

# Exploring Smoking Rates, Employment Status, and Age Verification Practices Among Students

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## ABSTRACT

**Background:** Tobacco use is a major cause of preventable diseases and deaths globally, leading to conditions like cancer, heart disease, and respiratory issues. Although smoking rates have declined in developed nations, it remains a significant public health issue, especially in low- and middle-income countries (LMICs). Cigarette smoking is the most common form of tobacco use, but smokeless tobacco and e-cigarettes are becoming more popular, raising concerns about their health impacts. Public health campaigns, regulations, and smoking cessation programs have helped reduce smoking, but progress varies across demographic groups. Tobacco industry strategies targeting youth and vulnerable populations hinder these efforts. The rise of e-cigarette use, marketed as a safer alternative, presents new challenges, as their long-term health effects remain unknown.

**Objectives:** The study evaluates smoking rates among students, examines age groups for smokers, analyzes the correlation between employment status and tobacco use, and investigates ID verification practices during tobacco product purchases.

**Methods:** A cross-sectional self-administered survey. The total number of students in the respondents was 664. Data were collected on tobacco use among young students to investigate their knowledge, attitudes, and practices regarding secondhand smoke (SHS).

**Results:** Among respondents, 59.13% are non-smokers, 4.37% use other tobacco products like IQOS and e-cigarettes, and 27.41% are poly-product users. The highest number of cigarette-only users is in the 23-24 age group. 27% of tobacco users have never been subject to age verification.

**Conclusions:** The youngest age group had the lowest smoking rates. ID verification rates are critically low. Implementing policies, strategies, and action plans is crucial for fostering a smoke-free environment.

**Keywords:** Electronic cigarettes; electronic nicotine delivery systems (ENDS); heated tobacco products (HTP); IQOS; secondhand smoke (SHS); World Health Organization (WHO).

## BACKGROUND

Data shows that a significant majority of adult individuals who consume tobacco commence their smoking habits before reaching the age of 18. Tobacco consumption is practiced by approximately 20% of teenagers globally.<sup>1,2</sup> However, there are a variety of tobacco products, including smokeless tobacco products, cigars, and, most recently, electronic vapor products (e.g., e-cigarettes). Heated tobacco products (HTP) have been developed as a nicotine delivery method to replace conventional cigarettes.<sup>3</sup> HTP tobacco products are marketed to consumers as a safer alternative to traditional cigarettes, posing reduced risks for both users and bystanders.<sup>4</sup> The data also shows that HTP usage is primarily observed in conjunction with other products, particularly among the youngest age group and individuals who have never smoked before. The dual use of these products, along with their significant popularity among younger generations and the interest expressed by non-smokers, raises concerns and underscores the necessity for diligent surveillance of HTP prevalence and user characteristics.<sup>5</sup>

Electronic nicotine delivery systems (ENDS), also known as E-cigarettes and vaping devices, were initially created as a

substitute device for traditional tobacco cigarettes.<sup>6</sup> Electronic cigarettes (e-cigarettes) are rapidly increasing in popularity all over the world. Since 2014, electronic cigarettes (e-cigarettes) have consistently emerged as the most prevalent tobacco product among the youth. A study found that in 2022, 2.55 million U.S. middle and high school students reported using e-cigarettes in the past 30 days, including 14.1% of high school students and 3.3% of middle school students.<sup>7</sup>

In 2022, approximately 844.8 thousand people in Georgia (731.4 thousand males and 112.6 thousand females) aged 15 and older used tobacco products. This ranks the country 92nd globally and 32nd in the WHO European Region for the number of tobacco users.<sup>8,9</sup>

Surveillance for tobacco product consumption among young individuals is of utmost importance as it is a critical tool for informing and assessing tobacco control strategies implemented at local, state, tribal, and national levels. This study aimed to evaluate the prevalence of smoking any tobacco-containing products among students at Tbilisi State Medical University, their attitudes concerning tobacco use, and contributing factors associated with cigarette smoking.



This research aimed to examine the characteristics and factors influencing tobacco use among young people and to evaluate students' knowledge, attitudes, and practices regarding secondhand smoke (SHS) and tobacco. The investigation considered both health implications and the role of smoking as an environmental pollutant.

**METHODS**

The study is a cross-sectional, self-administered survey conducted between June and December 2022 among a random sample of Tbilisi State Medical University students.

Study criteria: In this study, the students of four study programs:

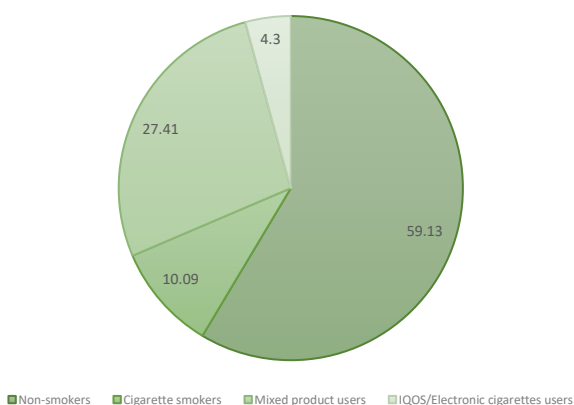
- Georgian MD program;
- English MD program;
- Bachelor's program in Public Health;
- Master's program in Public Health

The questionnaire, which included a comprehensive study description and a consent form, was emailed to the students. Respondents were allowed to complete the questionnaire upon consent. Nearly all the questions included an option to decline to answer. The students of other faculties/programs of Tbilisi State Medical University were not involved. The total number of students in these four faculties was 664. Statistical analyses were conducted in SPSS 27; significance was set at alpha=0.05.

**RESULTS**

The survey results show that the average age of respondents is 21. Of the 664 respondents, 59.13% are non-smokers, 10.09% use only traditional cigarettes, 4.37% use other tobacco products such as IQOS and electronic cigarettes, and 27.41% are poly-product users (Fig.1).

FIGURE 1. The use of tobacco products



The first age group, comprising individuals aged 17 to 20, has a relatively low rate of tobacco consumption. In the second and third age groups (21-22 years and 23-24 years), the consumption rates of traditional cigarettes are nearly identical. However, the rate of poly-product consumption is notably high. The age group of individuals aged 25 years and older demonstrates the highest rates of both other tobacco products (IQOS and electronic cigarettes) consumption and poly-product consumption (Tab.1).

TABLE 1. Distribution by age groups

Age Group	Non-smokers	Cigarette users	IQOS/E-cigarette users	Mixed product users
17-20 years	69.9 %	6.6 %	4.3 %	19.1 %
21-22 years	51.8 %	13.2 %	4.5 %	30.5 %
23-24 years	48.9 %	14.8 %	1.5 %	34.8 %
>24 years	49.1 %	5.7 %	9.4 %	35.8 %

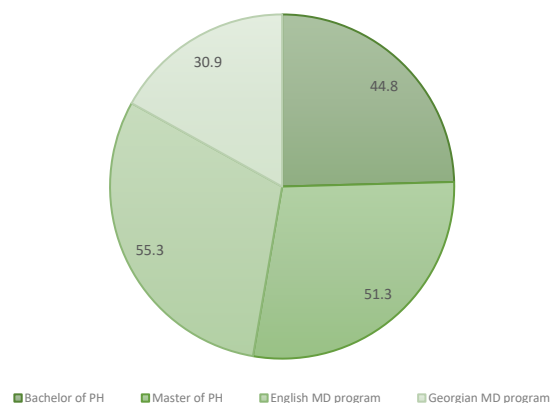
We sought to determine whether there is a correlation between employment status and tobacco consumption. However, we identified no significant distinguishing figures (Tab.2).

TABLE 2. Distribution by employment status

Employment status	Non-smokers	Cigarette users	IQOS/E-cigarette users	Mixed product users
Part-time employment	40.7%	10.9%	3.3%	11.1%
Unemployed	64.7%	5.9%	4.8%	16.3%

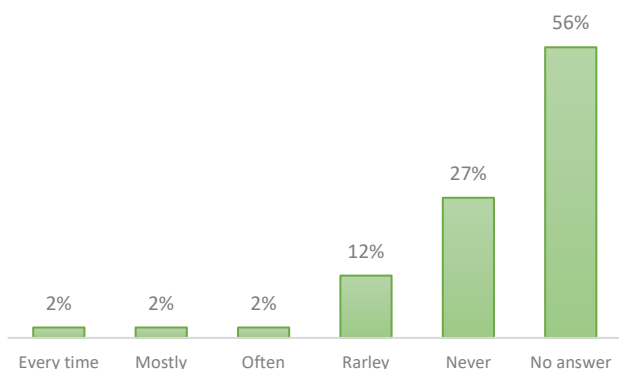
The survey findings revealed the distribution of smokers across programs: 51.3% in the Georgian MD program, 55.3% in the English MD program, 44.8% in the bachelor of PH program, and 51.3% in the master of PH program (Fig.2).

FIGURE 2. Distribution by study groups



The survey results indicated that 27% of tobacco users had never undergone age verification, while 56% chose not to respond (Fig.3).

FIGURE 3. Frequency of ID verification for tobacco purchases



**DISCUSSION**

The survey reveals varied tobacco usage patterns among respondents, with an average age of 21 years. A significant proportion (59.13%) of respondents identified as non-smokers, which could indicate the success of ongoing public health initiatives and anti-smoking awareness campaigns, particularly in younger populations. The majority of individuals in this age group appear to be informed about the risks of smoking, which aligns with previous studies that have shown a trend toward lower smoking rates among younger generations due to targeted health campaigns and increasing societal stigma around tobacco smoking.<sup>10</sup>

Despite the predominance of non-smokers, 10.09% of respondents still report using traditional cigarettes. This figure suggests that conventional tobacco products maintain a foothold in specific segments of the population, particularly in the context of social and behavioral influences that may persist despite public health messaging. This finding is consistent with global trends, where tobacco consumption continues to be prevalent in specific demographics, such as individuals from lower socio-economic backgrounds or those with limited access to alternative products and cessation support. The persistence of cigarette use among a minority underscores the importance of maintaining and enhancing traditional smoking cessation programs while diversifying strategies to address emerging tobacco use trends.<sup>11,12</sup>

A noteworthy finding from this survey is that 4.37% of respondents use alternative products like IQOS and e-cigarettes, indicating a growing interest in these products as perceived safer options. This aligns with broader global shifts

in tobacco consumption, where many individuals, particularly younger users, opt for alternatives they believe to be less harmful than traditional cigarettes. The increasing popularity of these alternative products highlights the need for more comprehensive research into their long-term health effects, as current evidence on their safety remains inconclusive. Moreover, the perception of these products as "safer" could contribute to the rising usage rates, which may inadvertently encourage initiation among non-smokers or younger individuals who view these products as a less harmful gateway.<sup>13</sup>

Additionally, a significant percentage (27.41%) of poly-product users - those who use both traditional and alternative products - raises serious concerns about compounded health risks. The combination of multiple tobacco products may expose users to an array of harmful substances, potentially exacerbating the risk of long-term health issues such as cardiovascular diseases, respiratory problems, and cancer. This trend underscores the necessity for targeted public health interventions that address single-product use and multi-product behaviors. Interventions should be designed to educate users about the cumulative risks of poly-product use and the potential for increased addiction due to the simultaneous consumption of nicotine from various sources.<sup>14</sup>

Further, tobacco consumption patterns revealed significant age-related variations. Younger individuals, particularly those in the 17–20 age groups, show low tobacco usage, likely reflecting the success of tobacco prevention programs in this age demographic. This outcome suggests that prevention efforts, including educational campaigns and restrictions on tobacco sales to minors, may be effective in curbing initial tobacco use. However, as individuals transition into the 21–24 age range, the prevalence of poly-product use increases significantly, which may be attributed to social factors, peer influence, and the increasing availability of alternative tobacco products. These findings suggest that while younger groups may be succeeding in avoiding traditional smoking, there is a need for interventions targeting poly-product use, particularly among young adults who may perceive alternative products as less harmful.

The survey found varying rates of tobacco use across academic programs, with the prevalence of smokers being highest in the English MD program (55.3%), followed by the Georgian MD program (51.3%), Bachelor of Public Health (44.8%), and Master of Public Health (51.3%). This variation suggests that academic discipline, cultural background, and

access to health education resources influence tobacco usage patterns. For instance, students in medical and public health programs might have a greater awareness of the risks associated with tobacco use, which could explain why smoking rates in these groups are not significantly lower than those in other programs. It would be valuable for future studies to investigate the role of education, program-specific stressors, and peer influences in shaping tobacco use behaviors among students across various academic disciplines.

Moreover, the finding that 27% of tobacco users have never undergone age verification raises significant concerns regarding the enforcement of age restrictions and the potential accessibility of tobacco products to underage individuals. This gap in age verification processes may contribute to underage smoking initiation, which could have long-term health implications. The high non-response rate (56%) related to age verification also suggests a lack of awareness or reluctance to engage with this issue, possibly indicating a gap in understanding or concern about the importance of age restrictions in tobacco sales. This finding underscores the need for more rigorous enforcement of age verification protocols and increased public education to ensure compliance with tobacco purchase laws. In addition, there may be a need to improve tobacco retailers' training and implement more stringent checks at the point of sale.

## CONCLUSIONS

Evidence suggests that most poly-users are in the unemployed group. Unemployed people are also more likely to be non-smokers. Most non-smokers are Georgian students.

The lowest smoking rates were observed among the youngest age group, which we view as a positive indicator, especially since studies show that smoking habits are often initiated within this age category.

Finally, it is essential to emphasize the importance of strict age verification when purchasing tobacco products, as the research indicates that ID verification rates are alarmingly low. It is important to highlight that the aforementioned research was conducted among students, most of whom are minors.

These findings emphasize the importance of implementing policies, strategies, and action plans to support a smoke-free environment.

The analysis did not reveal a significant correlation between employment status and tobacco consumption. This suggests that factors influencing tobacco use may be more

closely tied to other variables, such as age, social influences, or cultural norms, rather than employment status alone.

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