

## Tobacco use among Kola Sámi, the indigenous people of the Murmansk region, Russia: A cross-sectional study

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### ABSTRACT

Russia is among the top ten nations in terms of smoking prevalence. Little is known about smoking rates among Indigenous Peoples in Russia. Our aim was to assess the prevalence of tobacco and nicotine product use among Kola peninsula Sámi. An exploratory cross-sectional survey was conducted to determine tobacco or nicotine product use among 505 Sámi people (about 30% of the whole Sámi population of Russia). Over 60% of participants had tried tobacco or nicotine products. Median age of first use was 15 years, with cigarettes being the most frequent first product tried and the most common type of product used currently. About a third of participants used a tobacco or nicotine product at least occasionally; 25% (predominantly males) smoked at least occasionally with 23.8% smoking daily. Of participants who smoked, 52.5% scored medium and 44.2% scored high on the Heaviness of Smoking Index. Seventeen percent of participants smoked formerly but not currently. Like some other Indigenous Peoples, Kola Sámi in Russia have a higher smoking prevalence than the average among the Russian population. Interest in a smoking cessation mobile app designed for the Sámi population suggests that such an intervention could help to reduce this inequity.

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### Introduction

Smoking tobacco is one of the main preventable causes of morbidity and premature mortality in the world [1]. Globally, more than 7 million people die annually from diseases associated with smoking, and this number is projected to increase to 8 million per year by 2030 [2,3]. Smoking prevalence varies widely by sex, age, socio-economic status, place of residence (city or rural) and ethnicity [4]. The World Health Organization (WHO) has signalled alarm that even in countries with advanced Framework Convention on Tobacco Control (FCTC) programmes some people, including Indigenous Peoples, are being “left behind” [4]. Smoking prevalence among Indigenous Peoples is disproportionately higher than national averages in several countries but information on smoking prevalence for most of the 476 million Indigenous people in the world is either not collected or not reported [5,6]. Signatories to both the FCTC and the United Nations Declaration on the Rights of Indigenous Peoples are expected to recognise the existence of different Indigenous Peoples when

monitoring health, and collect disaggregated data on smoking [7].

Russia is among the top 10 countries with the highest prevalence of tobacco smoking in the world [1]. According to the annual Internet survey (SLOP survey), initiated by the Ministry of Health of the Russian Federation in 2020, on average 26.8% of the Russian population used tobacco or nicotine products (TNPs) at least occasionally in 2021. Smoking tobacco accounted for 71.3% of this TNP use which equates to a smoking prevalence of 19.1% [8]. Indigenous groups in Russia have been found to have a higher prevalence and higher initiation of smoking during late childhood and adolescence compared to the dominant Russian (Slavic) ethnic groups [9]. However, Indigenous ethnic group prevalence of TNP use, such as heated tobacco products (HTPs), vaping and snus, remains unclear [9].

The Murmansk region is in the top five of the Russian regions where smoking is the most prevalent [10] and where most of the Sámi (Indigenous people of the Kola peninsula) reside. According to the all-Russian census in 2010, 1771 Sámi people lived in Russia [11]. Little is

known about the prevalence of TNP use amongst the Sámi in Russia, or in Norway, Sweden and Finland across which the Sapmi (Sámi lands) cross [12].

The most recent studies of smoking prevalence among the Kola peninsula Sámi were conducted in 2005. These found that 59% of school students (30% males and 63% females) aged 15–18 smoked regularly. The average age for starting to smoke was 12.6 years in males (6.4 cigarettes per day) and 13.7 years in females (8.4 cigarettes per day) [13,14]. However, these studies were conducted more than 15 years ago and had significant limitations. They did not report either smoking prevalence among adult Sámi nor did they provide any information about the sample size of their study population.

Russia is a signatory to the FCTC, which encourages countries to take measures to promote the participation of Indigenous people in the development, implementation and assessment of tobacco control programmes, and to ensure that such programmes are socially and culturally appropriate to their needs and perspectives. We could find no information about programmes focused on smoking cessation and harm reduction among Indigenous Peoples in Russia [9].

The aim of this study was to investigate the prevalence of smoking and other forms of TNP use among the Sámi population of the Kola peninsula (in the Murmansk Region of Russia) to inform the development of interventions to reduce harmful tobacco use among the Sámi.

## Methods

An exploratory cross-sectional Computer-Assisted Personal Interviewing (CAPI) survey of TNP (cigarettes, vaping, HTPs, hookah, snus, and snuff) consumption was conducted with the Sámi people residing in the Kola peninsula, Murmansk region, Russia.

### Participants

Participants were Sámi adults aged 18 years and over who could give consent to take part on their own behalf. Recruitment was conducted by research assistants (RAs) among members of the Public Organization of the Murmansk Region “Association of the Kola Sámi”. Listed Members of the Association were approached by phone and invited to take part in the survey. We also applied a snowballing method. Participants were asked to invite their relatives or their Sámi friends who might be also interested in taking part in the survey. If a respondent agreed to take part in the study and met the inclusion criteria, an appointment was made

for an RA to meet with the participant to administer the survey. In addition, participants were recruited using a street-intercept method at the Sámi Cultural Festival “Moainas Lann” in Olenegorsk city. A street intercept approach is an efficient and cost-effective way to obtain a high response rate amongst a specific participant group in a public place [15]. The researcher approached people at the festival, inviting them to participate. Participants who agreed to participate in the study were assured that the research met ethical standards and had been approved by an Ethics Committee, which observed human rights with respect to rights of Indigenous people. They were then interviewed. Those who did not give informed consent were excluded from the study.

### Data Collection

Data collection took place from February 2021 to May 2021 and was carried out by two trained RAs. One the RAs was of Sámi ethnicity. Both of the RAs were members of the Public Organization of the Murmansk Region “Association of the Kola Sámi”. Prior to commencing the data collection, RAs completed training based on the Field Interviewer Guidelines for the WHO Global Adult Tobacco Survey [16]. The training covered the recruitment procedure, the role of interviewers, rules of communication with study participants, professional ethics and the rights of participants, the importance of confidentiality, and what to do if participants declined consent or withdrew from the study. Instructions on how to operate the tablet and access and administer the questionnaire was also covered.

All authors, including the Sámi collaborator, participated in contributing pre-existing questions commonly used to collect demographic information and information about tobacco consumption, such as from the WHO Tobacco Questions for Surveys [17]. Participation of relevant Indigenous stakeholders in the development of the questionnaire and data collection was in line Sámi Indigenous ethical guidelines and processes.

The question realms were designed to collect the following information on participants: 1) demographics (sex, age, marital status, level of education, occupation and rurality, including living a nomadic lifestyle. However, the 2010 all-Russian census found no Sámi nomads [11]. Consistent with the census no participants selected this option and it is not reported on. Level of income was estimated as: a) There is enough money to purchase the necessary food and clothing, larger purchases have to be postponed for later; b) Buying durable goods (TV, refrigerator) does not cause any

difficulties for us, but I can't afford to buy a car or a holiday home, or loan/mortgage; and, c) We can afford to buy everything we need. 2) health status and clinical diagnoses, if any; 3) history, frequency and usage patterns of TNPs, including questions about level of nicotine dependence in accordance with the Heaviness of Smoking Index (HIS) [18]; 4) history of substance or drug use; 5) interest in and beliefs about stopping smoking; 6) the impact of the COVID-19 pandemic on the use of TNPs; and, 7) awareness of the potential harms of smoking. Participants' practice of spiritual traditions was measured. This can indicate degree of distance from traditional beliefs due to assimilation to non-Sámi European beliefs and practices. Literature on Indigenous People's smoking behaviour and Indigenous holistic health models include spiritual wellbeing as a determinant of health [19] and health behaviours such as smoking [20].

Some questions were sourced from English language survey instruments and some were sourced from Russian language surveys. The final version was translated into Russian. The questionnaire in Russian and English is available elsewhere [21].

The questionnaire was loaded into the online Zoho Survey Pro tool and administered by the RAs who were supplied with an internet-enabled computer tablet. Using the Computer-Assisted Personal Interviewing (CAPI) technique, the RAs read the questions and answer options out loud to the participants. An explanation of each question was given when participants were provided with the questionnaire.

### **Data analyses**

IBM SPSS 26 version was used for data analysis. Descriptive statistics were calculated on the study data. Normality of distributions of continuous variables were assessed using the Shapiro–Wilk test. Statistical significance of differences between continuous variables was analysed using independent samples t-test or, if the assumptions for this were not met, with the Mann–Whitney U test. Statistical testing to compare categorical variables was completed using the independent samples chi-square test. The Fisher's exact test was used whenever the number of one group was five or less.

### **Ethics approval**

The local independent Ethics Committee at the Educational private institution of additional professional education "Institute of Interdisciplinary Medicine" approved the study (#202 from 10 February 2021.).

## **Results**

In total, 505 participants aged from 18 to 87 years (median age = 39 years) participated in the study. No one who was invited declined to participate and no participants withdrew. Just over half (n = 216, 56.8%) of the participants were females, 290 (57.4%) were married, 356 (70.5%) had children, 307 (60.8%) had a full-time job, and 311 (61.6%) lived in a small town or semi-rural area. Almost half of the participants (n = 234, 48.1%) graduated from vocational school or had attained a trade certificate. A third of the participants (n = 170, 33.7%) had completed university education. Most of the participants were members of the Sámi community organisations (local communities (clan, tribe, or territorially neighbouring) or public associations/organisations) (n = 363, 71.9%). More than half of the participants (n = 278, 55.0%) were active in preserving the traditional Sámi lifestyle and conducting traditional Sámi economic activities, such as fishing, reindeer husbandry, gathering wild plants, arts and crafts, although these activities were not the main source of income for the vast majority of the participants (n = 452, 89.5%). Concurrently, the majority of the participants were not following cultural and spiritual traditions of the Sámi (n = 278, 55.0%). None of the participants reported having a chronic mental disease. The overwhelming majority (n = 466, 92.3%) reported absence of chronic diseases. Full participant demographic characteristics are included in Table S1.

### **Prevalence of use of TNPs among the Kola peninsula Sámi**

Over 60% (n = 310, 61.4%) of the participants had tried TNPs and 170 (33.7%) confirmed they were still using them at the time of the survey, at least occasionally. Thirty participants (5.9%) used more than one type of product at least occasionally.

When planning the study, we did not expect snuff to be common among the Sámi. Therefore, initially we did not include "snuff" as a response option to the question "Which tobacco product did you try first?" This response option was added later during data collection when 211 (41.8%) of the participants had completed the survey. Prevalence of TNP use is summarised in Table 1.

A majority of the participants did not currently use TNPs. Among participants who consumed TNPs, prevalence of daily cigarette smoking was the highest (n = 120, 23.8%). This was defined as smoking one or more cigarettes per day over the previous six months and having smoked more than 100 cigarettes or other

**Table 1.** TNP prevalence, product and age first tried, and reason for trying smoking.

<i>Prevalence of TNP use</i>				
	Daily abs. (%)	At least once a week abs. (%)	Less than once a week. %	No current use abs. (%)
<b>Cigarettes</b>	120 (23.8%)	0 (0%)	6 (1.2%)	379 (75%)
<b>Vaping</b>	1 (0.2%)	1 (0.2%)	0 (0%)	503 (99.6%)
<b>HTPs</b>	15 (3.0%)	1 (0.2%)	0 (0%)	489 (96.8%)
<b>Oral nicotine pouches</b>	1 (0.2%)	0 (0%)	0 (0%)	504 (99.8%)
<b>Snuff</b>	0 (0%)	0 (0%)	0 (0%)	294 (100%)
<b>Hookah</b>	1 (0.2%)	15 (3.0%)	39 (7.7%)	450 (89.1%)
<b>Any TNP</b>	138 (27.3%)	17 (3.3%)	45 (8.9%)	195 (38.6%)
<b>Tobacco or nicotine product tried first</b>				
Cigarettes			289 (93.2%)	
HTPs			1 (0.2%)	
Vaping			1 (0.2%)	
Hookah			2 (0.4%)	
Snuff			17 (3.4%)	
Total			310 (100%)	
<b>Age at first use</b>				
<b>Age</b>			<b>N (%)</b>	
6–10			20 (6.5%)	
11–15			165 (53.4%)	
16–20			113 (36.6%)	
21–25			8 (2.6%)	
26–30			2 (0.6%)	
31–32			1 (0.3%)	
Total			309* (100%)	
<b>Main reason for starting smoking</b>				
Curiosity, interest			172 (55.5%)	
Smoking company			113 (36.5%)	
Imitation of parents/adults			23 (7.4%)	
Stress			1 (0.3%)	
Didn't answer			1 (0.3%)	
Loneliness, lack of friends			0 (0%)	
Fashion, advertising			0 (0%)	
Boredom			0 (0%)	
Total			310 (100%)	

\*One answer was not counted due to a typo in the answer.

tobacco products ever. HTPs were the second most prevalently used on a daily basis. Hookah was the most widely used TNP for occasional usage.

Eighty-six participants (17.0%) were former smokers (i.e. they did not smoke during the previous 6 months prior to participating in the survey and they had smoked more than 100 cigarettes or other tobacco products ever). Only 5 (1%) of all the participants were non-daily smokers who used less than 1 cigarette per day during the previous 6 months and had ever smoked more than 100 cigarettes or other tobacco products. Over half ( $n = 294$ , 58.2%) of all the participants were non-smokers (had never smoked 100 cigarettes or more and had not used any other tobacco products).

Among participants who did not smoke there were significantly more females than males ( $p < 0.001$ ). There was no significant difference among people who smoked daily by sex. Educational levels were higher among participants who had formerly smoked ( $p = 0.049$ ) and had never smoked ( $p < 0.001$ ) than among participants who smoked daily. Participants who had formerly smoked were significantly younger than

participants who did not smoke ( $p = 0.006$ ) or who smoked daily ( $p = 0.004$ ). Income level was significantly different between people who smoked daily compared to people who did not smoke ( $p = 0.022$ ). None of the other factors (number of children, rurality, preserving, or income from, traditional Sámi activities) were associated with smoking prevalence (Table S2).

Two hundred and eleven (41.8%) participants had smoked at least 100 cigarettes (or an equivalent amount of other combustible tobacco products, e.g. pipes, cigars, cigarillos) in their lifetime.

More than half the participants ( $n = 165$ , 53.4%) first tried a TNP between age 11–15, another third ( $n = 113$ , 36.6%) first tried a TNP between age 16–20. For most participants ( $n = 289$ , 93.2%) a cigarette was the first TNP they tried. More than half the participants tried a TNP out of curiosity and interest ( $n = 172$ , 55.5%), and a third ( $n = 113$ , 36.5%) declared a smoking company was the main reason for starting smoking (Table 1).

More than half of the participants who smoked cigarettes daily ( $n = 120$ , 23.8% of all participants), had a medium ( $n = 63$ , 52.5% smoke cigarettes daily) or

**Table 2.** Triggers to smoke, and preferred source of cessation support.

Perceived triggers to smoke by strength on a scale of 1 (strongest) to 4 (weakest) among participants who had ever tried TNPs				
Trigger strength	Spiritual wellbeing	Physical cravings for a smoke	Social triggers to smoke	Emotional or psychological triggers to smoke
1	8 (2.6%)	190 (61.3%)	52 (16.8%)	60 (19.4%)
2	55 (17.7%)	82 (26.5%)	68 (21.9%)	105 (33.9%)
3	142 (45.8%)	28 (9%)	72 (23.2%)	68 (21.9%)
4	105 (33.9%)	10 (3.2%)	118 (38.1%)	77 (24.8%)
Total	310 (100%)	310 (100%)	310 (100%)	310 (100%)
<i>Preferred source of cessation support among participants who smoked*</i>				
Manage on my own				117 (92.9%)
Ask others how they had stopped				26 (20.6%)
Talk to my doctor				10 (7.94%)
Talk to a counsellor/psychologist				4 (3.2%)
Don't know				1 (0.8%)
<b>Total</b>				<b>158</b>
<i>Interest in a mobile application/website that could assist reduction or cessation of tobacco use.</i>				
	<b>All participants (n = 505)</b>		<b>Participants who smoked daily (n = 120)</b>	
<b>Not at all</b>	47 (9.3%)		16 (13.3%)	
<b>Rather not interested</b>	146 (28.9%)		30 (25%)	
<b>Hard to say ("so-so")</b>	101 (20%)		36 (30%)	
<b>Rather interested</b>	151 (29.9%)		29 (24.2%)	
<b>Very interested</b>	60 (11.9%)		9 (7.5%)	

\* Total number of participants was 126 (100%). Participants were allowed to choose several answers. The total number in the table could be more than 126.

high (n = 53, 44.2% smoke cigarettes daily) HSI score while only 4 (3.3%) had a low HIS score. For more than two thirds of participants (n = 190, 77.2%) "physical cravings for a smoke" was the strongest trigger to smoke (Table 2).

Most participants who smoked had low or no intention to quit in the next year (n = 113/126, 89.7%) (Table 3). If participants were to decide to stop smoking almost all (n = 298, 96.1%) selected that they would prefer to stop smoking without any help (Table 2). Very few participants would seek help

to quit from a doctor or a counselor/psychologist (Table 2). None of the participants who had ever tried tobacco products had seen a doctor or other health care professional during the six months prior to the study. There was some interest in using a stop or reduce TNP-use mobile application or a website designed for Sámi people if one existed. Two hundred and eleven (41.8%) out of all the participants and 38 (31.7%) of those participants who smoked cigarettes daily were interested in this (Table 2).

**Table 3.** Perceptions about pack health warnings; and awareness of quit messages in newspapers, magazines or on television.

In the past 30 days, have warning labels on packaging made you think about quitting TNP use?				
Type of product (abs. of product users)*	abs. (%)	No abs. (%)	I don't know abs. (%)	I didn't notice this warning abs. (%)
Cigarettes (n = 126)	3 (2.4%)	54 (42.9%)	0 (0%)	69 (54.8%)
Vaping (n = 3)	0 (0%)	3 (100%)	0 (0%)	0 (0%)
HTPs (n = 16)	0 (0%)	12 (75%)	0 (0%)	4 (25%)
Oral nicotine pouches (n = 1)	0 (0%)	1 (100%)	0 (0%)	0 (0%)
Hookah (n = 55)	0 (0%)	18 (32.7%)	0 (0%)	37 (67.3%)
In the past 30 days, have you noticed information in newspapers or magazines about the dangers of using tobacco products or information encouraging people to quit using tobacco products?				
Type of product (abs. of the study participants n = 505)	Yes	No	Not applicable*	
Cigarettes abs. (%)	31 (6.1%)	64 (12.7%)	410 (81.2%)	
Snus abs. (%)	0 (0%)	95 (18.8%)	410 (81.2%)	
Vaping abs. (%)	1 (0.2%)	94 (18.6%)	410 (81.2%)	
HTPs abs. (%)	1 (0.2%)	94 (18.6%)	410 (81.2%)	
Hookah abs. (%)	1 (0.2%)	94 (18.6%)	410 (81.2%)	
Drugs abs. (%)	7 (1.4%)	88 (17.4%)	410 (81.2%)	
In the past 30 days, have you noticed information on television about the dangers of using tobacco products or information encouraging people to quit using tobacco products?				
Type of product (abs. of users)*	Yes	No	Don't Know	Not applicable**
Cigarettes abs. (%)	202 (40%)	205 (40.6%)	1 (0.2%)	97 (19.2%)
Snus abs. (%)	0 (0%)	407 (80.6%)	1 (0.2%)	97 (19.2%)
Vaping abs. (%)	2 (0.4%)	405 (80.2%)	1 (0.2%)	97 (19.2%)
HTPs abs. (%)	1 (0.2%)	406 (80.4%)	1 (0.2%)	97 (19.2%)
Hookah abs. (%)	1 (0.2%)	406 (80.4%)	1 (0.2%)	97 (19.2%)
Drugs abs. (%)	13 (2.6%)	394 (78.0%)	1 (0.2%)	97 (19.2%)

\*\* Participants did not currently read newspapers or magazines.

\*\*\* Participants did not currently watch TV.



**Table 4.** Intent to quit indicated by perceived likelihood participant would still be using the product they currently use 1 year in the future.

Current TNP used (total number of TNP consumers)*	Almost certainly not abs. (%)**	Probably not abs. (%)**	Probably yes abs. (%)**	Almost certainly yes abs. (%)**
Cigarettes (n = 126)	4 (3.2%)	9 (7.1%)	20 (15.9%)	93 (73.8%)
Vape (n = 3)	0 (0%)	0 (0%)	3 (100%)	0 (0%)
HTPs (n = 16)	0 (0%)	0 (0%)	8 (50%)	8 (50%)
Oral nicotine pouches (n = 1)	0 (0%)	0 (0%)	1 (100%)	0 (0%)
Hookah (n = 55)	0 (0%)	1 (1.8%)	30 (54.5%)	24 (43.6%)
Any type of TNP (n = 201)	4 (2.0%)	10 (5.0%)	62 (30.8%)	125 (62.2%)

\* Total number of the participants was 310 (100%). Total could equal more than 310 as participants were allowed to choose multiple answers.

\*\* Number of users of the TNP.

Regarding what other strategies could help Sámi people to reduce TNP-related harm, seven (1.4% out of all the participants) wrote: actively develop sports, especially among the younger generation; disseminate information about the dangers of smoking, and do so via the Internet; prohibit the sale of, or increase the cost of TNPs; promote a healthy lifestyle and host more activities aimed at promoting a healthy lifestyle, such as, ethnically tailored camps in nature incorporating physical activity.

Among participants who currently used a TNP product, health warning labels on packs were not perceived to have a cessation motivating effect (Table 4). Radio and TV were the most common source of information about the harms of smoking (Table 4).

### Drug consumption

Eighteen (3.6%) participants reported that they irregularly smoked cannabis, or vaped tetrahydrocannabinol or other psychoactive drugs. One hundred and thirty-five (26.7%) participants had tried those substances and drugs during their lifetime but did not currently use them, and 157 (31.1%) of the participants had never tried any drugs.

### COVID-19 impact

Almost no participants reported increased TNP consumption compared to their pre-pandemic level. Only 3 (1%) participants who smoked tobacco and 2 (0.6%) who used hookah, out of those who answered the question on impact of the COVID-19 pandemic on their TNP consumption, reported reduction of TNP consumption compared to pre-pandemic consumption. One hundred and twenty-four (40.0%) participants who smoked tobacco and 49 (15.8%) who used hookah reported no changes. The full data is presented in Table S3.

### Discussion

This study aimed to explore the prevalence of TNP consumption among the Indigenous Sámi people in Russia's Kola peninsula and to identify potential strategies for harm reduction among them. The study provided a unique opportunity to find out more about the demography and lifestyle of the Kola Sámi people. A high response rate was achieved resulting in about 30% of the total Sámi population in Russia taking part in the study [22,23].

Though a majority of participants did not currently smoke, the prevalence of at least occasional TNP use among the participants was 1.3 times higher than among the Russian national average and the rate of at least occasional smoking among the participants was higher than the Russian national average. This result suggests that the Kola Sámi can be counted among the list of other Indigenous Populations who have a disproportionately higher smoking prevalence compared to national averages, as is the case in New Zealand, Australia, Canada and the USA [6].

Prevalence of daily smoking among the study population however was comparable to the national average daily smoking prevalence in Russia [24]. The reason for the similarity in daily smoking might be due to assimilation of the Sámi participants in the Murmansk area who live close to Slavic people [25]. Historically, it had been common for Sámi people to use snuff [26]. Our study did not find that this was still the case. This may also reflect the influence of urbanisation and assimilation. However, snuff usage was likely underestimated due to the question not being added to the questionnaire until almost halfway through data collection.

That educational levels were higher among people who had formerly smoked and had never smoked than among participants who smoked daily is consistent with other studies among the Russian population [27]. Compared to a study conducted in 2005 [13,14], the age of first trying TNPs has risen from 12 years to 15 years. This is now just a bit lower than the average

age of starting smoking among the national Russian population, which is 17 years [24]. Further programmes aimed at preventing uptake of tobacco smoking and increased support for smoking cessation among Sámi peoples could help to reduce this inequity.

Almost all participants who smoked daily had a high or medium HSI and only about 10% of them were thinking of stopping smoking within the next year. Determining the reasons for low intention to stop smoking was not an aim of this study, but this too suggests there is potential for smoking cessation and harm reduction programmes to deliver health benefits for this group.

Almost all participants who had ever used TNPs reported they would prefer to manage stopping smoking on their own when and if they decided to quit. However, relatively little is known about Russian self-quitters' perspectives [28] and experiences of relapse. Programmes that raise awareness of the relative efficacy of different smoking cessation methods could be beneficial. Almost half of the participants reported interest in using a mobile application or website designed to help them reduce consumption or stop smoking. A review of the evidence on use and uptake of web-based therapeutic interventions (WBTI) amongst Indigenous populations in Australia, New Zealand, the USA and Canada found such interventions have promise [29]. Voluntary uptake of WBTI was between 30 and 50%. The review concluded that culturally appropriate evidence-based WBTI have the potential to reduce morbidity across a range of conditions and diseases, can be cost-effective, and can reduce inequalities in access to healthcare services. Reducing inequalities in access to healthcare is highly relevant for Russia due to the immense geographical size of Russia, and the large proportion of people living in remote areas.

During the COVID-19 lockdowns in Russia, tobacco shops that were selling TNPs exclusively were closed because TNPs were not included in the list of the essential goods [30]. However, there were options to buy TNPs in food supermarkets and food shops. This likely partly explains why participants who used TNPs did not report any change in the TNP consumption during that time.

### Limitations

This study has some limitations. The study participants were recruited through the Public Organization of the Murmansk Region "Association of the Kola Sámi" using a snowballing method without randomisation. This may be the reason why most of the participants indicated they were members of the Sámi community

organisations, and this may not represent the rate of membership of other Sámi people in such organisations. Despite this limitation, the recruitment method did not significantly affect the study results due to a large proportion of the Sámi population of Russia being included and high response rate. The questionnaire combined questions from existing validated instruments and some questions designed by the study team, including the Sámi researcher. This was both a weakness and a strength. It was a weakness that not all questions were derived from scientifically validated instruments. But it was a strength to have questions developed that were culturally relevant, especially given the exploratory nature of the study and dearth of pre-existing questionnaires validated for use by and with Sámi peoples.

### Conclusion

This study presents a unique analysis of TNP use amongst the Kola peninsula Sámi population of Russia. Tobacco and nicotine product use was disproportionately higher among the Kola peninsula Sámi than national prevalence rates. Higher smoking prevalence has been found among several other Indigenous Peoples globally [5,6], who share higher economic and social determinants of smoking. Culturally salient smoking cessation and tobacco harm reduction programmes designed in collaboration with the Kola peninsula Sámi population could help to reduce this inequity. A reasonably high level of interest in mobile internet-based interventions provides a rationale for investigating the feasibility of such a strategy if focused on Sámi.

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Neither the authors, nor the Centre of Research Excellence: Indigenous Sovereignty & Smoking, have any commercial interests in vaping, snus, oral nicotine or tobacco products. MG has, over 10 years ago, received fees from pharmaceutical companies for consultancy about cessation medicines.

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## Data availability statement

The data underlying this article cannot be shared publicly due to the ethical responsibility to preserve the privacy of individuals that participated in the study. Individual participants could be identified if the data was made public due to the small number of Kola peninsula Sámi people and that about a third participated in the survey.

## Author contributions

Marewa Glover conceived of the study, secured funding for this project, developed the study design and edited the paper. Alexander Merkin, Sofya Akinfiyeva and Artem Nikolaev developed the study design, conducted literature search, conducted statistical analyses and drafted the paper. Alexander Merkin, Alexander Komarov and Igor Nikiforov supervised data collection and edited the manuscript. Elena Rocheva conducted data collection and edited the manuscript. All authors were involved in the editing of the paper and approved the final draft.

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