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ORIGINAL ARTICLE

Attitudes towards the use of nicotine products among vocational school students in Finland

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Abstract

Background Young people's use of nicotine products is a global challenge, and it is changing over time. Young people in Finnish vocational education smoke cigarettes more often and rate their health more poorly than other upper-secondary students. The data for this study was collected in November 2020. The study aimed to investigate behaviours, attitudes and opinions about nicotine products among 15–28-year-old Finnish vocational students.

Methods An electronic questionnaire survey was distributed to and collected from 449 students. The survey data was analysed with SPSS which categorised the participants into nicotine product non-users and users. A factor analysis was done, and the result was a six-factor model with six themes.

Results Non-users and users had similar attitudes and impressions towards nicotine product. However, non-users disagreed more with the theme "social norms and feelings of pleasure from nicotine products" than the users ($p < 0.001$). The non-users disagreed more often with the theme of the nicotine appearance of nicotine products than the users did ($p < 0.001$). As regards the theme "use of nicotine products impacts appearance" the users strongly disagreed more often with this theme than non-users ($p < 0.001$). Most participants in both groups considered non-smoking fashionable.

Conclusion Our findings suggest that understanding young people's behaviour and attitudes towards nicotine products is important for protecting young people's health. The connections between young people's attitudes, their use or non-use of nicotine products, and everyday life trends are complex and time-bound. More research using multiple methods is needed to clarify the phenomenon.

Keywords Young people · Vocational students · Attitude · Nicotine product · Survey

Introduction

The use of nicotine products is a global challenge among young people (World Health Organization 2023; World Health Organization 2024). Young people's use of nicotine products is linked to many factors, such as education level, family and friends (Helenius and Kivimäki 2023). In the year 2021 two-thirds (67.2%) of young people studying in Finnish vocational schools had, at least once, used some nicotine product or e-cigarettes (THL 2021). Another important factor contributing to substance use among young people is the use of nicotine products by family members and peers. This has a strong impact on their health behaviour. It appears that smoking is more common among young people when their parents (Mendel et al. 2012), siblings or peers smoke (Aho et al. 2019; Murnaghan et al. 2009). Family members and health professionals are also thought to be the most credible information sources for health problems among young

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people. Cognitive authorities are likely to influence their opinions (Känsäkoski et al. 2021). Authorities like teachers are known to affect students' smoking behaviour. If students attend a school where teachers smoke together with the students, the students are more likely to smoke (Andersen et al. 2019).

It is known that young people's health and health behaviours affect health in their adulthood (Chen et al. 2006; Elgar et al. 2015; Ilmakunnas et al. 2015; Känsäkoski et al. 2021; Marttunen and Haravuori 2015; Reiss 2013; Sipilä et al. 2011). On the basis of several earlier studies, for example, vocational school students self-rate their health more poorly than other upper-secondary students (Andersen et al. 2015; Hietanen-Peltola and Korpilahti 2015; Hankonen et al. 2017; Horváth et al. 2018; Kestilä et al. 2018; Salakari et al. 2023). This leads to inequalities in the health and well-being of young people linked to the education group; deficiencies and risks to health and well-being, particularly affect young people in secondary vocational education. These welfare deficits are connected to socioeconomic status (Knaappila et al. 2021) and educational attainment (Chen et al. 2006; Sipilä et al. 2011; Reiss 2013; Elgar et al. 2015; Ilmakunnas et al. 2015; Marttunen and Haravuori 2015). According to several Finnish studies, family background is related to young people's health (Huurre et al. 2011; Latvala 2011; Kestilä et al. 2018) and predicts their subsequent well-being (Kestilä et al. 2018). The socioeconomic status of the family and their environmental circumstances affect, for example, the quality of lifestyle choices and leisure opportunities (Kestilä et al. 2018).

The total use of nicotine products among young people has decreased over the past few decades (Ollila and Ruokolainen 2022; Helenius and Kivimäki 2023). However, the number of young people using snuff has increased (Kestilä et al. 2018), but this was seen to have reduced in the 2020 s when e-cigarette use rose (Ollila and Ruokolainen 2022; Helenius and Kivimäki 2023). Young people are known to start using nicotine products because their friends are using them (Spijkerman et al. 2007; Frederiksen 2019), smoking is considered to be cool, and they are curious about the taste (Dijk et al. 2007). The reasons for e-cigarette use among young people are the results of the taste characteristics, lack of attention, easy access, willingness to experiment, the image of the safety of e-cigarettes, and the advertising and marketing aimed directly at young people (Lyzwinski et al. 2022). Curiosity about e-cigarettes also has a major significance in young people's choices to use as flavour additives in e-cigarettes are considered appealing (Frederiksen 2019). Young people more often choose sweet flavours (e.g., fruity or candy-flavoured) than tobacco or minty-flavoured (conventional) e-cigarettes (Lyzwinski et al. 2022). Smoking is considered to be relaxing and to be a social event. On the other hand, non-smokers want to avoid the negative consequences of smoking (Dijk et al. 2007). Even though there have been studies on the different nicotine product use by young people, there is still a lack of knowledge concerning attitudes towards the use of nicotine products among young people. The present study aimed to investigate Finnish vocational school students' (aged 15 to 28) behaviours, attitudes and opinions about nicotine products; the students were categorised as non-users and users of nicotine products. This study provides insight into a specific group of young people in Finland in the 2020 s.

Methods

Data collection and study population

The study data was collected with an electronic questionnaire survey targeting Finnish vocational students in November 2020 ($N = 461$). We included students aged 15 to 28 years of age according to the Finnish Youth Act (1285/2016), which defines under 29 years of age as adolescents or young adults. Thus, we excluded seven participants older than 28 years of age and the final study population for this study was 449. The youngest students were 15 when they participated in the study, but they all turned 16 by the end of the 2020 year. All students studied in vocational school.

All participants answered the online questionnaire during a lesson. Participants were instructed to answer the questionnaire once. Answering was conducted with a computer or a cell phone, and participants could edit their answers before the final submission. Participation was voluntary and anonymous, and the participants had the right to decline to participate in the study without penalty. The participants separately gave their consent to the research at the beginning of the questionnaire. The study was also primarily approved by the Ethics Committee at the Turku University of Applied Sciences in Turku, Finland, and permission to conduct research was also applied from the participating vocational institute (31.10.2020) before the data collection.

Questionnaire

The questionnaire used in this study was developed on the basis of two Finnish survey instruments (1. The Adolescent Health and Lifestyle Survey 2015: Adolescent smoking, alcohol and substance use in 1977–2015, and 2. The Adolescent Health and Lifestyle Survey 2017: Adolescent smoking, alcohol use, and gambling) (Kinnunen et al. 2015, 2017) and the results of systematised literature reviews (unpublished Elo et al. 2017; Lehto 2017). The questionnaire was tailored from these existing instruments to meet the purpose of this study, taking the target group into account. The questionnaire was built using elements already utilised in

existing validated instruments and supplemented with target group-specific research knowledge from the systematised literature reviews. The questionnaire is presented in the supplementary materials.

The content validity of the questionnaire was assessed by a panel of five social and healthcare professionals with expertise in the research topic and experience in designing measurement tools. The evaluation was conducted in 2017 before the first use of the survey instrument. The focus of the evaluation was on the clarity, unambiguity, intelligibility, appropriateness, coverage, number and adequacy of the questions. The expert panel's feedback from the pretesting phase refined and clarified questions related to health symptoms and nicotine attitudes (Presser et al. 2004; Granholm and Salakari 2022).

The pretests of the questionnaire were conducted after the expert evaluation with vocational students ($n = 30$). The pretesting was carried out both with paper forms and electronic surveys in 2017. During the pretesting, the researchers in charge observed how the target group completed the questionnaire. The students were given the opportunity to ask questions. The researchers systematically collected feedback from the participants to assess the questionnaire's comprehensibility, clarity and unambiguity, as well as to evaluate the time required for its completion. Subsequently, the feedback was analysed, and the questions about nicotine attitudes were further clarified. A further round of pretesting was not required (Presser et al. 2004; Granholm and Salakari 2022).

The questionnaire included questions related to demographic data, self-rated health, alcohol use and binge drinking, and the frequency of snuff, traditional cigarettes and e-cigarette use. Questions also addressed statements about nicotine products, their appearance, health effects and peer pressure on a Likert scale of 1–5 (1 as strongly disagree 4 as strongly agree and 5 as "I do not know"). Self-rated health was scaled again before the analysis, so "I do not know" was centred as 3 on the Likert scale. This was done to prevent distortion of the statistical results, particularly to avoid amplifying any bias towards disagreement with the statements.

Outcome variables

Information about nicotine product use was collected with questions concerning *tobacco smoking, snuff and e-cigarette use*. Tobacco smoking options: do not use, on paused or ceased, use less frequently than once a week, use once a week or more, but not daily, and use once a day or more. Use of snuff and e-cigarette options: do not use, use less frequently than once a week, use once a week or more, but not daily, and use once a day or more. Later, the participants were classified as non-users and users. Non-users were the ones who chose the option not to use snuff and e-cigarettes, and in tobacco smoking the options not to use or paused or ceased. The users could use snuff, tobacco, e-cigarettes or a combination of these products.

The participants' alcohol use was initially measured with nine options, ranging from no alcohol use to daily use. These were later combined into four categories: no use or very infrequent use, alcohol use 3–6 times a year, 1–2 times a month, and daily or 1–2 times a week. Participants also reported their binge drinking frequency, with options ranging from weekly to never.

Beliefs and attitudes towards nicotine products and their use were assessed with 20 statements using a Likert scale of 1–5 (from strongly agree, somewhat agree, "I do not know", somewhat disagree and strongly disagree). The statements were about nicotine product impressions, social norms, feelings of pleasure from nicotine products, nicotine products' appearance or impacts on the appearance, and the opinions of family members and friends.

Covariates

Sociodemographic factors included age, gender, living conditions and self-rated health. Their genders were defined as female, male and other, where "I do not want to answer" was included owing to low frequency ($n = 15$). The living conditions were living alone, living with parents or guardians, living with a cohabiting partner or spouse, living with friends, and other living arrangements. The last two were combined owing to low frequency ($n = 24$). The participants answered other living arrangements such as living with both parents in their different apartments, living with a sibling or grandparents, and living in a foster home. The participants estimated their *self-rated health* on a Likert scale of 1–5 (from excellent good, moderately good, "I do not know", moderately poor and very poor).

Statistical analysis

The study's explanatory variables were current nicotine use status categorised into non-users and users. The background variables were age, gender, living conditions, self-rated health, use of snuff, tobacco, e-cigarettes, alcohol and binge drinking. The proportion of participants in these variables was calculated and expressed as percentages. The chi-squared test was used to compare the demographic factors between non-users and users. The prevalence of e-cigarettes, tobacco smoking and use of snuff was determined.

Firstly, statement frequencies between nicotine product users and non-users were compared using the Mann–Whitney U tests. Secondly, the 20 statements were grouped on the basis of factor analysis. The factor analysis was conducted with the principal components factor extraction method and varimax rotation retaining

all factors with eigenvalues exceeding a minimum value of 1. The data was suitable for factor analysis (The Kaiser–Meyer–Olkin (KMO) value 0.80 and Barlette's test p value < 0.001). The values of two variables ("Nicotine products should be completely banned" and "My parents do not care if I use nicotine products") which had a different direction from the others were reversed before creating the sum variables. Finally, all variables were computed into summary measures and tested on the Mann–Whitney U test the difference between non-users and users to investigate participants' attitudes and beliefs according to their nicotine use status. The level of significance was set to p value ≤ 0.05. Statistical analyses were conducted using IBM SPSS Statistics for Windows, version 29 (IBM Corp, Armonk, NY, 2022).

Results

Most participants were under 18 years of age, female, living with parents or guardians, and self-rating their health as excellent or moderately good. Self-rated health among non-users ($n = 287$) was better than among nicotine product users ($n = 162$) ($p = 0.05$). Over half of the non-users (51.6%) reported using alcohol once a year or less often, but only 6.2% of the users did not drink alcohol ($p < 0.001$). A large portion of users (26.5%) also reported using alcohol daily or 1–2 times a week while only 5.2% of the non-users ($p < 0.001$). Binge drinking was more common among nicotine product users. Most non-users (59.2%) reported binge drinking never but the corresponding amount was only 7.4% among users ($p < 0.001$). Among both non-users and users, 5% to 7% had quit smoking or were having a pause. Among users, half or more did not use snuff (50%) or e-cigarettes (67%), while only 14% did not smoke tobacco. Among users, 36% smoke daily, 24% use snuff and 6% e-cigarettes, respectively (Table 1).

The factor analysis results

The factor analysis resulted in a six-factor model (Table 2). The model's summary measures were named with descriptive themes: Theme 1: Impressions of nicotine products, Theme 2: Pleasure from nicotine products, Theme 3: Nicotine products appearance, Theme 4: The impact of nicotine product use on appearance, Theme 5. Impact of others on their opinions, and Theme 6: Attitudes towards nicotine use. Each theme had from two to seven statements. Single attitude statements, their factor loadings, and the six themes are shown in Table 2.

Attitudes and beliefs related to nicotine products and their use

Most (5) of the seven statements in theme 1 (impressions of nicotine products) differed statistically between non-users and users. Among non-users, 2% agreed strongly with the statement that "snuff is healthier than tobacco", while among users, 7% agreed. Half of the users agreed that snuff used to be a part of hockey culture, whereas about every third of the non-users (36.6%) agreed with the statement ($p = 0.002$). Only small differences were seen between non-users and users in the statements "adolescents who have hobbies do not smoke" ($p = 0.018$) and "adolescents with hobbies do not use snuff" ($p < 0.001$) in those who agreed with the statements (Table 3).

All three statements in theme 2 (pleasure from nicotine products) differed statistically between non-users and users ($p < 0.001$ for all). Among non-users, 4% agreed strongly with the statement that "nicotine product use is relaxing", 1% with the statement "nicotine product use improves mood", and 28% with the statement "nicotine products should be completely banned". Users' numbers were 33%, 22% and 4%, respectively (Table 3).

Theme 3 (nicotine products appearance) included three statements that differed between non-users and users ($p < 0.001$ to 0.02). Non-users more often thought that warnings on tobacco packages were not pointless, while users thought the opposite ($p < 0.001$). Among non-users, 6% agreed strongly with the statement that "e-cigarettes seem interesting", while among users 15% agreed ($p = 0.002$). Most of the participants (65.2% of the non-users and 64.2% of the users) disagreed with the statement "e-cigarettes are safe to use". Still, 19.8% of the users and 10.8% of the non-users agreed with the statement. There were no statistical differences between the groups ($p = 0.018$) (Table 3).

In theme 4 (the impact of nicotine product use on appearance) only the statement "nicotine users perform worse in school than others" had statistical differences between the non-users and users ($p < 0.001$). Among non-users, 10% agreed strongly with the statement, while 3% of users had the same opinion. There were no statistical differences between non-users and users concerning their thoughts about "nicotine users appear older than their age" and "smokers have more friends". Both groups were more likely to disagree with the statements than agree (Table 3).

In theme 5 (impact of others on their opinions), over half of the non-users agreed with the statement "refusing nicotine products is easy, even if a friend offers" when only 30% of users agreed with that statement ($p < 0.001$). Most of the non-users (65%) strongly disagreed with the statement "my parents do not care if I use nicotine products". In contrast, users' opinions were more evenly distributed between the response options ($p < 0.001$) (Table 3).

Table 1 Selected characteristics of participants non-users and users of nicotine products. The figures are expressed as numbers (percentages). Statistical differences between characteristics and nicotine product use were tested with the chi-squared test

Variable		All participants ($N = 449$)	Use nicotine products		
			No ($n = 287$)	Yes ($n = 162$)	p-value
Age, n (%)	15–17 years	274 (61.0)	187 (65.2)	87 (53.7)	0.017
	18–28 years	175 (39.0)	100 (34.8)	75 (46.3)	
Gender, n (%)	Female	246 (54.8)	157 (54.7)	89 (54.9)	0.279
	Male	176 (39.2)	109 (38.0)	67 (41.4)	
	Other/No answer	27 (6.0)	21 (7.3)	6 (3.7)	
Living conditions, n (%)	Lives with parents/guardians	324 (72.2)	215 (74.9)	109 (67.3)	0.202
	Lives alone	67 (14.9)	42 (14.6)	25 (15.4)	
	Lives with friends or other living arrangements	23 (5.1)	12 (4.2)	11 (6.8)	
	Lives with a cohabiting or spouse	35 (7.8)	18 (6.3)	17 (10.5)	
Self-rated health, n (%)	Excellent/moderately good	335 (77.9)	220 (80.9)	115 (72.8)	0.051
	Moderately poor/very poor	95 (22.1)	52 (19.1)	43 (27.2)	
Use of alcohol, n (%)	≤ once a year*	158 (35.2)	148 (51.6)	10 (6.2)	< 0.001
	3–6 times a year	110 (24.5)	72 (25.1)	38 (23.5)	
	1–2 times a month	123 (27.4)	52 (18.1)	71 (43.8)	
	daily/1–2 times a week	58 (12.9)	15 (5.2)	43 (26.5)	
Binge drinking, n (%)	Once a week or more often	30 (6.7)	4 (1.4)	26 (16.0)	< 0.001
	1–2 times a month	70 (15.6)	14 (4.9)	56 (34.6)	
	Infrequently	167 (37.2)	99 (34.5)	68 (42.0)	
	Never	182 (40.5)	170 (59.2)	12 (7.4)	
Tobacco smoking, n (%)	No use	295 (65.7)	273 (95.1)	22 (13.6)	< 0.001
	On paused or quit	25 (5.6)	14 (4.9)	11 (6.8)	
	< once a week	39 (8.7)	N/A	39 (24.1)	
	Once a week or more, not daily	32 (7.1)	N/A	32 (19.8)	
	> once a day	58 (12.9)	N/A	58 (35.8)	
Use of snuff, n (%)	No use	367 (81.7)	287 (100.0)	80 (49.4)	N/A
	< once a week	19 (4.2)	N/A	19 (11.7)	
	Once a week or more, but not daily	24 (5.3)	N/A	24 (14.8)	
	> once a day	39 (8.7)	N/A	39 (24.1)	
Use of e-cigarettes, n (%)	No use	396 (88.2)	287 (100.0)	109 (67.3)	N/A
	< once a week	35 (7.8)	N/A	35 (21.6)	
	Once a week or more, but not daily	9 (2.0)	N/A	9 (5.6)	
	> once a day	9 (2.0)	N/A	9 (5.6)	

* Includes no-users

N/A not applicable

Theme 6 (attitudes towards nicotine use) included two statements that did not show statistical differences between the groups. Most participants (65.5% of the non-users and 60.5% of the users) agreed with "non-smoking is fashionable". Most participants also felt that friends influence adolescents' use of nicotine products. The non-users stated more often that they did not have an opinion about or agreed with the statement "non-smoking is fashionable" than the users (Table 3).

Differences in attitudes towards nicotine products between non-users and users across themes

In theme 1 (impressions of nicotine products) nicotine product non-users and users had similar attitudes towards nicotine product impressions making no statistical differences between the groups. On the other hand, theme 2 (pleasure from nicotine products) showed that non-users disagreed more, and the users agreed more stating the answers on different levels ($p < 0.001$). In theme 3 (nicotine products appearance) there was more variation in non-user opinions than in users. The non-users disagreed more often with the theme than the users ($p < 0.001$). It is the opposite in theme 4 (the impact of nicotine product use on appearance). The users strongly disagreed more often than non-users. The non-users opinions were more similar in the group than in the users' group where they varied more ($p < 0.001$). In theme 5 (impact of others on their opinions) variation between the groups was similar, but the values were at different levels. The non-users more often strongly agreed with the theme than the users ($p < 0.001$). In theme 6 (attitudes towards nicotine use) there was no difference between the

Table 2 The six-factor model: themes and factor loadings

Theme	Statement	Factor loading
Impressions of nicotine products (1)	Nicotine product users are brave	0.448
	Snuff is healthier than tobacco	0.677
	The use of snuff is a part of ice hockey culture	0.353
	Snuff enhances an athlete's performance	0.645
	Adolescents who have hobbies do not smoke	0.614
	Snuff users are smarter than smokers	0.715
	Adolescents with hobbies do not use snuff	0.610
Pleasure from nicotine products (2)	Nicotine product use is relaxing	0.846
	Nicotine product use improves mood	0.812
	Nicotine products should be completely banned	− 0.593
Nicotine products appearance (3)	Warnings on tobacco packages are pointless	0.649
	E-cigarette seems interesting	0.758
	E-cigarettes are safe to use	0.592
The impact of nicotine product use on appearance (4)	Nicotine users perform worse in school than others	0.515
	Nicotine users appear older than their age	0.757
	Smokers have more friends	0.537
Impact of others on their opinions (5)	Refusing nicotine products is easy, even if a friend offers	0.724
	My parents do not care if I use nicotine products	− 0.624
Attitudes towards nicotine use (6)	Non-smoking is fashionable	0.468
	Friends influence the use of nicotine products	0.813

non-users and users; both groups had a similar approach to the theme (Fig. 1).

Discussion

This study showed that Finnish vocational students' opinions were influenced by their use or non-use of nicotine products. Where most students thought that non-smoking was fashionable, they also considered that nicotine product use did not make them look bolder or that using snuff was smarter than using tobacco. We might think that users and non-users had equal knowledge when they answered the statements that snuff is healthier than tobacco and that snuff enhances athletes' performance due to the similararity in the answers. On the other hand, the nicotine users thought that using nicotine products was relaxing and improved their mood, while the non-users felt the opposite. This could be due to users' personal experience; the users might have suffered nicotine-alleviating withdrawal symptoms such as restlessness, irritability (Prokhorov et al. 2001), nervousness or tension (Rojas et al. 1998). Even though vocational students' attitudes and opinions vary, there is a similarity between users and non-users, for example, in their knowledge about nicotine products and their effects on health. However, our study or the study instrument does not shed light on young people's general knowledge about nicotine products and their effectiveness on health or the correctness of the knowledge. This could be a subject for another study.

The interesting finding was that most vocational students considered non-smoking to be fashionable. There was no difference in opinions about this whether they used nicotine products or not. This might result from the impression that tobacco smoke is not desired. During the data collection, snuff (smokeless tobacco) was popular, but a declining trend among young people (Helenius and Kivimäki 2023). We should also remember that youth is a factor that influences young people's attitudes despite nicotine product use.

We found that tobacco smoking was more common than e-cigarette use. Our data was collected in 2020 when e-cigarette use was less common than currently (Helenius and Kivimäki 2023). In contrast to this study, vocational students did not find e-cigarettes interesting. In our study, most of the students also thought that e-cigarettes were not safe to use. Despite the fact that users more often thought they were safe to use than non-users, 40% of students did not know. It is a good reminder that young people's knowledge, attitudes and behaviours evolve, creating difficulties in managing the phenomenon. However, some factors remain the same such as young people's adopting attitudes and behaviours—from friends and siblings (Murnaghan et al. 2009; Aho et al. 2019), parents (Andersen et al. 2015) and close adults such as teachers (Andersen et al. 2019; Liang et al. 2022). Peer pressure is also a factor that should be taken into consideration to strengthen young people's refusal skills and

Table 3 Attitudes and beliefs related to nicotine products and their use among non-users and users of nicotine products by themes (1–6)

Theme	Statement		Agree			Disagree		*p**
			Strongly	Somewhat	Not know	Somewhat	Strongly	
Impressions of nicotine products (1)	Nicotine product users are brave	Non-users	4 (1.4)	8 (2.8)	31 (10.8)	43 (15.0)	201 (70.0)	0.021
		Users	5 (3.1)	4 (2.5)	25 (15.4)	32 (19.8)	96 (59.3)	
	Snuff is healthier than tobacco	Non-users	5 (1.7)	20 (7.0)	91 (31.7)	36 (12.5)	135 (47.0)	0.047
		Users	11 (6.8)	19 (11.7)	41 (25.3)	28 (17.3)	63 (38.9)	
	The use of snuff is a part of ice hockey culture	Non-users	24 (8.4)	81 (28.2)	80 (27.9)	33 (11.5)	69 (24.0)	0.002
		Users	24 (14.8)	57 (35.2)	37 (22.8)	21 (13.0)	23 (14.2)	
	Snuff enhances an athlete's performance	Non-users	3 (1.0)	9 (3.1)	72 (25.1)	21 (7.3)	182 (63.4)	0.358
		Users	6 (3.7)	11 (6.8)	31 (19.1)	17 (10.5)	97 (59.9)	
	Adolescents who have hobbies do not smoke	Non-users	5 (1.7)	35 (12.2)	67 (23.3)	82 (28.6)	98 (34.1)	0.018
		Users	7 (4.3)	17 (10.5)	23 (14.2)	36 (22.2)	79 (48.8)	
	Snuff users are smarter than smokers	Non-users	3 (1.0)	8 (2.8)	96 (33.4)	24 (8.4)	156 (54.4)	0.915
		Users	9 (5.6)	5 (3.1)	41 (25.3)	19 (11.7)	88 (54.3)	
	Adolescents with hobbies do not use snuff	Non-users	5 (1.7)	14 (4.9)	77 (26.8)	73 (25.4)	118 (41.1)	< 0.001
		Users	2 (1.2)	6 (3.7)	29 (17.9)	27 (16.7)	98 (60.5)	
Pleasure from nicotine products (2)	Nicotine product use is relaxing	Non-users	10 (3.5)	53 (18.5)	135 (47.0)	28 (9.8)	61 (21.3)	< 0.001
		Users	54 (33.3)	78 (48.1)	12 (7.4)	14 (8.6)	4 (2.5)	
	Nicotine product use improves mood	Non-users	3 (1.0)	49 (17.1)	123 (42.9)	30 (10.5)	82 (28.6)	< 0.001
		Users	36 (22.2)	72 (44.4)	16 (9.9)	26 (16.0)	12 (7.4)	
	Nicotine products should be completely banned	Non-users	80 (27.9)	75 (26.1)	48 (16.7)	54 (18.8)	30 (10.5)	< 0.001
		Users	7 (4.3)	21 (13.0)	26 (16.0)	39 (24.1)	69 (42.6)	

Table 3 (continued)

Theme	Statement		Agree			Disagree		p*
			Strongly	Somewhat	Not know	Somewhat	Strongly	
Nicotine products appearance (3)	Warnings on tobacco packages are pointless	Non-users	36 (12.5)	50 (17.4)	43 (15.0)	60 (20.9)	98 (34.1)	< 0.001
		Users	44 (27.2)	36 (22.2)	15 (9.3)	37 (22.8)	30 (18.5)	
	E-cigarettes seem interesting	Non-users	16 (5.6)	58 (20.2)	48 (16.7)	30 (10.5)	135 (47.0)	0.002
		Users	25 (15.4)	35 (21.6)	19 (11.7)	31 (19.1)	52 (32.1)	
	E-cigarettes are safe to use	Non-users	6 (2.1)	25 (8.7)	69 (24.0)	60 (20.9)	127 (44.3)	0.018
		Users	15 (9.3)	17 (10.5)	26 (16.0)	54 (33.3)	50 (30.9)	
The impact of nicotine product use on appearance (4)	Nicotine users perform worse in school than others	Non-users	29 (10.1)	62 (21.6)	82 (28.6)	53 (18.5)	61 (21.3)	< 0.001
		Users	4 (2.5)	24 (14.8)	27 (16.7)	31 (19.1)	76 (46.9)	
	Nicotine users appear older than their age	Non-users	15 (5.2)	40 (13.9)	55 (19.2)	55 (19.2)	122 (42.5)	0.671
		Users	3 (1.9)	24 (14.8)	27 (16.7)	42 (25.9)	66 (40.7)	
	Smokers have more friends	Non-users	12 (4.2)	46 (16.0)	103 (35.9)	50 (17.4)	76 (26.5)	0.124
		Users	8 (4.9)	26 (16.0)	42 (25.9)	28 (17.3)	58 (35.8)	
Impact of others on their opinions (5)	Refusing nicotine products is easy, even if a friend offers	Non-users	152 (53.0)	60 (20.9)	24 (8.4)	37 (12.9)	14 (4.9)	< 0.001
		Users	49 (30.2)	41 (25.3)	16 (9.9)	42 (25.9)	14 (8.6)	
	My parents do not care if I use nicotine products	Non-users	8 (2.8)	19 (6.6)	39 (13.6)	35 (12.2)	186 (64.8)	< 0.001
		Users	23 (14.2)	27 (16.7)	19 (11.7)	36 (22.2)	57 (35.2)	
Attitudes towards nicotine use (6)	Non-smoking is fashionable	Non-users	123 (42.9)	65 (22.6)	36 (12.5)	31 (10.8)	32 (11.1)	0.008
		Users	40 (24.7)	58 (35.8)	23 (14.2)	23 (14.2)	18 (11.1)	
	Friends influence the use of nicotine products	Non-users	111 (38.7)	118 (41.1)	28 (9.8)	20 (7.0)	10 (3.5)	0.444
		Users	67 (41.4)	68 (42.0)	10 (6.2)	13 (8.0)	4 (2.5)	

* Mann–Whitney U test

The figures are expressed as numbers (percentages). The scale is a Likert scale of 1–5 (1 as strongly disagree, 2 as somewhat disagree, 3 as not know, 4 as somewhat agree, and 5 as strongly agree). Non-users and users are compared with the Mann–Whitney U test

knowledge about nicotine product risks and support healthy lifestyle choices. Influencing these factors healthy lifestyle choices can be achieved.

Social environment and peer pressure are affecting young people's attitudes and use of nicotine products. Their behaviour is affected by family and friends' attitudes and behaviours about nicotine products (Murnaghan et al. 2009; Mendel et al. 2012; Aho et al. 2019; Känsäkoski et al. 2021). In our study, there was a limitation in the study instrument. There was only one question about the use of nicotine products by parents or guardians which concerned snuff use, thus omitting the use of other nicotine products. However, the study shows that close ones have an impact on young people's nicotine product use and most non-users thought that their parents cared about their nicotine product use or did not use them. Friends' influence is also recognised among participants. It was interesting to notice that only about half of the non-users stated that it was easy to refuse friends who offered nicotine products and somehow still managed not to use the products. There might be a need to strengthen the refusal skills or self-efficacy, or it might be because of their social environment that makes the refusal easy, for example, the lack of offering situations and family members and most of friends being non-users. There is a research gap in the existing literature. Examples of studies concerning tobacco refusal self-efficacy and the evidence from health education interventions in enhancing adolescents' self-efficacy to refuse tobacco are relatively limited and more research is needed (Nyman 2024).

In this study, we found that users reported using more alcohol and binge drinking more often than non-users; this is consistent with previous studies (e.g. Thrul et al. 2019; Kreski et al. 2023; Lau et al. 2023). Through the gateway hypothesis, young people's nicotine use (Kandel and Kandel 2014; Li et al. 2014; Ren and Lotfipour 2019) or nicotine and alcohol use together (Levine et al. 2011) are known to increase the odds of later illicit drug abuse such as marijuana and cocaine. This matter should be taken seriously, making health promotion of young people particularly important.

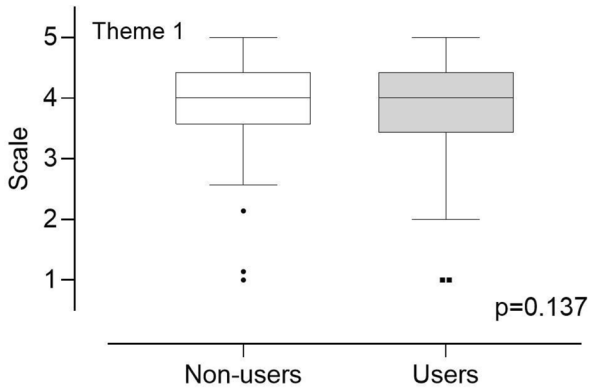
When we examined our study instrument, we noted that the instrument validity of the content had been assessed, and it was pretested beforehand. The instrument comprises detailed questions measuring young people's attitudes and use of nicotine products giving a perspective on the research matter. However, our research considers respondents 15 to 28 years old as adolescents or young adults and combines them into the term young people. This large age range might affect the results because the study population is wide, and adolescents are likely to be more adult-like at the end of the age range (Arnett 2000). Further studies could be stricter with the age range. There were also a few more respondents who were non-users than users. Another limitation of our study population is that we collected the data only from one large city area in Finland and did not have an urban–rural set-up making our data local. Nevertheless, our study still sheds light on the important theme of young people's behaviour as regards nicotine products and their attitudes towards these products, therefore providing insight into the situation in the 2020s.

This study gives input about adolescents' and young adults' opinions and attitudes towards nicotine products. This knowledge can be used to target education and prevention programmes that meet the needs of adolescents and young adults. It can help develop effective health services supporting, for example, services for quitting nicotine product use. The environment and social norms can be influenced by campaigns that reduce the social pressure associated with the use of nicotine products. The inclusion of young people makes health promotion programmes more relevant to them. In addition, the right information can be provided, and the role of families, schools and other support networks can be strengthened.

Furthermore, the use of nictotine products by vocational students is a multifaceted issue influenced by social, economic and cultural factors (Salakari et al. 2023). While there has been a shift from traditional tobacco smoking towards vaping and e-cigarettes, the overall higher usage rates compared to other upper-secondary students remain a concern (Helenius and Kivimäki 2023). Continued efforts in education, policy and support are essential to address and mitigate the health risks associated with nicotine use among young people are still needed.

Conclusion

Our study provided important insight into adolescents' use of nicotine products and their attitudes and opinions about the matter. Young people's attitudes and opinions are often similar due to their shared experiences as part of youth culture. Nevertheless, they can vary significantly regarding specific behaviours, such as nicotine product use. They can be affected by family members' and friends' opinions and health behaviours on nicotine product use and correct knowledge about nicotine products and their health-related risks. Connections between young people's attitudes and changing everyday trends in nicotine product use are complex and a time-bound matter that makes the need for further research with multiple methods clarifying the phenomenon. The knowledge provided by this study can be used to target education, prevention programmes and campaigns to strengthen young people's knowledge and refusal skills and to meet their needs in developing effective health services.


Theme 1
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4
3
2
1
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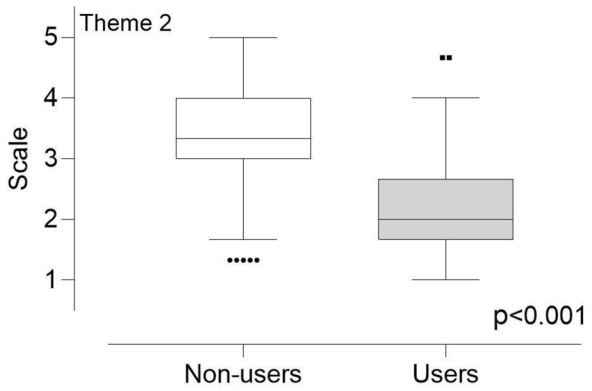
Non-users
Users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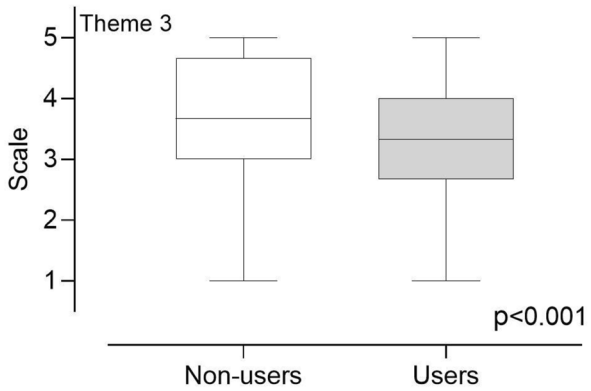
Scale
5
4
3
2
1
p<0.001
Non-users
Users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Scale
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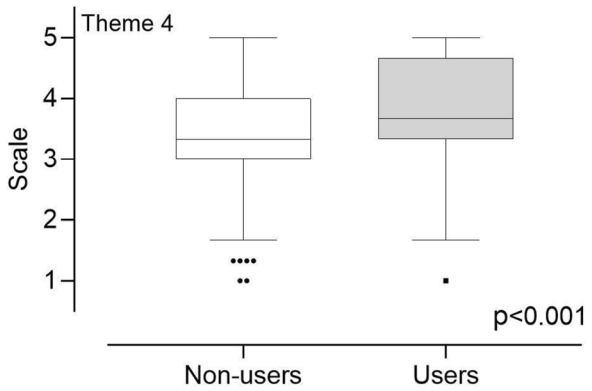
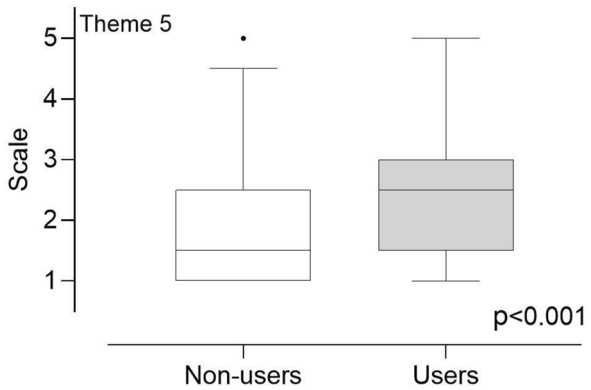
4
3
2
1
p<0.001
Non-users
Users


Theme 4
Scale
5
4
3
2
1
p<0.001
Non-users
Users


Theme 5
Scale
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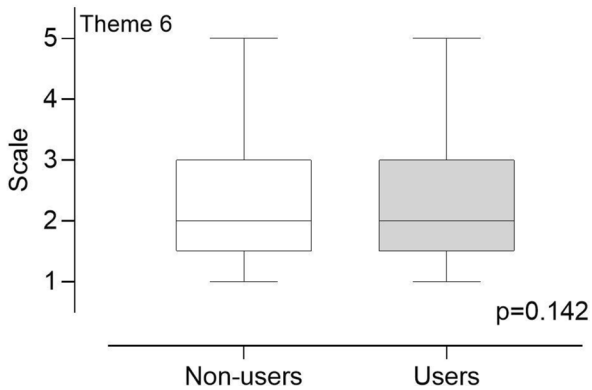
4
3
2
1
p<0.001
Non-users
Users


Theme 6
Scale
5
4
3
2
1
p=0.142
Non-users
Users

◂**Fig. 1** Attitudes and beliefs related to nicotine products and their use among non-users and users on six themes. Theme 1: Impressions of nicotine products, Theme 2: Pleasure from nicotine products, Theme 3: Nicotine products appearance, Theme 4: The impact of nicotine product use on appearance, Theme 5: Impact of others on their opinions and Theme 6: Attitudes towards nicotine use. Likert scale of 1–5 (1 = strongly agree, 2 = somewhat agree, 3 = "I do not know", 4 = somewhat disagree and 5 = strongly disagree). Independent variable *t* tests were used to describe the differences between the groups presented

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Authors' contributions Minna Salakari conducted the data collection and was a senior advisor in the study field. Anu Vaihekoski analysed the data and wrote the results with the help of Lauri Sillanmäki. Sini Eloranta and Hanna Lagström directed the analysis and article writing. Anu Vaihekoski wrote the manuscript drafts and made changes to the article. All authors reviewed and approved the final manuscript.

All authors made substantial contributions to the conception of the work, revised it critically for important intellectual content, approved the version to be published, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Data availability The datasets analysed during the current study are available from the author Minna Salakari on reasonable request.

Code availability Not applicable.

Declarations

Ethics approval The study was primarily approved by the Ethics Committee at the Turku University of Applied Sciences in Turku, Finland, and permission to conduct research was also applied from the participating vocational institute (31.11.2020) before the data collection.

Consent to participate Participation was voluntary and anonymous, and the participants had the right to decline to participate in the study without penalty. The participants separately gave their consent to the research at the beginning of the questionnaire.

Consent for publication We authors, give our consent for the publication of 'Attitudes Towards the Use of Nicotine Products among Vocational School Students in Finland' in the Journal of Public Health. We understand that this material will be used for academic or research purposes, and we permit publishing in print and digital formats.

Conflicts of interest The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

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