. During the Christianisation of the Sámi during the seventeenth and eighteenth centuries, these practices were condemned. In recent years, however, a revival of Sámi culture has occurred and so has the practice of Sámi traditional medicine (STM) and the use of complementary alternative medicine (CAM). The aim of this study is to map the prevalence and use of STM and CAM among Sámi in Sweden today. The study population consisted of 3641 Sámi from the whole of Sweden, who had participated in the population-based cross-sectional survey Sámi Health on Equal Terms (SámiHET) in 2021. Our results show that women are more prone to use both STM and CAM than men and that younger persons are more likely to use STM and CAM than elderly persons. STM is more often used in the northern parts of Sápmi compared to the southern parts as well as a lower use of CAM in the north. This might be due to the stronger Sámi identity and easier access to traditional Sámi healers/helpers in the north as well as limited access to CAM services

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Introduction

The Sámi, who live in the northern region of Scandinavia across the countries of Norway, Sweden, Finland and Russia's Kola Peninsula, are the only Indigenous Peoples in Scandinavia [1]. While there are no reliable demographic records in existence [1], the total population figures are estimated to be around 80,000, with approximately 20,000 in Sweden [2]. In Sweden, most Sámi are occupied in various sections of society, both traditional occupations, such as reindeer-herding, fishing, small-scale farming, food and arts and other occupations, such as healthcare industrial workers. Reindeer herding Sámi are organised in different professional groups called *Siida*.[1] In total there are 51 *Siida* in Sweden, subdivided into three different groups related to grazing patterns and legislation (33 mountain *Siida*, 10 forest *Siida* and 8 concession *Siida*) organising approximately 2500–3000 reindeer herders.

The common well-fare system is quite similar for all Sámi living in the Nordic countries. In Sweden, public healthcare common, decentralised, mainly managed by regions and municipalities, and includes public actors as well as contracted private ones [3]. Only evidence-based treatments are subject to public support. Thus, most providers of the CAM sector are found among non-contracted entrepreneurs in the private and grey sectors.

According to the World Health Organisation (WHO), Traditional Medicine (TM) refers to the knowledge system on health and wellbeing that is native to the country or region [4]. In this study, we define Sámi Traditional Medicine (STM) accordingly. The term complementary and alternative medicine (CAM) is often used interchangeably with "alternative medicine" and/or "complementary medicine". The WHO defines CAM as referring to a range of health care practices that are not part of and are not fully integrated into a state or country´s own conventional medicine and dominant health care system, which means that there may be an overlap between TM and CAM [4]. Johns Hopkins University has systemised this by including TM (acupuncture, ayurveda, homoeopathy, naturopathy,

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[1]*Siida* (in English: "Sámi villages") describes a network of reindeer herders consisting of extended families and a working community. It describes families, relatives, and other people who work together within a reindeer herding area or geographical space.

Chinese of Orient medicine) as a separate category within the definition of CAM, followed by the categories body touch (chiropractic and osteopathic medicine, massage, body movements therapies, Tai chi, yoga), diet and herbs (dietary supplements, herbal medicine, nutrition diet), external energy (electromagnetic therapy, Reiki and Qigong), mind (meditation, biofeedback and hypnosis) and senses (art, dance, music, visualisation and guided imagery) [5].

In 2017, the Swedish government appointed a special investigator to explore issues concerning "care and treatment other than that conducted in the established care". The investigator chose the term CAM as the basis for complementary and alternative care. The investigator also reviewed the legal aspects regarding treatment with non-licenced therapists (historically called "the quackery law" and today included in the Patient Security Act). As part of the investigation, a bibliometrics analysis was done of the scientific literature in the field. Twenty Swedish studies were published during the years 1987–2018 in which the use of CAM was mapped in terms of its use in different populations. A total of 17–39% of the population reported that they had used CAM during the preceding year. Women usually report more frequent use of CAM than men. The most common methods apart from chiropractic and naprapathy are medical massage, acupuncture, relaxation techniques, yoga and different CAM medicines [6]. No STM was mentioned in the report.

Sámi traditional medicine draws upon Sámi Indigenous People's worldview and cosmology, which provides meaning to actions taken when faced with ill health and crisis. The worldview is structured around elements and phenomena of the natural environment, with close connections and relationships with nature and the landscapes, as well as the importance of the extended family and social networks, which define illness as collectively "owned" by a large social circle including the extended family and the community or, in the case of reindeer herding Sámi, the *Siida* [7].

Extensive contemporary literature exists on TM, particularly in northern Norway, where it has been well studied, but less so in Sweden [1,7–12]. Literature does exist on the pre-Christian period until the sixteenth or seventeenth century during the early Christianisation of the Sámi Indigenous Peoples in Sweden. The 17th and 18th centuries witnessed religious and cultural suppressive confrontations on a global level, and in a sense, the experience of the Sámi can be seen as a part of this phenomenon. It is a period that saw the Swedish state and church condemn aspects of the STM practices and culture that were perceived as pagan elements. The drums in the *Noaidi´s*[2] custodianship and *Yoik* (were singled out, suppressed, and completely banned [13–15]. Bäckman´s study reports that by about 1700 "the *Noaidi* was outmanoeuvred as the one responsible for the well-being of Sámi society" [14], while by the 1800s representatives of the Church reported that all visible signs of the traditional worldview of the Sámi had been erased, even though within the Laestadian church movement, many elements of STM remained, albeit within a Christian context [14].

During the post-Christianisation period, as well as today, even after nearly four centuries of cultural oppression [13] Sámi traditional healers continue to practice traditional medicine, even though a shroud of secrecy surrounds STM in the Swedish Sámi milieu in comparison to the Sámi communities in northern Norway [7,13]. TM in northern Norway is often seen to combine Christianity, Sámi traditional healing rituals and information obtained from the individual's visit to the conventional health care services [1,7]. Studies in Norway reveal that TM and traditional healing are often preserved through heritage and passed on from the older to the younger generations [7]. Sámi healers in Sweden treat problems including shoulder and back pain, eczema, stomach problems, anxiety, depressed mood, feeling alienated and even suicidal thoughts. The methods used include laying on of hands, verbal consultation, various herbal and animal preparations, cupping, massage, spiritual healing, prayers and divination [15,16]. In older literature, some more descriptions on STM are available [17–19]. A recent review study on the contemporary situation of STM in Sweden shows a few peer-reviewed scientific reports and scientific studies on STM in either English or Swedish [8,15]. From a grey-literature perspective, a recent tri-lingual description of Sámi TM has been published by the Sámi author and artist Anita Ponga [16].

The use of TM and its prevalence among the Sámi and Norwegian populations in northern Norway has been investigated in the Population-based Study on Health and Living Conditions in Regions with Sami and Norwegian Populations (SAMINOR) study [1]. A total of 16,544 persons responded to a questionnaire about TM use, and altogether 13.8% reported they had used TM once or more during their lifetime. Most TM users were people affiliated with the Laestadian church (34.3%), living in Inner Finnmark (31.1%) and having Sámi ethnicity (25.7%). Women were slightly more often prone to use TM than men, and the younger were more likely to use TM than the elderly. The TM users also had lower income, but there were no differences with regard to education. This means that not only do Sámi populations use

traditional medicine, but that this is common also within the non-Sámi population. The study found that participants with a Sámi background were more frequent users of TM than the non-Sámi participants [1].

It has been shown that confidence in public healthcare lower among reindeer-herding Sámi in Sweden compared to the majority of the population. This has been observed in both men and women, and distrust is attributed to primary healthcare and psychiatric care. Notable also is that younger people report less confidence than older people [20]. It may be hypothesised that this situation of distrust in public healthcare may have created a breeding ground for STM practice among Swedish Sámi.

TM is an important part of the traditional life and culture in Sápmi, although there is sparse information and knowledge about the contemporary practice of STM among Sámi in all parts of Sweden, inside as well as outside Sápmi. Therefore, this study will aid in filling this knowledge gap.

Aim of the study

The purpose of this population-based cross-sectional study was to describe the current applications of STM and CAM among Sámi in Sweden. Our aim was to map the prevalence and use of STM and CAM among Sámi women and men in Sweden, stratifying for different subgroups of Sámi based on gender, socioeconomic and cultural factors.

METHODS and MATERIALS

This population-based cross-sectional study was drawn from the survey- Sami Health on Equal Terms (SamiHET), based on a self-administrative questionnaire, developed by a research team at the Department of Epidemiology and Global Health at Umeå University (EPIGH), in close collaboration with the Swedish Sami Parliament and the Swedish National Public Health Agency.

There are no official statistics on Sámi in Sweden, thus the aim with the SámiHET study was to serve as a tool for population-based studies on Sámi in Sweden, with the limitation that only Sámi included in the registers that the survey is based upon are reached.

A more detailed description of the study protocol of the SámiHET study is available in Stoor and San Sebastian [21]. In brief, during the period February–May 2021, the SámiHET questionnaire was sent to a population of 9,260 persons, registered in the voting list of the Swedish Sámi Parliament, (85%), the reindeer mark owner register (42.7%) and the national entrepreneur registry with a focus on reindeer husbandry entrepreneurs (8.2%). The questionnaire contained 81 questions on: Sami identity and language; exposure to discrimination; racism and violence; access to healthcare living conditions and culture. The questionnaire was sent to persons aged 18–84 years, with three later reminders to respondents, including the option to use either a digital or a paper-based questionnaire. 3,790 persons responded, - a 40.9% response rate. Of these, a total of 3,658 (2,068 women) reported a Sámi identity, constituting the SámiHET cohort. The data set was pseudo-anonymised by Statistics Sweden (with no official ID numbers included) and stored at a secure server at Umeå University. The study was advertised in Sami media and information explaining the study was publicly available at the Umeå University website.[2]

The questionnaire of the SamiHET was based partly on a national public health survey, Health on Equal Terms (HET) conducted by the Public Health Agency since 2004 [22] and partly on other survey tools and questions developed within the research group.[3]

Design, sample selection, and data collection

Study population

The selection of the study population from the SámiHET cohort is shown in Figure 1. The figure shows the original exclusion criteria from the SámiHET study (step 1–5). In addition to criteria, this study population was selected according to the response pattern on two questions. The first of them (F20 a-i) was a 9-question panel within SámiHET relating to the use of different agents for healthcare The question was posed as follows: Have you during the last three months visited or been visited by any of the following? hospital doctor, general practitioner, nurse, youth centre, counsellor, psychologist, physiotherapist, CAM or other. The answer yes once, and yes, many times was coded YES, and the answer no was coded NO. The second of them (F21) was assessed through a question about whether or not the respondent had ever sought health treatment from a traditional helper (in Swedish hjälpare),

[2]Noaidi- Sámi term used for a spiritual leader and healer, similar but not equal to shaman.
[3]Yoik- Sámi term for a vocal expression, similar but not equal to singing.

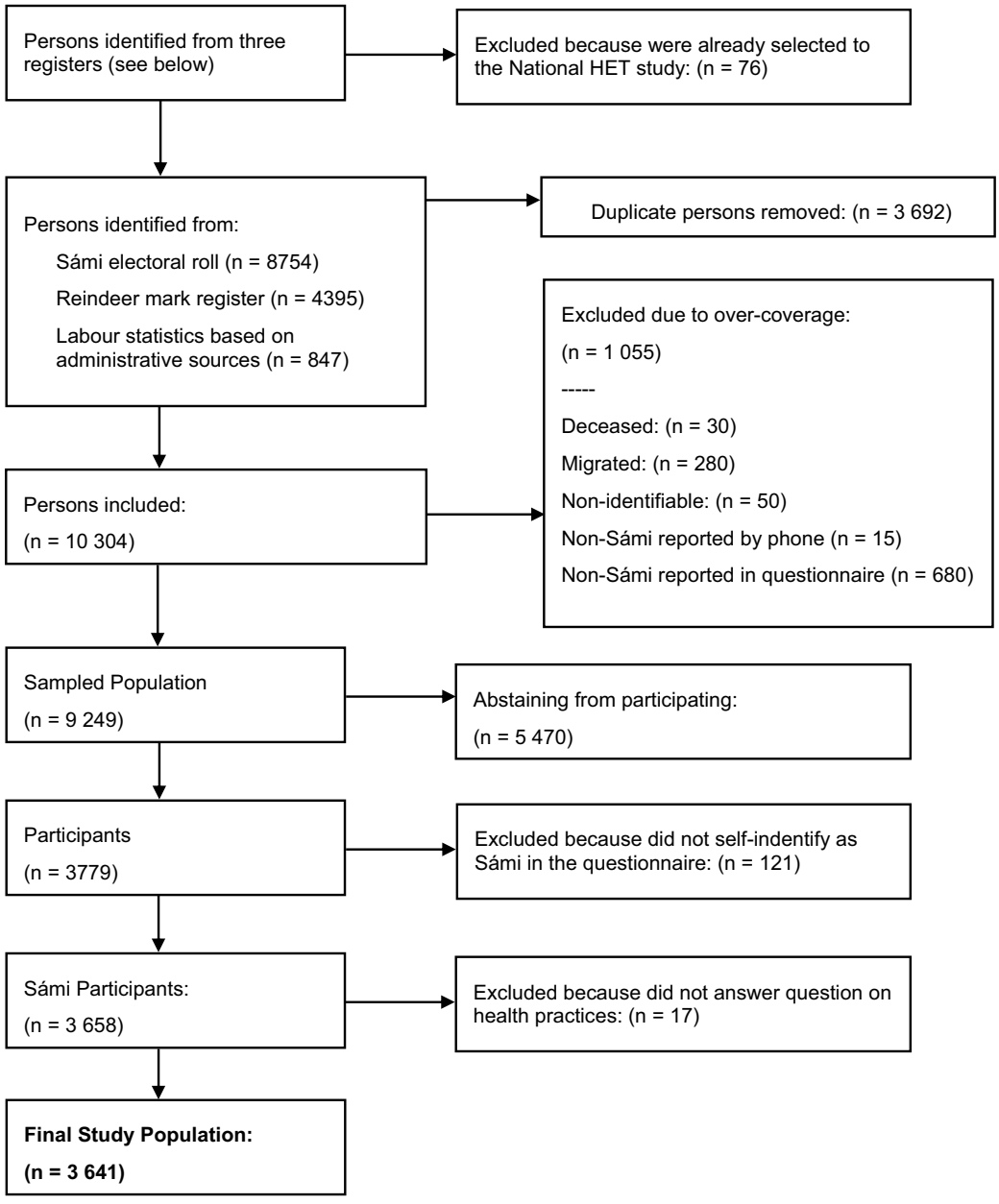

Figure 1. Selection of study population. From an originally population of Sámi in Sweden defined through three registers (n = 10,380), persons were excluded due to over-coverage (N = 1,055), abstaining from participating (n = 5,470), did not self-identify as Sámi (n = 121) or did not answer survey questions on health practices in the SámiHET study (n = 17) were excluded, resulting in a final study population of 3,641 persons.

faith-healer (in Swedish helbrägdagörare), *gunstar*, or similar individuals. People not responding to any of these questions (n = 17) were excluded (step 6), giving a final sample of 3641 persons (1,580 men and 2,061 women).[4]

Questionnaire

The questions on CAM and TM used for this study were based on the original question on CAM and TM from the Swedish national HET survey [22] and the SAMINOR panel question on Sámi TM [1]. The CAM and TM question panels

[4]Laestadian Church movement refers to the conservative Lutheran movement in Northernmost Sápmi within the frames of the state-approved national Lutheran churches.

from HET was included with no changes. In addition, a more specific question on Sámi TM was added separately, and based on the CAM and TM questions of SAMINOR.[5]

In SAMINOR, the question on TM and CAM was posed as follows:

> "If you have ever used alternative providers, which have you used?" The responses were traditional healer (guvllar, reader, blower, hands on healer); modern healer; acupuncturist; reflexologist, homeopath, kinesiologist (etc)".
>
> [1]

In the SámiHET questionnaire, the specific additional question on Sámi TM used the Sámi term gunstar, which equals the Sámi term guvllar used in the SAMINOR question panel. The wording of the added question on Sámi TM was discussed with a group of voluntary Sámi in Umeå before it was added into the SámiHET questionnaire.

The rationale for completing the SámiHET panel with this additional question was the possibility to compare use of TM in different Sámi populations in Norway and Sweden. Tables were designed to mirror the tables in the SAMINOR study on the prevalence of STM use among different ethnicities in northernmost Norway [1], to increase the comparability.

Measurements

Use of STM

Use of STM was assessed through a question about whether the respondent had ever sought health treatment from a traditional helper (in Swedish hjälpare), faith-healer (in Swedish helbrägdagörare), *gunstar*, or similar individuals. The answers "yes, during the last three years" ($n = 233$) and "yes, more than three years ago" ($n = 596$) were coded YES, and answers "no" ($n = 2{,}790$) and "missing" ($n = 22$) were coded NO.

Use of CAM

Use of CAM was assessed through the question about whether the respondent had paid a visit to a naprapath, chiropractor, homoeopath, or the like during the last 3 months. The answers "once" ($n = 201$) and "many times" ($n = 164$) were coded YES, and the answers "no" ($n = 3{,}096$) and "missing" ($n = 180$) were coded NO. The CAM question was included from the Swedish National Health on Equal Terms (HET) questionnaire.

Socioeconomic variables

General socioeconomic variables used in this study included registry-based data on disposable income categorised into tertiles: (high, medium, low); civil status (living with a registered spouse, yes/no); education (primary, secondary and post-secondary), and region (Norrbotten, Västerbotten, Jämtland, other).

Cultural variables

Cultural variables were self-reported belonging to a *Siida* (Are you a member of a reindeer herding community/*Siida* ?, with three positive alternatives; Yes, a mountain-, forest- or concession herding community, and one negative alternative; no); Sámi language skills (speaking, yes/no), and linguistic affiliation (Which language is your main Sámi language? five alternatives: North-, Lule-, Pite-, Ume-, and South Sámi, possible to choose more than one alternative).

Health-related variables, self-reported through the SámiHET questionnaire, included; self-reported good health (yes/no, yes including the answers good/very good and no including the answers acceptable/bad/very bad); hypertension (yes/no); asthma (yes/no); allergy (yes/no); diabetes (yes/no); depression (yes/no); insomnia (yes/no); isolation (yes/no); and obesity (BMI ≥30)".

Statistical analysis

A cross tabulation between STM and CAM users was performed to analyse potential overlaps. Between-group differences between users and non-users of STM and CAM, respectively, were analysed using the Fisher exact Chi-square test for categorical data and the independent sample *t*-test for continuous variables. All analyses were performed in IBM SPSS for Windows (version 26.0). A p-value lower than 0.05 was considered significant. Because of the lower number of CAM cases compared to STM cases, larger differences were needed to detect significant differences between users and non-users.

Ethics

When conducting research involving Sámi in Sweden, it is crucial to be cognisant of the historical trauma of research on Sámi Indigenous Peoples and in this case Sámi worldviews. From a medical research perspective, the pseudo-scientific race biology documentation and exposure of Sámi individuals in the early 1900s is one

[5]Gunstar is the Sámi term for a traditional Sámi healer.

example, as well as ongoing loss of traditional land due to extractivism [23]. Sámi traditional healing is still a sensitive issue in the Sámi milieu and must be handled with respect. Thus, the questionnaire data were pseudonymized to the researchers, and all results are presented on a group level.

There is no system in Sweden for ethical review of indigenous health research that is similar to the ethical review systems in Norway and Canada. However, the SámiHET questionnaire was developed in close cooperation with the Sámi community (The Sámi Parliament, Sámi researchers, research environments at Umeå University) and the Public Health Agency of Sweden. This was in accordance with the ethical guidelines for Sámi health research as suggested by a committee established by the Sámi Parliament of Norway. The project was formally approved by the Swedish Ethical Review Authority (Dnr 2020–04803 and Ö 70–2 2020/3.1).

Results

The study population consisted of 1,580 men (43.4%) and 2,061 women (56.6%) all self-identified as Sámi, in the ages 18–84 years and representing all geographical areas in Sweden (Norrbotten 38.3%, Västerbotten 22.7%, Jämtland 7.0% and other parts of Sweden 22.4%). Table 1 shows the overlap between users of STM healing and CAM. Approximately one-third of the CAM users also used STM ever in a lifetime, and every fifth of the STM users simultaneously used CAM in recent time (Table 1).

Table 1. Cross tabulation of the number of participants by practice of Sámi Traditional Medicine (STM, ever users) and Complementary Alternative Medicine (CAM, users last 3 months).

		STM		
		No (%)	Yes (%)	Total STM (%)
CAM	No	2571 (70.6)	705 (19.4)	3276 (90.0)
	Yes	241 (6.6)	124 (3.4)	365 (10.0)
Total CAM		2812 (77.2)	829 (22.8)	3641 (100)

Table 2. Basic characteristics of the total sample and among users and non-users of STM (ever users) and CAM (users during last 3 months).

	Total sample		STM users		Non-STM users		P-value	CAM users		Non-CAM users		P-value
	%	n	%	n	%	n	Chi^2	%	n	%	n	Chi^2
Age, years (mean)	53.7	3641	52.2	829	54.2	2812	0.003*	50.2	365	54.1	3276	≤0.001*
Sex		3641		829					365			
Men	43.4	1580	33.2	275	46.4	1305		38.1	139	44.0	1441	
Women	56.6	2061	66.8	554	53.6	1507	≤0.001	61.9	226	56.0	1835	0.03
Income (tertiles)		3639		829					365			
Low	33,3	1212	41.9	347	30.8	865		29.0	106	33.8	1106	
Medium	33,3	1213	32.2	267	33.7	946		32.9	120	33.4	1093	
High	33,3	1214	25.9	215	35.6	999	≤0.001	38.1	139	32.8	1075	0.03
Civil status		3641		829					365			
Living with a spouse	42.6	1552	39.2	325	43.6	1227	0.02	40.5	148	42.9	1404	0.4
Education		3635		827					364			
Primary	33.8	1230	27.4	227	35.7	1003		31.6	115	34.1	1115	
Secondary	37.6	1366	40.7	337	36.6	1029		35.7	130	37.8	1236	
Post-secondary	28.6	1039	31.8	263	27.6	776	≤0.001	32.7	119	28.1	920	0.1
Region		3641		829					365			
Norrbotten	47.8	1741	62.7	520	43.4	1221		39.7	145	48.7	1596	
Västerbotten	22.7	828	13.0	108	25.6	720		24.7	90	22.5	738	
Jämtland	7.0	255	7.2	60	6.9	195		7.1	26	7.0	229	
Other	22.4	817	17.0	141	24.0	696	≤0.001	28.5	104	21.8	713	≤0.001
Siida member		3595		822					361			
Mountain	29.5	1060	47.3	389	24.2	671		29.9	108	29.4	952	
Forrest	9.8	354	7.5	62	10.5	292		11.4	41	9.7	313	
Concession	1.4	50	1.7	14	1.3	36		0.8	3	1.5	47	
None	59.3	2131	43.4	357	64.0	1774	≤0.001	57.9	209	59.4	1922	0.6
Language		3588		824					361			
Speaking	22.9	820	39.9	329	17.8	491	≤0.001	15.0	54	23.7	766	≤0.001
Linguistic affiliation		3641		829					365			
North Sámi	38.3	1396	58.5	485	32.4	911	≤0.001	32.6	119	39.0	1277	0.02
Lule Sámi	15.1	550	16.9	140	14.6	410	0.1	16.7	61	14.9	489	0.4
Pite Sámi	3.9	141	2.9	24	4.2	117	0.1	5.5	20	3.7	121	0.09
Ume Sámi	10.1	369	5.1	42	11.6	327	≤0.001	11.2	41	10.0	328	0.5
South Sámi	22.2	808	16.5	137	23.9	671	≤0.001	22.7	83	22.1	725	0.8

Independent sample T-test was used for this analysis since the variable was continuous.

Table 2 shows a comparison between users and non-users of TM and CAM. TM reflects ever-users and CAM reflects users during the last 3 months.

From a socioeconomic perspective, ever users of STM were on average 2 years younger, representing a mean age of 52.2 years to compare with the mean age 54.2 years among non-users ($p \leq 0.001$). They were also more likely to be women (66.8% compared to 53.6%; $p \leq 0.001$). The proportion of persons with relatively low disposable income was higher among users of STM (41.9%) compared to non-users (30.8%; $p \leq 0.001$), while the proportion who was living with a registered spouse was lower (39.2% compared to 43.6%; $p = 0.02$). In addition, a significantly higher proportion of the STM ever users had a post-secondary education compared to non-users (31.8% and 27.6%, respectively; $p \leq 0.001$) (Table 2).

From a cultural perspective, Sámi people from Norrbotten were overrepresented among ever users of STM (62.7% and 43.4%, respectively; $p \leq 0.001$) compared to non-users, as were the case in Sámi belonging to a mountain Sámi Siida (47.3% and 24.2%, respectively; $p \leq 0.001$) and Sámi with North Sámi as their main language (58.5% and 32.4%, respectively; $p \leq 0.001$). Sámi people reporting ability to speak Sámi were also over-represented among ever users of STM (39.9% and 17.8%, respectively; $p \leq 0.001$). On the contrary, both Sámi with Ume Sámi and South Sámi as their main language were under-represented among ever users of STM ($p \leq 0.001$ in both cases). No similar differences were found in Sámi with Lule- and Pite- Sámi as their main language (Table 2).

From a socioeconomic perspective, recent users of CAM were on average 4 years younger than non-users (50.2 years and 54.1 years, respectively; $p \leq 0.001$). Thus, the difference in average age between users of CAM and non-users was larger than the difference in ever users of STM, while the direction was the same. Similarly, with ever users of STM, recent users of CAM were more likely to be women (61.9% and 56.0%, respectively; $p = 0.03$). The income pattern of recent users of CAM was the opposite of the ever users of STM, and the proportion of people with a relatively high income was higher (38.1% and 32.8%, respectively; $p = 0.03$). We did not observe any significant differences either in civil status between recent users and non-users of CAM or in the proportion of users having a post-secondary education compared to non-users. However, the tendency was similar to the case with STM, with no under-representation of people with a post-secondary education among recent users of CAM (Table 2).

From a cultural perspective, Sámi people from Norrbotten were under-represented among recent users of CAM and over-represented among Sámi people from central and southern Sweden ($p \leq 0.001$). This pattern was opposite to the pattern in ever users of STM. We did not find any significant pattern between the recent use of CAM and *Siida* membership. Sámi people reporting an ability to speak Sámi were under-represented among recent users of CAM (15.0% and 23.7%, respectively; $p \leq 0.001$), as was Sámi people with North Sámi as their main language (32.6% and 39.0%, respectively; $p = 0.02$). We found no association between recent users of CAM and linguistic affiliation to Lule-, Pite-, Ume-, or South Sámi language (Table 2).

Table 3 shows health-related issues among users and non-users of STM and CAM. TM reflects ever-users and

Table 3. Health-related issues in the total sample and among users and non-users of STM (ever users) and CAM (users during last 3 months).

	Total sample		STM users		Non-STM users		P-value	CAM users		Non-CAM users		P-value
	%	n	%	n	%	n	Chi	%	n	%	n	Chi^2
Self-reported health		3633		827		2806			365		3268	
Poor	26.4	958	31.7	262	24.8	696		29.6	108	26.0	850	
Good	73.6	2675	68.3	565	75.2	2110	≤0.001	70.4	257	74.0	2418	0.1
Hypertension		3628		827		1933			364		2266	
Yes	29.9	1085	26.2	217	30.9	868	0.009	23.9	87	30.6	998	0.008
Asthma		3618		827		2262			362		2591	
Yes	20.7	748	26.5	219	19.0	529	≤0.001	22.9	83	20.4	665	0.3
Allergy		3615		826		1731			365		1940	
Yes	41.2	1488	52.1	430	37.9	1058	≤0.001	48.8	178	40.3	1310	0.002
Diabetes		3621		825		2580			362		3012	
Yes	7.3	266	6.1	50	7.7	216	0.1	5.2	19	7.6	247	0.1
Obesity		3590		821		2234			363		2597	
Yes	19.4	696	19.6	161	19.3	535	0.8	18.2	66	19.5	630	0.8
Depression		3631		827		2322			365		2654	
Yes	19.6	710	27.6	228	17.2	482	≤0.001	26.8	98	18.7	612	≤0.001
Insomnia		3612		824		1808			364		2071	
Yes	37.6	1359	46.0	379	35.2	980	≤0.001	50.0	182	36.2	1177	≤0.001
Isolation		3598		822		2564			363		2973	
Yes	8.0	288	9.2	76	7.6	212	0.1	7.2	26	8.1	262	0.5

CAM reflects users during the last 3 months. On average, 73.6% of the population reported good health. A lower proportion of STM ever users reported a good health compared to non-users (68.3% and 75.2%, respectively; $p \leq 0.001$). A lower proportion of the STM ever users suffered from hypertension in comparison with the non-users (26.2% and 30.9%, respectively; $p = 0.009$). However, STM ever users were over-represented in comparison with non-users with respect to asthma (26.5% and 19.0%, respectively; $p \leq 0.001$), allergy (52.1 and 37.9, respectively; $p \leq 0.001$), depression (27.6% and 17.2%, respectively; $p \leq 0.001$) and insomnia (46.0% and 35.2%, respectively; $p \leq 0.001$). No associations were found between lifelong experience with STM and prevalence of diabetes, obesity and isolation (Table 3).

No statistically significant differences in relation to self-reported health was found among recent CAM users in comparison with non-users, though the general pattern resembled the one in ever users of STM (70.4% and 74.0%, respectively). Similarly, with the pattern in STM ever users, a lower proportion of the recent CAM users reported hypertension morbidity in comparison with non-users (23.9% and 30.6%, respectively; $p = 0.008$). CAM users were over-represented in relation to allergy (48.4% and 40.3%, respectively; $p = 0.002$), depression (26.8% and 18.7%, respectively; $p \leq 0.001$) and insomnia (50.0% and 36.2%, respectively; $p \leq 0.001$). No associations between recent users and non-users of CAM were found with respect to asthma, diabetes, obesity and isolation (Table 3).

Discussion

The major findings in this study are that women are more prone than men to use both STM and CAM and younger persons more than elderly. Highly educated individuals are also more prone than persons with lower education to use STM and CAM. STM is used more frequently in the northern parts of Sápmi while CAM is used less in the north compared to the south.

In the study sample of 3,641 Sámi in Sweden, 22.8% reported having consulted a traditional helper/healer. This is quite similar to the reported prevalence among Sámi in the SAMINOR study, which was 25.7%. An important difference between SámiHET and SAMINOR is that SámiHET targeted the entire Sámi population in Sweden, while SAMINOR focused on Sámi core areas in rural parts of Norway. Noteworthy, the experience of practising STM in Norrbotten, in the Northernmost part of Sweden, was more than twice as high as in the SAMINOR study (62.7%), while the practice was lower than among Sámi in the SAMINOR study in other parts of Sweden. In other studies on Alaskan Natives, 46–68% reported having consulted a traditional healer [24], which is similar to the prevalence we found in Norrbotten. The high prevalence of experience in using STM in the northernmost part of Sápmi could also be attributed to a stronger Sámi identity and easier access to traditional Sámi healers/helpers in the study area. Sámi people in the core Sápmi area in northern Sweden are traditionally used to taking care of themselves and not requesting help unless severely ill, partly due to a lack of adequate health care facilities and great distances [15], and partly due to the Sámi concept of *birget* [25]. In brief, *birget* is described as a concept of hardness and autonomy, meaning a culture of actively avoiding the expression of negative feelings and weaknesses, but also a culture of silent emancipatory treatment and positive support [25]. Economic factors might also be at play, where traditional healing is usually free of charge and available in family circles while CAM has to be paid for. Our results show that STM users have a significantly lower income compared to non-users, which is similar to findings in other studies [1,11,12].

Our observation that 10.1% reported having a consultation for CAM in recent times (Table 1), is somewhat lower compared to other studies in Sweden, e.g. those summarised in the SOU report, presenting figures around 17–93% [6]. However, since the time frame of these studies differs, immediate comparisons are not possible. Three months is a rather short time span, which means that people who have been healthy during the last 3 months have no incitement to seek any healthcare and thus will not be visualised by this question. Interestingly, about one-third of the CAM users had also consulted STM (Table 1). This can be seen as an expression of medical pluralism. Our data show that Sámi in Sweden pick the best from different health systems, a common behaviour that has been described also in other studies related to CAM [26].

With regard to gender, we found that Sámi women were seen to use STM and CAM more often than Sámi men. This is generally the case in most studies on the use of TM and CAM, in other populations, for example, in the SÁMI NOR 1 study, as well as in the SOU report [1,6]. The reason for this is not clear. One explanation may be that women's needs in conventional care are less well met compared to men's [27,28]. Another contributing factor might be that women usually report more health problems than men and thus can be reasonably assumed to also be in need of intervention [25,29]. This theory lies outside the scope of this study and calls for more studies to investigate the underlying factors.

The relatively lower mean age of Sámi people reporting experience of using STM and CAM is similar to other studies [1,30].

The high prevalence of well-educated people with experience of STM is an interesting observation and not similar to the results presented from the SAMINOR study [1]. In our study, the pattern among Sámi using CAM in recent times and education was similar to the pattern of Sámi using STM. Since education is correlated to income, the fact that CAM has to be paid for might partly explain the wider use of CAM by highly educated individuals. However, since most STM is offered for free, this would not explain the pattern in use of STM, while the experience of STM reported in this study may have occurred back in time when the person had a different socioeconomic status than when the survey was performed in 2021. Another explanation to the relatively higher educational level among users of STM and CAM could be based on gender. The average education level among Sámi women is higher and among Sámi men lower compared to the National average [31]. Thus, when more women than men use STM, the education level follows the same pattern.

Some cultural dimensions may also play a role because the mountain Sámi is more likely to live a long distance from health care services and because there are more rural-based Sámi living in the county of Norrbotten in comparison to the county of Västerbotten. For the same reason, patterns between health-seeking behaviour related to STM are also mirrored in a positive way by our results regarding *Siida* membership, Sámi language skills, and language affiliation. There is a similar opposite tendency in relation to the recent use of CAM, though only significant with regard to Sámi language skills and North Sámi linguistic affiliation.

We have no data on why Sámi in Sweden were seeking healthcare STM and CAM. The health patterns of users with respect to some common diseases may partly indicate which kinds of illnesses the participants were affirmed with. In this way, our results indicate that those seeking alternatives through STM and CAM had a lower prevalence of self-perceived good health, which perfectly makes sense and which also was the pattern in the SAMINOR study [1]. The highest prevalence of experience with STM was found among participants suffering from asthma, allergy, depression and insomnia (Table 2), while STM users were underrepresented among participants suffering from hypertension. Among CAM users, the pattern was similar, though not significant in relation to asthma.

Regarding health challenges such as asthma, allergies, depression, and insomnia, modern medicine may not always have an obvious approach. With psychological problems, many find the explanations and treatments offered by STM more trustworthy [9]. Earlier studies in other contexts [8] show that individuals´ preferences for consulting traditional healers for psychosomatic and psychological problems are due to the understanding of the traditional healer of the patient's context [8]. TM has a cultural affinity, and to many TM is more trustworthy and less stigmatising than the healthcare services and is in line with the Sámi culture, particularly with regard to psychological problems. This has also been widely studied in northern Norway and other contexts [8,13,29,32–34].

A recent study reported on living experiences, mental health care experiences, care needs, and identity of the Sámi in metropolitan regions and was commissioned by the Transcultural Centre in the Stockholm region [9]. It describes research questions that look at what individuals of Sámi descent, the Sámi culture, experiences of historical trauma, discrimination, and negative attitudes mean for Sámi in big cities and how they perceive the aforementioned factors to affect health. Almost all the respondents in the study had never consulted traditional healers and had only rudimentary knowledge of such practices [9]. This corresponds partly with the results in this paper with regard to STM, which is more frequently used in the region with the largest distance to Stockholm, that is Norrbotten.

Limitations and strengths

A limitation of this paper is the fact that only Sámi defined through registers was included in the SámiHET study. This paper should therefore not be interpreted as a representation of the entire Sámi population because the study is limited to the individuals found in registers. This also does not necessarily mean that we have reached a representative proportion of people with Sámi identity – but these are still the best available figures possible. Furthermore, the SámiHET study did not have a question about religious background as was the case in the SÀMINOR study.

The study's limitation is that it does not distinguish between faith-healer in a traditional way and the more modern spiritual healers that normally would be considered as CAM and not traditional medicine, while there could be users of modern faith healing like for instance Reiki among the participants reported to be users of TM. This may lead to a possible over-representation of users of TM in this study along with an uncertainty of the proportion STM included in the TM. The fact that the question about CAM "naprapath, chiropractor, homoeopath, or the like during the last three months" did not include acupuncture and massage that are among the most commonly used CAM therapies in Sweden

is a limitation, which may lead to an underrepresentation of CAM users, although the study was restricted to the way the question was posed in the Swedish National HET survey. Further, the expression "or alike" included both in the CAM and the TM questions means a potential overlap of answers.

An important issue to consider is the difference as regards how the questions about the use of STM and CAM were formulated. The question about the use of STM covered the last 3 years or more whilst the use of CAM was limited to the last 3 months. This, of course, makes comparison problematic. Reasonably, there might be an underestimation of the use of CAM in the population. The authors of this study had no influence on the wording of the CAM question. However, we still think that the CAM question gives some useful information.

Regarding integrity, the Sámi society is small, which means that also group-level descriptions may be perceived as a threat against integrity. This risk must be considered in relation to the need for more knowledge about perspectives in the Sámi milieu for health care personnel to enable them to meet their Sámi patients with approaches that include respect, reciprocity, and cultural understanding.

The response rate, which was 40.9%, is considered satisfactory considering the response rate of the Swedish Health on Equal Terms survey performed at the same time period was 44.3% [12]. We also deem the participation rate satisfactory considering the history of negative experiences of research among the Sámi, which is a more likely reason for not responding, thus meaning a low willingness of the target population to participate in research studies [21]. However, due to a response rate below 50% all interpretations of our results need to be done with caution.

Participation in questionnaire surveys has gone down continuously during the last decades. The first national HET-study in 2004 showed the response rate to be 60,8% and in 2020 it was down to 42,3%. The response rate in the SAMINOR 1 study 2003–2004 was 60,3% [1] and for the follow-up SAMINOR 2 study 2012 the interest had decreased to 27% [35]. When interpreting data from these kinds of surveys with a participation rate lower than 50% it is always necessary to consider the problems about representativeness of the data. However, we still think they are useful to get a reasonable view of the situation being studied.

One important strength of this study was the possibility to apply similar questions on TM and CAM that has previously been performed in Sámi core areas in Norway through the SAMINOR study on a sample representing the entire Sámi population in Sweden. This will expand the knowledge on heterogeneities and similarities in Sápmi with regard to TM and CAM.

Conclusion

STM is still in use in the Sámi community in Sweden, and especially in the northernmost areas of Sápmi among Sámi who speak Sámi language, and members of the mountain reindeer herding *Siida* communities. CAM is used as a complement to public healthcare especially by Sámi outside the core regions of Sápmi. CAM is used to a much lower extent, in the core regions of Sápmi, in Sweden. Women and the highly educated are more prone to use STM as well as CAM.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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