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High Smoking Rates and Emerging Alternatives: Nicotine Use Among People Who Use Drugs in Kyrgyzstan

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Abstract

Background. People who use drugs experience substantially higher smoking prevalence and smoking-related morbidity and mortality than the general population but services for drug users rarely address smoking. Although nicotine use is widespread among people who use drugs in Central Asia, evidence of the use of different nicotine products remains limited. Improved understanding of these patterns is essential for developing effective tobacco harm reduction strategies in drug harm reduction services.

Objective. This study assessed the use of multiple nicotine products and examined demographic, regional, and socioeconomic differences in nicotine use among clients of harm reduction services in Kyrgyzstan.

Methods. A cross-sectional survey of clients of two non-governmental organizations providing harm reduction and psychosocial services in Bishkek and Osh. Participants reported use of cigarettes, nasvay (a traditional smokeless tobacco), nicotine vaping products (NVPs), heated tobacco products (HTPs), and snus or nicotine pouches.

Results. Nicotine use was nearly universal, with 98.7% reporting current use of at least one nicotine product and 94.9% using daily. Daily combustible tobacco smoking predominated (79.4%), with minimal gender differences. Nasvay was the second most commonly used product, with 18.4% reporting daily use, particularly among men and respondents in Osh. Use of NVPs and HTPs was comparatively low (5.2% and 2.9% daily, respectively), while snus and nicotine pouches were not used and largely unknown. Women, younger clients and those in higher-income groups were more likely to use NVPs and HTPs, whereas daily smoking remained almost universal among older and lower-income respondents.

Conclusions. Combustible tobacco use is deeply entrenched among clients of harm reduction services in Kyrgyzstan, with nasvay playing an important secondary role. Emerging use of novel nicotine products among younger, female, and higher-income groups highlights potential harm reduction opportunities. Integrating tobacco harm reduction into drug harm reduction services is low cost, relatively easy to implement, and with potential to reduce smoking in this population.

Background

Tobacco smoking and psychoactive substance use frequently co-occur, posing a dual burden for individual and public health. Globally, people who use drugs (PWUD) are more likely than the general population to smoke tobacco daily and to experience higher rates of smoking-related morbidity and mortality. Rates are high for people in treatment for drug problems. A systematic review of 54 studies, covering over 37,000 people from 20 countries across six continents, found that smoking rates among people in contact with drug treatment services were consistently two to four times higher than in the general population; the average smoking rate for people receiving opiate maintenance therapy was 85% [1]. Individuals using methamphetamine during methadone maintenance treatment exhibit notably high levels of nicotine dependence, highlighting the clinical relevance of concurrent stimulant and tobacco

use [2]. Those with substance use disorders exhibit substantially higher smoking rates and greater difficulty achieving cessation compared to the general population [3].

Many reviews indicate the co-occurrence of smoking and drug use in different drug using populations. A recent systematic review and meta-analysis found that cannabis and nicotine use show a robust bidirectional association, suggesting intertwined behavioral and neurobiological pathways [4]. Among adolescents with substance use disorders, tobacco smoking is highly prevalent and closely linked to greater psychiatric comorbidity [5]. Epidemiological evidence shows that nicotine dependence frequently co-occurs with other substance use disorders, reflecting shared vulnerability factors [6]. Co-occurrence of smoking and other drug use is also found in national population surveys – an analysis of US population data from 2016 to 2019 indicated that nicotine dependence among adult smokers remains widespread and is strongly associated with concurrent use of other psychoactive substances [7].

People in treatment for drug problems also have high levels of tobacco related mortality. A US study found that the general population tobacco-related death rate was 30.7%, but 53.6% for people receiving treatment for substance use problems [8]. People in drug treatment were more likely to die from a tobacco-related cause at a younger age than the rest of the population. A recent study of mortality data (2000–2018) for over 100,000 people who used heroin in England showed 63% died before the age of 70, compared to 16% of the general population. Almost similar deaths were due to tobacco smoking and illicit drugs: each accounted for approximately one quarter of premature deaths among people who use heroin. Illicit drugs caused 28% of these deaths – but smoking accounted for 24%.

Despite the high levels of smoking tobacco and related morbidity and mortality, smoking often remains a neglected aspect of drug treatment and harm reduction services, which traditionally focus on illicit drugs, HIV, and other health risks. Most drug treatment and harm reduction services do not incorporate smoking cessation in their treatment programmes [9–11].

The Central Asian region, comprising Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, is situated along the northern drug traffic route for Afghan heroin destined for Russia. [12, 13]. Following the collapse of the Soviet Union, heroin trade routes moved through the region, coinciding with increasing opium production in Afghanistan, the world's largest producer of opium [14–16]. Countries such as Tajikistan, which share a long border with Afghanistan, serve as major transit hubs for Afghan opium [16, 17]. This results in the high availability and affordability of opiates in central Asia [18]. Heroin is the most commonly injected drug in the region [15].

Regional drug markets have recently shifted away from traditional opioids towards new psychoactive substances (NPS) [12, 19]. The appearance of NPS, primarily synthetic cathinones and synthetic cannabinoids (often called 'salts') is a trend across Eurasia. In Kazakhstan, NPS appeared earlier than in many neighboring countries due to its borders with China and Russia, which manufacture a large proportion of these substances [20]. The increased injection of stimulants like "salts" presents a growing challenge for HIV prevention, as these substances can increase injection frequency and sexual risk behaviors [19].

Smoking tobacco is found in 17.4% of the adult population of Kyrgyzstan, with higher rates for men (32.8%) than for women (2.9%) [21]. In Central Asian countries, using nasvay is also common. Nasvay is typically a mixture of tobacco, caustic lime, and ash [18]. Synthetic cannabinoids are commonly mixed with tobacco or other herbal mixtures and then smoked [20].

In Central Asia, particularly in Kyrgyzstan, community-based organizations play an important role in addressing the complex needs of PWUD. The “Public Fund Attika” is one such organization, founded by people who use drugs. Operating in Bishkek and Osh (the two largest population centers), including the surrounding Chüy and Osh regions, Attika reaches approximately 2,000 clients annually with medical and harm reduction services including opioid agonist treatment, counselling on safer substance use, HIV testing, provision of sterile needles and syringes, outreach, judicial consultations and social reintegration support. Clients include people using a wide range of drugs, including those on opioid agonist treatment and young users of new psychoactive substances; people living with HIV, TB or hepatitis; and people released from prison.

Support for smoking cessation is not currently offered as part of the range of services available.

Understanding how smoking and other substance use intersect within this community-based setting is essential for designing more effective harm reduction interventions. While international studies indicate varying patterns of co-use between tobacco and other psychoactive substances, such evidence is scarce for Kyrgyzstan and the broader region. This gap limits the capacity of local NGOs to tailor their services to the full spectrum of health risks faced by their clients.

The study objective was to identify the prevalence of smoking and the use of other nicotine products, including local nasvay, among people who use drugs and receive harm reduction services in Kyrgyzstan.

The study was a collaboration between researchers at Knowledge-Action-Change, a private sector public health agency, and Public Fund Attika.

Methods

Study Population and Sampling

The target population comprised drug users who received NGO-based harm reduction services in Kyrgyzstan's two largest regions: Bishkek and Osh, including the surrounding Chüy and Osh regions. This population was selected due to high rates of tobacco use and unique compounded barriers, such as stigma, addiction, and socioeconomic challenges. Given the wide range of contacts between clients and the service, with some enrolled in treatment programmes and others having more client driven and occasional contact with the service, it wasn’t possible to derive a random sample of the client population. Instead, an opportunistic sampling strategy was adopted, with a later comparison with agency statistics to identify potential bias and to weight the achieved sample to approximate the agency client profile.

Recruitment was undertaken by Attika. Potential participants were identified via routine outreach and service activities at Attika's service locations. NGO staff informed eligible individuals about the research project during their regular visits to the centers or through outreach in the community. Individuals were provided with an explanation of the study's purpose, procedures, voluntary nature, confidentiality protections, and their right to decline or withdraw without consequence to the services they receive.

The research protocol was submitted to and ethics approval for the study was provided by the Committee on Bioethics under the Global Research Institute in the Kyrgyz Republic.

A team of eight trained male and female interviewers was recruited from the agency outreach and peer education team who were familiar with the clients. As part of their regular work, they had an established rapport and working knowledge of many individuals accessing harm reduction services. To encourage participation and acknowledge their time, motivational packages valued at no more than 10 USD per participant were distributed, managed by Attika to ensure cultural appropriateness and adherence to national legislation. The interviewers were trained in the use of Computer-Assisted Personal Interviewing and provided with computer devices.

To prevent duplicate participation, interviewers used temporary participant identifiers (e.g., first name, nickname) during fieldwork which were deleted after data collection prior to analysis.

Data Collection Instrument and Administration

Quantitative data were collected using a structured questionnaire adapted from the WHO Global Adult Tobacco Survey (GATS) and further modified to include specific sections relevant to drug use and newer alternative safer nicotine products [22]. Existing validated instruments, such as the Smoking knowledge, Attitudes and Services survey (S-KAS), were adapted to suit the study population, with a pre-survey focus group conducted to refine the instrument for relevance to the target population [23].

Fieldwork commenced in March 2025 and continued through April 2025. During fieldwork the research team outside Kyrgyzstan remotely monitored interviewer performance and potential data anomalies.

Descriptive statistics, mean comparisons, and bivariate correlations were calculated to compare distributions. All analyses were conducted using R software [24].

Results

Demographic characteristics of the study sample

A total of 350 individuals were recruited. We also obtained information on the population of NGO clients (1199) to enable comparison with the study sample and apply appropriate weightings.

The respondent sample is broadly similar to the NGO client population (Table 1) but displays recognizable demographic biases. The sample includes proportionally more men and more individuals

aged 28–40 than the client base, accompanied by slight underrepresentation of the youngest and oldest clients. These differences suggest that, while the sample is not fully demographically representative, it retains sufficient alignment with the client population to permit cautious generalization. All calculations and analyses take this deviation into account and compensate for it using the post-stratification weight applied.

Table 1
Demographic characteristics of the study sample, unweighted and weighted.

	Population (NGOs clients)		**Sample Unweighted**		**Sample Weighted**	
	N	**%**	**N**	**%**	**N**	**%**
Men	857	71.5	222	63.4	249	71.3
Women	342	28.5	128	36.6	101	28.7
Total	**1199**	**100**	**350**	**100**	**350**	**100**
16–27	262	21.9	68	19.4	76	21.8
28–34	268	22.4	89	25.4	79	22.6
35–40	208	17.3	85	24.3	61	17.3
41–46	231	19.3	52	14.9	67	19.2
47–76	230	19.2	56	16	67	19.1
Sum	**1199**	**100**	**350**	**100**	**350**	**100**

Characteristics of substance use

The frequency of psychoactive substance use was assessed within the past three months. Respondents could choose how often they used each substance (never, once or twice, monthly, weekly, daily or almost daily).

Analysis of Substance Use Frequency

There was a wide range of substance use, reflecting the diverse clientele of the NGO (Table 2). Alcoholic beverages were consumed by many (75.6%) with weekly use being the most common (25.9%), followed closely by monthly (22.2%) and once or twice use (22.3%). Cannabis use was also common at 71.9%. Opioids were used by 56.1% with a high proportion of individuals reporting daily or almost daily use (39.2%), making it the most common use frequency for this substance.

GABA-pentinoids and synthetic cathinones were used by 22.2% and 40.9%. Use of sedatives or sleeping pills was relatively uncommon, with 74.2% of the sample reporting never using them.

Several substances were used very infrequently within the past three months. Amphetamine-type stimulants were never used by the vast majority of participants (81.9%), with only small percentages reporting use at any frequency. Similarly, hallucinogens were reported as never used by 93.1% of the sample, and cocaine by an even higher 97.0%. These particular substances were rare among the studied population.

Table 2. Frequency of substance use within the past three months

	GABA-pentinoids	**Synthethic cathinones**	**Alcoholic beverages**	**Cannabis**	**Cocaine**
Current use:	**78 (22.2%)**	**143 (40.9%)**	**265 (75.6%)**	**252 (71.9%)**	**9 (2.7%)**
Once or twice	39 (11.1%)	56 (16%)	78 (22.3%)	67 (19.1%)	8 (2.3%)
Monthly	17 (4.9%)	38 (10.8%)	78 (22.2%)	27 (7.7%)	2 (0.4%)
Weekly	14 (4.1%)	34 (9.8%)	91 (25.9%)	63 (18%)	0 (0%)
Daily or almost daily	7 (2.1%)	15 (4.4%)	18 (5.2%)	95 (27.1%)	0 (0%)
Never	**267 (76.2%)**	**205 (58.6%)**	**84 (24.1%)**	**97 (27.8%)**	**340 (97.0%)**
DK/RF*	5 (1.6%)	2 (0.5%)	1 (0.3%)	1 (0.3%)	1 (0.3%)

	Amphetamine-type stimulants	**Sedatives or sleeping pills**	**Hallucinogens**	**Opioids**
Current use:	**60 (17.0%)**	**88 (25.0%)**	**23 (6.6%)**	**196 (56.1%)**
Once or twice	48 (13.8%)	50 (14.3%)	23 (6.6%)	36 (10.4%)
Monthly	3 (0.9%)	13 (3.7%)	0 (0%)	10 (2.8%)
Weekly	7 (1.9%)	20 (5.8%)	0 (0%)	13 (3.6%)
Daily or almost daily	1 (0.4%)	4 (1.3%)	0 (0%)	137 (39.2%)
Never	**287 (81.9%)**	**260 (74.2%)**	**326 (93.1%)**	**153 (43.7%)**
DK/RF*	4 (1.1%)	3 (0.8%)	1 (0.3%)	1 (0.3%)

* DK/RF – Don’t know/ refused

Prevalence and patterns of nicotine product use

Overall prevalence of nicotine products

Overall, 98.7% were currently using some kind of nicotine product (current use is any use in the previous three months). Not using nicotine was extremely rare, with only 1.3% not reporting using nicotine.

Combustible tobacco smoking was the dominant form of nicotine use (Figure 1). More than three-quarters (79.4%, 80.1% of men and 77.6% of women) reported daily smoking, with an additional 11.2% (11.5% of men and 10.5% of women) smoking less than daily. Overall, 90.6% currently smoked. Comparatively, the WHO estimates that 17.4% of the total adult population of Kyrgyzstan currently smokes [21].

The use of other nicotine products was markedly lower. Nasvay was the second most prevalent nicotine product: 18.4% daily, and 12.1% less than daily. Use of alternative nicotine products was rare. Nicotine vaping products (NVPs) were used daily by just 5.2% of respondents and less than daily by 9.9%. Heated tobacco products (HTPs) were used daily by 2.9% and 3.4% less than daily. Notably, 3% of respondents had never heard of vaping products and nearly 9% had never heard of HTPs, suggesting limited awareness or availability in some areas. Snus and nicotine pouches showed no reported use and over 60% had never heard of them.

Current use of nicotine products and income

Smoking is the most prevalent form of nicotine use, at 90.6% current use and 50% were exclusive smokers (Table 3). The prevalence of exclusive smoking is higher in the lowest income quintile (Q1) at 64.0% compared to the highest income quintile (Q5) at 50.7%. In contrast, the current use of vapes and HTPs is more prevalent in the highest income quintile (Q5). Exclusive vape use is 4.2% in Q5, compared to 0% in Q1. Similarly, exclusive HTP use is 1.6% in Q5, and 0% in Q1. This indicates that safer nicotine products are more likely to be used by individuals in higher income brackets, while traditional smoking is more common among those with lower incomes. Nasvay use shows a similar pattern to smoking, with a higher prevalence in Q1 (8.4%) than in Q5 (4.7%).

Poly nicotine use - the use of multiple nicotine products – was also common. The combination of smoking and nasvay is particularly prevalent in the total sample (24.2%), with a higher percentage in Q1 (15.5%) than in Q5 (13.6%), though the difference is not as pronounced as with single-product use. Conversely, the use of combinations including vapes and HTPs is more common in the highest income quintile. The combination of smoking and vapes is more prevalent in Q5 (12.8%) than in Q1 (9.1%). A more striking difference is seen with smoking and HTPs, where the prevalence is 6% in Q5 but 0% in Q1. This further supports the finding that newer nicotine products, whether used alone or in combination with traditional smoking, are concentrated in the higher income brackets of this population. The

combination of all four products and smoking with nasvay and HTP are not present in either the lowest or highest income quintiles but have a minimal presence in the overall sample. Finally, a negligible percentage of the total sample (1.3%) reported not using any nicotine products, with a higher proportion in the highest income quintile (6.4%) than in the lowest (0%).

Table 3. Prevalence of current use of nicotine products by income (1st vs 5th quintile).

Products	Q1	Q5	Total
Smoking	36 (64.0%)	22 (50.7%)	175 (50.0%)
Nasvay	5 (8.4%)	2 (4.7%)	14 (4.0%)
Vapes	0	2 (4.2%)	12 (3.5%)
HTP	0	1 (1.6%)	3 (0.8%)
Smoking & Nasvay	9 (15.5%)	6 (13.6%)	85 (24.2%)
Smoking & Vapes	5 (9.1%)	5 (12.8%)	34 (9.7%)
Smoking & Nasvay & Vapes	2 (3.0%)	0	3 (0.9%)
Smoking & HTP	0	3 (6.0%)	15 (4.1%)
Smoking & Nasvay & HTP	0	0	2 (0.4%)
Smoking & Nasvay & Vapes & HTP	0	0	3 (0.9%)
Do not use nicotine products	0	3 (6.4%)	5 (1.3%)

Daily use of nicotine products

Exclusive smoking is the most common form of daily nicotine consumption at 68.5% (Table 4). This is more prevalent in the lowest income quintile (Q1) at 82.5%, compared to the highest income quintile (Q5) at 68%. This reinforces the finding that daily cigarette smoking is strongly associated with lower income. The daily use of newer products like vapes and HTPs shows a different pattern. Exclusive day vape use is higher in the Q5 group (5.7%) than in the Q1 group (1.2%). Similarly, exclusive daily HTP use is present only in the Q5 group (1.6%) and not in Q1. This suggests that daily use of newer nicotine devices is concentrated among higher-income individuals. Exclusive daily nasvay use is also more common in Q1 (11.0%) than in Q5 (6.2%), aligning with the pattern observed for traditional smoking.

The data on daily poly-use further highlight the income-based differences. The combination of smoking and nasvay is more common in the lowest income quintile (5.3%) and is not present in the highest quintile. In contrast, the combination of smoking and HTPs is exclusively seen in the highest income quintile (6.0%) and is absent in the lowest. Daily use of the combination of smoking and vapes is very low overall (0.9%), and non-existent in either Q1 or Q5. Finally, the percentage of individuals who do not

use any nicotine products daily is significantly higher in the highest income quintile (12.5%) compared to the lowest (0%), indicating a stronger tendency towards abstinence in higher-income brackets.

Table 4. Prevalence of daily use of nicotine products by income (1st vs 5th quintile)

Products	Q1	Q5	Total
Smoking only	47 (82.5%)	29 (68.0%)	240 (68.5%)
Smoking & Nasvay	3 (5.3%)	0	29 (8.3%)
Smoking & Vapes	0	0	3 (0.8%)
Smoking & HTP	0	3 (6.0%)	5 (1.4%)
Nasvay only	6 (11.0%)	3 (6.2%)	35 (10.0%)
Vapes only	1 (1.2%)	2 (5.7%)	15 (4.3%)
HTP only	0	1 (1.6%)	5 (1.5%)
Do not daily use nicotine products	0	5 (12.5%)	18 (5.1%)

Gender differences

Gender-specific prevalence showed marked differences in product choice (Table 5). Men were more likely to smoke daily (80.1% vs. 76.8% of women) and far more likely to use nasvay daily (25.6% vs. 0.5%). Both men and women had much higher rates of smoking than the general population. WHO estimates that 32.8% of adult men and 2.9% of women in Kyrgyzstan currently smoke.

Women reported higher daily use of vaping products (11.3% vs. 2.7%) and HTPs (5.4% vs. 1.9%). This suggests possible gendered patterns in the adoption of newer nicotine products, with women more inclined toward vaping and heated products and men maintaining traditional forms like nasvay.

Table 5. Prevalence of daily use of nicotine products by gender.

Product	**Men**	**Women**
Smoking	200 (80.1%)	77 (76.8%)
Nasvay	64 (25.6%)	0 (0.5%)
NVP	7 (2.7%)	11 (11.3%)
HTP	5 (1.9%)	5 (5.4%)

Age differences

Smoking tobacco is highly prevalent across all age groups, with particularly high rates observed among older clients (Table 6). The highest prevalence was recorded in the 35-44 age group (89.8%), followed closely by the 45-54 group (89.2%). Younger clients, specifically the 18-24 age group, also exhibited a high smoking prevalence of 83.0%. The lowest prevalence, though still substantial, was found in the 25-34 age group (63.1%). These findings suggest that cigarette smoking is widespread across this population, with a slight decrease in the youngest group.

Nasvay use shows a different age-related pattern, with the highest prevalence of nasvay use found among the oldest clients (55-59 age group) at 29.2%, indicating that this form of nicotine use may be more common in older generations. A similar trend is observed in the 45-54 age group (24.8%). In contrast, the prevalence was lower among younger clients, with the 18-24 age group showing the lowest rate at 11.4%. This suggests that nasvay use is less common among younger clients in this demographic.

The use of newer nicotine products is concentrated almost exclusively among younger clients. NVP prevalence was highest in the 25-34 age group (11.0%) and the 18-24 age group (9.0%). The prevalence of NVP use drops significantly with age, becoming negligible or nonexistent in the 45-54 and 55-59 age groups. Similarly, HTP use is most prevalent in the 18-24 age group (10.2%) and the 25-34 age group (3.9%). Like NVPs, HTP use is extremely low or absent in older age brackets. This pattern suggests that these newer nicotine products are primarily adopted by younger individuals within this client population, while older clients continue to rely on traditional forms of tobacco.

Table 6 Prevalence of daily use of nicotine products by age.

Product	18-24	25-34	35-44	45-54	55-59
Smoking	25 (83.0%)	79 (63.1%)	93 (89.8%)	68 (89.2%)	13 (80.5%)
Nasvay	3 (11.4%)	23 (18.0%)	15 (14.5%)	19 (24.8%)	5 (29.2%)
NVP	3 (9.0%)	14 (11.0%)	2 (1.5%)	0 (0.0%)	0 (0.0%)
HTP	3 (10.2%)	5 (3.9%)	1 (1.2%)	1 (1.2%)	0 (0.0%)

Regional differences

Regional comparisons showed only modest variation (Table 7): daily smoking was slightly more prevalent in Osh (80.8%) than in Bishkek and Chüy (78.3%). Nasvay use showed clearer regional divergence: daily use was more prevalent in Osh (24.8%) than in Bishkek and Chüy (15.0%), consistent with its greater popularity in southern Kyrgyzstan. Daily vaping and HTP use were slightly higher in Bishkek and Chüy (NVP: 4.3%, HTP: 3.8%) than in Osh (NVP: 6.8%, HTP: 1.3%), suggesting that newer nicotine products may be more accessible or acceptable in the capital and northern regions.

Table 7. Regional differences in prevalence of daily nicotine products use.

Product	Bishkek and Chüy	Osh
Smoking	180 (78.3%)	97 (80.8%)
Nasvay	35 (15.0%)	30 (24.8%)
NVP	10 (4.3%)	8 (6.8%)
HTP	9 (3.8%)	2 (1.3%)

Smoking-related support in harm reduction settings

Reported exposure to smoking-related advice and cessation support was limited across the study population. Approximately one-third of participants reported having been informed about the health risks of smoking (34.5%) and advised to quit tobacco use (30.9%), while a similar proportion indicated that they had been encouraged to reduce smoking if quitting was not possible (34.1%). Awareness of the harms of smokeless tobacco was somewhat higher (45.0%), whereas fewer participants reported having received information on second-hand smoke (18.2%).

In contrast, the provision of structured cessation support was rare. Only 3.2% of participants reported having been offered personal assistance to quit smoking or smokeless tobacco use, and less than 1% (0.7%) reported having made a follow-up appointment to discuss cessation. Similarly, encouragement to use evidence-based pharmacological support was minimal, with only 2.0% reporting being advised to use nicotine replacement therapy (NRT).

Encouragement to switch to alternative nicotine products was reported more frequently than formal cessation support, although still at relatively low levels. Around 14% of participants reported being encouraged to switch to heated tobacco products (14.3%) or e-cigarettes (13.9%), while recommendations to use snus (0.3%) or nicotine pouches (0.0%) were negligible.

Table 8. The level of support for smoking cessation among the study population.

Affirmative responses	N (%)
I have been told about the hazards of smoking	109 (34.5%)
I have been told about the hazards of second-hand smoke	60 (18.2%)
I have been told about the hazards of using smokeless tobacco	48 (45.0%)
I was advised to quit smoking/smokeless tobacco	102 (30.9%)
I was offered personal help to quit smoking/smokeless tobacco	11 (3.2%)
I made a follow-up appointment to discuss quitting smoking/smokeless tobacco	2 (0.7%)
I was encouraged to cut down on smoking/smokeless tobacco if I am unable to quit completely	113 (34.1%)
I was encouraged to use NRT	7 (2.0%)
I was encouraged to switch to e-cigarettes	46 (13.9%)
I was encouraged to switch to heated tobacco products	47 (14.3%)
I was encouraged to switch to snus	1 (0.3%)
I was encouraged to switch to nicotine pouches	0 (0.0%)

These findings are consistent with previous studies indicating that tobacco use is often deprioritized within harm reduction and drug treatment settings, where clinical attention is typically focused on illicit drug use, infectious disease prevention, and overdose risk [1,25,26].

Discussion

This study provides a detailed overview of nicotine use among people who use drugs in Kyrgyzstan, drawing on survey data from clients of two harm reduction services. Nicotine use was nearly universal, with 98.7% reporting current use of at least one nicotine product and 94.9% using a nicotine product daily. Daily cigarette smoking was overwhelmingly prevalent, with nearly 79.4% of respondents reporting daily smoking with minimal gender differences. Smoking rates for men were nearly three times higher than the national adult population rate of 32.8%. Smoking rates for women (77.6%) were 27 times the national adult population rate (2.9%). These high levels of smoking underscore the potential severe burden of smoking-related harm among people who use drugs.

Nasvay, a traditional form of smokeless tobacco, was the second most commonly used product, with 18.4% reporting daily use, particularly among men and respondents in Osh. Its use appears to be shaped by cultural and regional factors, as well as gender norms, with virtually no use among women.

These findings highlight a dominant reliance on combustible tobacco smoking among people who use drugs in Kyrgyzstan, with nasvay as a culturally embedded secondary product. Newer nicotine delivery systems such as vapes and heated tobacco have very limited uptake. Use of NVPs and HTPs was comparatively low (5.2% and 2.9% daily, respectively), while snus and nicotine pouches were not used and largely unknown. Women reported higher daily use of NVPs and HTPs than men. Younger participants and those in higher-income groups were more likely to use NVPs and HTPs. This indicates that while new nicotine products are not yet widespread, certain subgroups may be more receptive to alternatives to combustible tobacco. The limited awareness of snus and nicotine pouches further indicates that market availability and cultural familiarity likely play a significant role in shaping product choices.

From a harm reduction perspective, interventions aiming to reduce health risks associated with combustible tobacco could consider promoting safer nicotine alternatives, particularly for younger and higher-income groups already experimenting with them. However, for older and lower-income users, efforts may need to address entrenched smoking patterns and the cultural significance of nasvay to be effective.

The results highlight a critical gap in harm reduction services with respect to tobacco dependence. Within the study population, only a minority of participants reported receiving any smoking-related support: approximately one-third had ever been advised about the health risks of smoking, a similar proportion had been encouraged to quit, while very few had been offered concrete cessation assistance, such as behavioral support or nicotine replacement therapy. This limited engagement reflects the operational realities of the services from which participants were recruited, where smoking cessation is not systematically integrated into routine harm reduction provision.

These findings are consistent with broader evidence indicating that tobacco use is often not prioritised within drug treatment and harm reduction settings, where clinical and programmatic attention is typically directed toward illicit drug use, infectious disease prevention, and overdose risk. Addiction services do not systematically offer smoking cessation counselling or pharmacotherapy, and people with substance use disorders have lower access to cessation support than the general population [3, 7] reflecting structural, cultural, and training-related barriers within treatment systems [1, 25, 26]. Historically, smoking has been perceived by both providers and clients as a lower-priority concern compared with illicit drug use, infectious disease prevention, or overdose risk, resulting in limited routine assessment and treatment of nicotine dependence. As a result, smoking is often viewed as a secondary or less urgent concern, leading to missed opportunities for intervention despite the substantial burden of tobacco-related morbidity among people who use drugs. Together, these structural and service-level factors underscore the need to more fully integrate tobacco harm reduction and cessation support into comprehensive substance use services. Integrating tobacco harm reductio is low cost, relatively easy to implement, and with potential to reduce client morbidity and mortality [27, 28].

These patterns highlight the importance of understanding tobacco use within the broader context of harm reduction services for people who use drugs. The high rate of daily smoking suggests an urgent need for integrated interventions that address tobacco dependence alongside other substance use. Alternative nicotine products could potentially contribute to reducing the harms of smoking in this population, are consistent with harm reduction strategies, but awareness and uptake remain low, particularly for products such as snus and nicotine pouches, which were unfamiliar to most respondents.

Given these findings, targeted tobacco harm reduction strategies should be considered for integration with existing harm reduction services. Such approaches could include providing evidence-based information on the relative risks of different nicotine products, ensuring access to safer alternatives, and integrating smoking cessation support within harm reduction and psychosocial services [27, 28]. Furthermore, interventions should be sensitive to local cultural practices, such as Nasvay use, and consider the role of gender, age, and socioeconomic factors in shaping nicotine use patterns.

Limitations

This study has several limitations. First, the sample was drawn exclusively from clients of two services and is not representative of all people who use drugs in Kyrgyzstan. Individuals who engage with community-based services may differ systematically from PWUD who are not in contact with NGOs, including in socioeconomic status, patterns of substance use, and access to health information. Although post-stratification weights were applied to align the sample with available service demographic distributions, residual selection bias cannot be ruled out.

Second, some categories of substances and nicotine products, such as NVPs, HTPs, and snus, had very low prevalence, limiting the statistical precision of subgroup estimates and the ability to detect meaningful associations.

Finally, the survey instrument, while adapted from validated tools such as GATS and the S-KAS, was modified to suit the local context. Despite pre-testing, some constructs, particularly those relating to knowledge, attitudes, and perceptions of newer nicotine products, may not fully capture the nuanced understanding of these items within this population.

Conclusion

This study shows that nicotine use, particularly cigarette smoking, is pervasive among people who use drugs in Kyrgyzstan and far exceeds national prevalence. Nasvay remains culturally embedded, while the adoption of NVPs and HTPs is limited and concentrated among specific demographic groups. These findings highlight a critical gap in harm reduction services: tobacco-related risks are widespread but largely unaddressed. Integrating smoking cessation support and tobacco harm reduction into existing programs represents a significant opportunity to reduce preventable harms in this population.

Declarations

Ethics approval and consent to participate

Ethics permission for the study was granted by the Committee on Bioethics under the Global Research Institute in the Kyrgyz Republic (Ref #: GLORI-IRB-110032025-1, 12 March 2025). The study maintained participant anonymity, as respondents could not be identified during any stage of the survey. Interviewers used fictitious identifiers that were not linked to questionnaire data and were deleted post-collection. Participation was voluntary, with participants informed of their right to withdraw at any time, and confidentiality was asserted. Personal data collected during the research was kept entirely separate from incentive distribution records to ensure no linkage between research data and incentive receipt. The online survey platform used encrypted connections, and all collected data were securely stored on servers located in Poland. Access to raw data was restricted to the core research team.

Consent for publication

Not applicable

Availability of data and materials

The raw data set, documentation, and questionnaire have been deposited in the Polish Social Data Archive and are publicly available under a CC BY-SA Creative Commons Attribution - ShareAlike 4.0 license.

Patterns of nicotine use and barriers to tobacco harm reduction among drug users receiving NGO-based services in Kyrgyzstan [dataset]. Jerzyński, Tomasz, ISS UW, KAC [producer], Mzhavanadze, Giorgi, KAC [producer], Pikirenia, Tatsiana, KAC [producer], Kyrgyzstan (Bishkek and Osh), 2025. PADS25003. Polish Social Data Archive (PADS) [distributor], Social Data Repository (RDS) [publisher], 2025. https://doi.org/10.60894/EBFU2H

Competing interests

This study was conducted as part of the authors' collaboration with Knowledge-Action-Change. Authors declare no other financial or non-financial competing interests in the past 36 months.

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Authors' contributions

TJ: Conceptualization; Methodology; Formal analysis; Data curation; Software; Validation; Visualization; Writing – original draft; Writing – review & editing.

GM: Conceptualization; Investigation; Writing – review & editing.

TP: Project administration; Conceptualization; Investigation; Writing – review & editing.

GS: Conceptualization; Supervision; Writing – review & editing.

SB: Local implementation; Resources, Investigation.

All authors reviewed and approved the final manuscript.

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Use of AI-Assisted Technologies

The authors used AI-assisted tools at an early stage of the research process to support exploratory searches for publicly available information. No AI system was used in data collection, data analysis, interpretation of results, or writing of the manuscript. All content, analyses, and conclusions are the sole responsibility of the authors.

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Figures

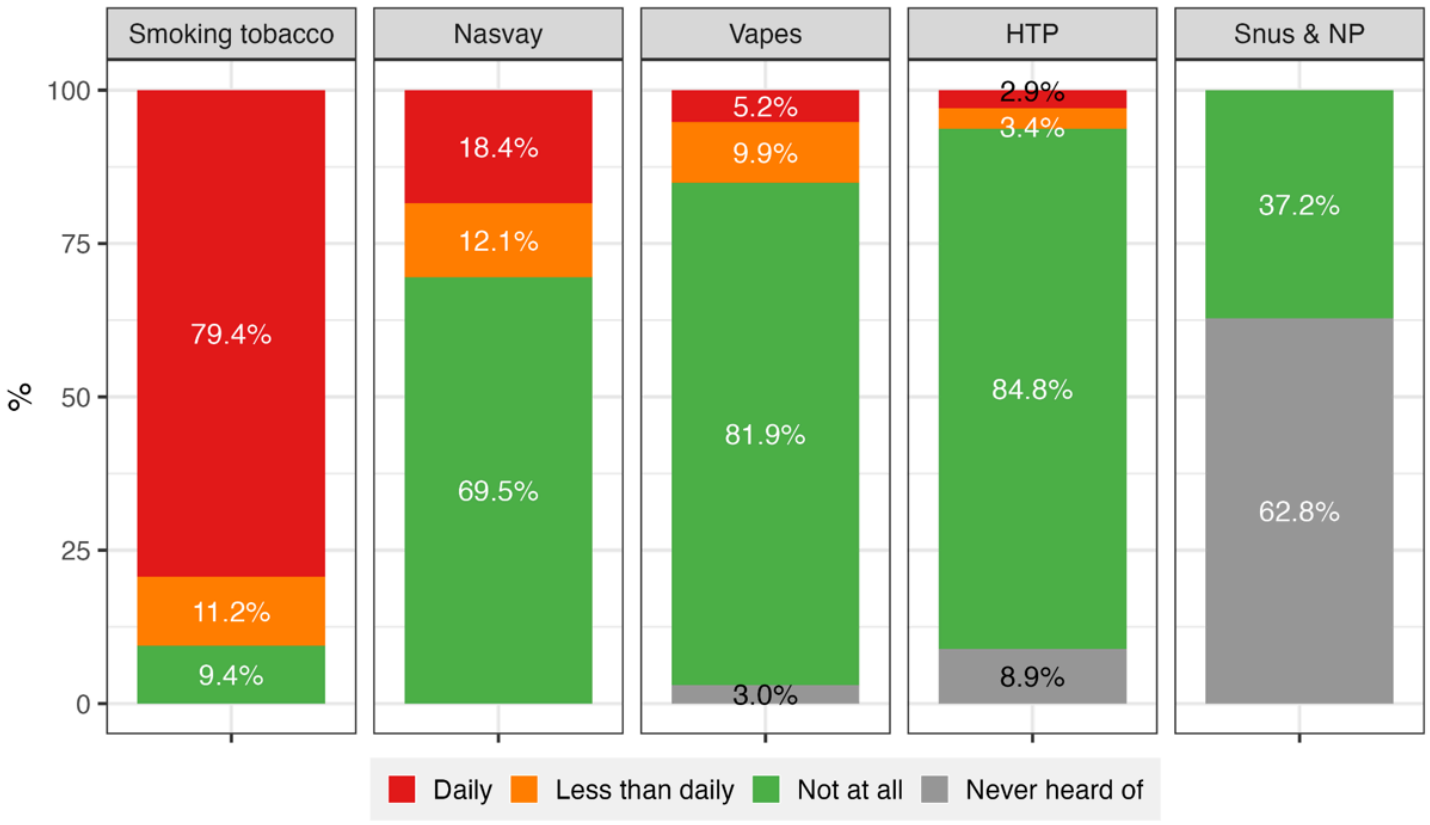


Figure 1

Prevalence of use and awareness of different nicotine products.

Supplementary Files

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