Nicotine Dependence and Smoking Habits of Hungarian Police Cadets

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Abstract

Aim: Smoking is one of the most significant health risk factors. Some studies have shown that the prevalence of smoking is higher in some professions (e.g. police personnal) than in the general population. The aim of the research presented in this study is to investigate the smoking habits and nicotine dependence of Hungarian trainee police officers (so-called police cadets).

Methodology: A cross-sectional, questionnaire-based survey was conducted among Hungarian police cadets. The study sample (N=270) consisted of 57.4% male (n=155) and 42.6% female (n=115). Average age of cadets 21.8 years (±0.26 years, CI: 95%). The Fagerström Test for Nicotine Dependence (FTND) was used to measure nicotine dependence among police cadets.

Findings: Lifetime prevalence of smoking is 77.0% among police cadets. Females were more likely than males to have tried smoking, but the difference was not significant. (81.7% vs. 73.6%; $\chi^2(1) = 2.50$, $p = 0.11$, $\varphi = 0.1$). Current smoking prevalence was 35.6%, and regular (daily) smoking was 14.8%. Daily smokers scored an average of 2.57 (SD = 1.87) on the FTND scale. The average score for males was 2.6 (SD = 1.82) and for females was 2.5 (SD = 2.03), there was no significant difference ($t(27) = 0.10$, $p = 0.91$). The majority of police cadets who smoke regularly (85.0%) have very low or low nicotine dependence.

Value: The article highlights the prevalence and patterns of smoking among Hungarian police cadets. Our result can be useful for developing a prevention strategy in this special population.

Keywords: smoking, law enforcement, police cadets, Fagerström Test for Nicotine

Introduction

According to the survey of World Health Organisation (WHO), more than a fifth (22.8%) of the global population smoke. Europe has the highest smoking prevalence of any region in the world (WHO, 2019b). The prevalence of current smoking in European Union and the United Kingdom The proportion of current smokers is 23% among EU and UK adult population (European Commission, 2021). However, there are large cross-national differences in current smoking prevalence ranged from 12.6% in Sweden to 36.2% in Bulgaria (Starker & Kuhnert, 2023). In Hungary, 32.1% of the population aged 18–64 smoke regularly (i.e. daily), and 3.0% occasionally. One quarter (25.1%) of Hungarian adults who smoke regularly have high nicotine dependence and two thirds (67.4%) have moderate addiciton (Urbán & Pénzes, 2021). The results of the Eurobarometer surveys conducted between 2009 and 2017 can be used to examine smoking trends. They show that the overall proportion of smokers in Hungary has been decreasing since 2009, while the proportion of people trying e-cigarettes is increasing (Brys et al., 2022). In relation to European trends, estimated smoking prevalence between 2000 and 2015 showed, in general, decreasing levels in European countries, but the pace of decrease and the smoking prevalence was very different among countries. Higher smoking prevalence of over 30% was observed in central and eastern European countries, while lower than 20% levels were reported from the Nordic countries (WHO, 2019b). Thus, Hungary is considered a high-risk country in this respect. It is a particularly high risk for men, because prevalent of smoking is significantly higher among male than female. International and national epidemiological data suggest that there is a significantly gender difference in smoking. The prevalence of current smoking, daily smoking and nicitine dependence is considerable higher among men than women (Brys et al., 2022; Urbán & Pénzes, 2021; WHO, 2019b). According to Grunberg et al. (1991) There are clear gender differences in tobacco use, especially when use across time, type of tobacco product, and variation across cultures are considered. Brys and colleges (2022) found men were 1.5 times were more likely than women to smoke among adult population. Gender difference can be explained by psychosocial variables (e.g. social desirability in perception of smokers) and biological variables (e.g. nicotine sensitivity) (Grunberg et al., 1991).

Despite of any positive trends, smoking is one of the most significant health risk factor worlide. Tobacco use was responsible for 8.71 million deaths and 229.77 million disability-adjusted life years globally in 2019 (He et al., 2022). In respiratory cancers, smoking as an aetiological agent is responsible for 80-90% of the disease (Alberg et al., 2013). In recent years, alternative tobacco products (e.g. e-cigarettes, heated tobacco products) have been gaining ground. However, classic cigarettes remain the most popular tobacco product in Europe and Hungary (European Commisson, 2021; Gallus et al., 2022). Experimentation with e-cigarette and prevalence of current use in Hungary is still relatively low (Brys et al., 2022).

Previous scientific results suggest, there are significant differences in smoking prevalence, no only by gender, age or social status, but also between people in different occupations (Syamlal et al., 2015). According to previous studies, smoking prevalence is generally higher among blue-collar (e.g. manufacturing, materials handling, construction transportation mining workers) employees than pink-collar (e.g. clerical, sales, services) or white-collar (e.g. managerial, administrative, sciences) workers (Asfar et al., 2016; Gaudette et al., 1998). This may be due to differences in workplace culture (e.g. pace of work, frequent changes of employer), work-related stressors and the nature of the job (Ham et al., 2011). Previous studies have shown smoking prevalence to decline with increasing occupational status (Gaudette et al., 1998).

Police officers are considered a high-risk group, with a higher prevalence of alcohol consumption, smoking and other harmful health behaviors compared to the general population (Basaza et al., 2020; Ramakrishnan et al., 2013; Richmond et al., 1998; Smith et al., 2005). According to international studies carried out in recent years, the proportion of current smokers among police officers has ranged from 5.8% to 49.4% (Allison et al., 2019a; Allison et al., 2019b; Barreto et al., 2019; Barreto et al., 2021; Basaza et al., 2020; Chean et al., 2019; Gowda & Thenambigai, 2020; Irizar et al., 2021a; Irizar et al., 2021b; Jankowski et al., 2021; Janczura et al., 2021; Khan et al., 2019; Ma et al., 2018; McCanlies et al., 2017; Ogeil et al., 2018; Wirth et al., 2017; Yadav et al., 2022). Phan and colleges (2022) examined the trends of smoking and smokeless tobacco use among first responders. They found that smoking prevalence declined overall, but smokeless tobacco use was higher among law enforcement personnel. In 2018-2019 law enforcement personnel (AOR = 3.2; 95% CI = 2.1 to 4.7) were more likely than adults in non-first-responder occupations to use smokeless tobacco products.

Contrarily, we have limited evidence on the prevalence of nicotine dependence and smoking habits of Hungarian police officers. Just a few research focused on

this topic in Hungary (Borbély, 2019; Erdős, 2022; Mácsár et al., 2017; Ritter, 2004). According to a previous drug epidemiological study among Hungarian police officers, 43.6% of the respondents smoked (Ritter, 2004). A cross-sectionaly study among police officers of the Szabolcs-Szatmár-Bereg County Police Headquarters showed that 32.3% of police officers smoked in the county (Ambrusz et al., 2024). In Budapest the smoking prevalence was 33.4% among police personnel (Mácsár et al., 2017). Overall, previous occupation-specific epidemiological data suggest that about one third of Hungarian police officer smoke. Epidemiological studies on smoking would be also important in this professional population. Smoking among police officers correlates with the higher prevalence of hypertension (Sen et al. 2014), reduced performance on physical tests (Boyce, et al., 2006), a higher risk of developing prostate disease (Zhou et al., 2018); it also imposes extra additional costs on the employer (the state) (Basaza et al., 2020). Results of epidemiological studies are needed to develop and improve effective prevention strategies and health promotion programmes (Elekes & Paksi, 1993; Németh & Költő, 2016). The aim of this study was to exemine the smoking habits and the prevalence of nicotin dependence among Hungarian police cadets.

Methodology

Data collecting and Procedure

A cross-sectional, questionnaire-based online survey was conducted among Hungarian police officer cadets at the University of Public Service (Hungary) Faculty of Law Enforcement (UPS FLE). The research was conducted between January and April, 2022.

The sampling frame consisted of a population table of UPS FLE police cadets (N = 417). The data were collected using a licensed questionnaire program that complies with the methodological requirements and ensures the technical conditions necessary for the validity of the research (http:// www.online-kerdoiv. com). A total of 270 people took part in the survey (response rate: 64.8). All respondents were included in the final sample.

Participation was voluntary and anonymous. Participants were informed in writing about the survey's aims, the procedure, and privacy policy. They also had the opportunity to ask any questions about the research before involvement. Data collection was conducted on the cadets' free time. Participation in the research could be refused at any time. This study does not require institutional

ethical review board approval in accordance with institutional policies. The research was carried out in compliance with the Ludovika University of Public Services' Ethical Code (Code of Ethics adopted by the Senate of the University of Public Service by Resolution 32/2019 (VII. 10.). The study has been prepared in accordance with the LUPS' Code of Ethics, as well.

Measures

Smoking status

Characteristics of smoking was assessed by indicators based on international recommendations (ESPAD Group, 2021; Global Adult Tobacco Survey Collaborative Group, 2020; Office on Smoking and Health, 2020) and previous research methods (Elekes & Paksi, 2003; Paksi et al., 2021). Lifetime prevalence was determined by posing the question, 'Have you ever smoked?'. The last-year prevalence was assessed by asking, 'Have you smoked in the previous 12 months?'. The current use was measured by the following questions, 'Do you smoke every day or occasionally?' For the second question, participants were given a choice of three answers, 'Yes, regularly [every day]' or 'Yes, occasionally' or 'Not at all'. Within the group of current smokers, we made a distinction between those who smoked regularly (daily) and those who smoked occasionally.

Former smoking/Previous smoking

Former smokers (previous smoking) refers to respondents who have given up (i.e., quit) cigarette and/or tobacco smoking. Former smoker was definied as someone who was not smoking at the time of the interview, however, answered 'Yes' to the question 'Did you smoke regularly or occasionally in the past?' [Yes, regularly (every day); Yes, occasionally; No]. In this study we made a distiction between who smoked regulary or occassionaly befor (former smokers) and who smoked daily (regular (daily) former smokers).

Nicotin dependence

Nicotine dependence was measured among regularly smokers. To examine prevalence of nicotine dependence, the Hungarian version (Urbán et al., 2004) of Fagerström Test for Nicotine Dependence (FTND) was used (Heatherton et al., 1991; Fagerström et al., 1990). FTND the most commonly used measure of nicotine dependence. In this study, FTND test scores were evaluated using the

scoring scale developed by Heatherton and colleges (1991) because this version provides more reliable results for the biochemical indicator of smoking. Based on the FTND results, the level of nicotine dependence can be rated on a five-point scale: very low (0-2 points), low (3-4 points), moderate (5 points), high (6-7 points) or very high (8-10 points) (Fagerström et al., 1990). In previous studies, the internal consistency of FTND was found to be relatively low (Cronbach α=0.47; 0.59; 0.58) (Burling & Burling, 2003; Ebbert et al., 2006; Sledjeski et al., 2007). In this study internal consistency of FTND was acceptable (Cronbach α=0,61).

Socio-demographic variables

Age, gender (male, female), academic year, residence type (capital, county seat, town, village), religiosity (religious in some form, non-religious or don't know), romantic relationship status (single, live in romantic relationship), and subjective socio-economic status of the student's family (lower or lower-middle class, middle class, upper or upper-middle class) were also assessed in the questionnaire. Among the types of residence, those with a population ≥ 10,000 were classified as town and those with a population < 10,000 as villages. Respondents who lived in romantic relationship, married or registered partnership were classified as romantic relationship by romantic relationship status. 'Religious (in some form)' meant that the respondent following the doctrines of his/her religion, or being religious in his/her own way.

Statistical analysis

Data were subjected to a Kolmogorov-Smirnov (KS) test for normality. Parametric and non-parametric tests were selected based on the results of the KS test. We used the chi-square (c2) test to assess the relationship between smoking status, former smoking, nicotin dependence and socio-demographic variables. The association relationship between the test values was measured using the Cramer V (V) and Phi (f) coefficient. For the metric variables Fischer's F-test, two-sample t-test (t) and Cohen's effect size index (d) were used. The difference between the mean FTND score among smokers was analyzed using the t-test. Effect sizes of the difference of FTND score were estimated using Cohen's d statistic, for which values of 0.2, 0.5, and 0.9 are considered small, medium, and large effects, respectively.

Single logistic regression analysis was used to examine the relationship between smoking status and sociodemographic variables. The logistic regression

method was created with dichotomised smoking status as a dependent (response/outcome) variable. The possible values of the variable were 1 for regular smokers and 0 for non-smokers. Occasional smokers were left out of the sample in this analysis. The logistic regression model included sociodemographic variables, such as gender, type of residence, subjective classification of the family's social situation, romantic relationship status and religiosity as predidctors. The significance level was taken as $p < .050$.

Findings

The final study sample (n = 270) consisted of 57.4% male (n = 155) and 42.6% female (n = 115). The average age of cadets was 21.8 years (SD = 2.13, 95% CI: 21.52 – 22.03). The majority of participants hailed from small towns (38.9%) and villages (33.0%). More than half (52.5 – 86.1%) of cadets from each academic year group participated in the survey. The majority of participants (69.3%) came from middle-class families and 57.4% consider themselves to be religious in some form. Table 1 shows other socio-demographic data.

Table 1
Socio-demographic characteristics of the study sample (n, %)

		n	**%**
Gender	*male*	155	57.4
	female	115	42.6
Residence type	*capital*	31	11.5
	county seat	45	16.7
	town [a]	105	38.9
	village [b]	89	33.0
Romantic relationship	*single*	147	54.4
	romantic relationship [c]	123	45.6
Religiosity	*religious (in some form) [d]*	155	57.4
	non-religious or don't know	115	42.6
Subjective classification of the family's social situation	*lower or lower-middle class*	39	14.4
	middle class	187	69.3
	upper or upper-middle class	40	14.8
	NA	4	1.5
Academic year	*1st-year*	72	26.7
	2nd-year	69	25.6
	3rd-year	68	25.2
	4th-year	61	22.6

Note. Table is made by the author.

Our results show that more than three quarters (77.0%) of police cadets have ever tried smoking in their lifetime. Women were slightly more likely than men to have experimented with smoking in their lifetime, but the difference was not significant (81.7% vs 73.6%, respectively; $\chi^2(1) = 2.50$, p = .114, V = .10). 47.8% of the cadets had smoked in the previous 12 months, however there was no significant gender difference. The prevalence of current smoking was 35.6% (n = 96), meaning that more than one-third of police cadets smoked daily or occasionally.

Almost the half of ever smokers (47.9%) had tried smoking before the age of 16. However, one fifth (19.8%) of cadets who had ever smoked had experimented with smoking at or before the age of 13. 91.7% of current smokers also started smoking regularly or occasionally at or before the age of 16. Current smokers have smoked on average for six and a half years with some regularity, so daily or occasionally.

Smoking cessation was also examined in this study. 11.9% of the respondents answered they used to smoke before but had quit. 12.3% of men and 11.3% of women are involved in quitting. The proportion of daily smokers who quit was 4.1% of the sample. However, for police cadets, no significant gender differences were found for either smoking cessation ($\chi^2(1) = .05$, p = .811) or daily smoking cessation ($\chi^2(1) = .67$, p = .413). Table 2 shows the prevalence of smoking experimentation, smoking status and smoking cessation by gender.

Table 2
Smoking experimentation, smoking status and smoking cessation among police cadets by gender (%)

Indicators	All, % (n = 270)	Males, % (n = 155)	Females, % (n = 115)	p	V/ φ
lifetime prevalence	77.0	73.6	81.7	.114	.10
last-year prevalence	47.8	45.8	50.4	.452	.05
last-month prevalence	34.4	36.1	32.2	.499	.04
Actual smoking					
regular (daily) smoking	14.8	16.1	13.0	.480	.04
occassionaly smoking	20.8	16.8	26.1	.062	.10
Smoking cessation					
former smokers	11.9	12.3	11.3	.811	.01
regular (daily) former smokers	4.1	3.2	5.2	.413	.05

Note. Table is made by the author.

Smoking habits were examined by different sociodemographic variables. We found that, the highest proportions of current smokers are among cadets from towns (41.9%) and the capital (35.5%). However, the pattern of current smoking

by type of residence, no significant differences were observed ($\chi^2(3) = 3.37$, p = .330, V = .1). The prevalence of current smoking is also higher among those in romantic realtionship, those from a middle-class family, and the non-religious, compared to singles, those from a lower- or upper-class family, and the religious. Differences were not significant for the different variables though. Meanwhile, we found small effect size significant pattern in the lifetime prevalence of current smoking by religiosity ($\chi^2(1) = 4.27$, p < .05, φ = .13). Non-religious cadets are 68% more likely to have smoked in their lifetime or still smoke daily or occassionaly, compared to religious peers (OR = 1.68; 95% CI: 1.02 – 2.74).

Regular (daily) smoking was more prevalent among males, cadets living in the capital, non-religious, single and cadets from middle-class families compared to other sociodemographical groups. However, the differences observed for daily smoking were not significant for any of the variables (Table 3).

Table 3
Regular (daily) smoking prevalence by different sociodemographic variables (%)

	N	Regular (daily) smoking (%)	χ^2(df)	p	V/ φ
Gender					
male	155	16.1	.49(1)	.480	.04
female	115	13.0			
Residence type					
capital	31	16.1	.13(3)	.986	.02
county seat	45	13.3			
town [a]	105	15.2			
village [b]	89	14.6			
Romantic relationship					
romantic relationship [c]	123	14.6	.005(1)	.939	.005
single	147	15.0			
Religiosity					
religious [d]	155	12.9	1.39(1)	.236	.07
non-religious	110	18.2			
Subjective classification of the family's social situation					
lower or lower-middle class	39	10.3	5.29(2)	.070	.33
middle class	187	18.2			
upper or upper-middle class	40	5.0			
Academic year					
1st-year	72	11.1	1.84(3)	.605	.09
2nd-year	69	18.8			
3rd-year	68	14.7			
4th-year	61	14.8			

Note. Table is made by the author.

Because of its public health importance, we have examined patterns of smoking cessation by sociodemographic variables. Our results suggest that smoking quitting was more common among males than females, but the difference was statistically non-significant (12.3% vs. 11.3% respectively; $\chi^2(1) = .05$, $p = .811$, $\varphi = .01$). There were also no significant differences by type of residence and the subjective classification of the family's social situation. However, there was a significant pattern for romantic relationship status and religiosity in smoking cessation. Among those who lived in romantic relationship, the proportion of cadets who quit smoking was twice as high as among those who were single (16.3% vs. 8.2% respectively; $\chi^2(1) = 4.20$, $p < .05$, $\varphi = .1$). Results showed that people in a relationship were more than twice as likely (OR = 2.18; 95% CI: 1.02 – 4.67) to quit smoking compared to people who were single. There was also a medium effect size significant difference in smoking cessation by religiosity (7.1% vs. 19.1% respectively; $\chi^2(1) = 8.71$, $p < .01$, $\varphi = .2$). The results indicate that compared to police cadets who identified themselves as religious, non-religious cadets were more than three times more likely to quit smoking (OR = 3.08; 95% CI: 1.42 – 6.71). Table 4 shows the prevalence of smoking cessation by different sociodemographic variables.

Table 4
Smoking cessation prevalence by different sociodemographic variables (%)

	N	Smoking cessation (%)	χ^2(df)	p	V/ φ
Gender					
male	155	12.3	0.05(1)	.811	.01
female	115	11.3			
Residence type					
capital	31	6.5	1.93(3)	.586	.08
county seat	45	15.6			
town [a]	105	13.3			
village [b]	89	10.1			
Romantic relationship (???)					
romantic relationship [c]	123	16.3	4.20(1)	.040	.12
single	147	8.2			
Religiosity					
religious [d]	155	7.1	8.71(1)	.003	.18
non-religious	110	19.1			
Subjective classification of the family's social situation					
lower or lower-middle class	39	12.8	.79(2)	.671	.14
middle class	187	12.3			
upper or upper-middle class	40	7.5			

Note. Table is made by the author.

The prevalence and characteristics of nicotine dependence were examined only among regular (daily) smokers. The extent of nicotine dependence was estimated using the FTND. Results suggested that most of the regular smokers (85.5%) had very low or low nicotine dependence. One sixth of the cadets had moderate or high nicotine dependence. Daily smokers scored an average of 2.57 (SD = 1.87; 95% CI: 1.97 – 3.17) on the FTND scale, which also indicates that the majority of police cadets who smoke regularly had low or very low nicotine dependence. Results analised by gender, higher scores were found for males compared to females on the FTND scale. The average score for males was 2.60 (SD = 1.82; 95% CI: 1.84 – 3.35) and for females 2.53 (SD = 2.03; 95% CI: 1.40 – 3.65). However, the difference in mean scores was not significant (t(27) = .10, p = .917). Both very low and heavy nicotine dependence were more common among males. Low and moderate dependence were more prevalent among females. However, the difference was significant only for moderate dependence ($\chi^2(1) = 5.40$, p = .02, $\varphi = .4$). Table 5 shows the dependence categories by gender.

Table 5
FTND categories among regular (daily) smoker cadets by gender

FTND Categories	All % (n = 40)	Males, % (n = 25)	Females, % (n = 15)	p	φ
Very low dependence	52.5	56.0	46.7	.567	.09
Low dependence	32.5	32.0	33.3	.931	.01
Moderate dependence	7.5	.0	20.0	.020	.40
High dependence	7.5	12.0	.0	.163	.20
Very high dependence	.0	.0	.0	–	–
FTND classification used: very low (0–2 points), low (3–4 points), moderate (5 points), high (6–7 points), very high (8–10 points).					

Note. Table is made by the author.

Daily smoking was also examined using logistic regression method. It appears that regular smoking had no significant relationship with the included variables expecting the subjective classification of the family's social situation (Table 6). With regard to subjective classification of the family's social situation (upper or upper-middle, middle, lower and lower-middle class), in both the case of middle class (OR = 4.51, 95% CI: 1.03 – 19.86) and lower or lower-middle class (OR = 2.14, 95% CI: .36 – 12.63) the odds of regular smoking increased compared with upper or upper-middle class. The results mean that cadets living in middle-class families are 4.51 times more likely to be regular smokers than those living in upper- or upper-middle-class families. However, gender, religiosity, romantic relationship status and type of residence were not significant predictors.

Table 6

Results of the regression analysis

Smoking status (non-smoker vs. regular smoker)				
Predictor variables	**Coefficient B**	**z**	**OR [CI 95%]**	**p**
Gender	- .11	.32	.89 [.44 – 1.81]	.750
Residence type				
capital			*Ref.*	
county seat	-.29	.43	.75 [.2 – 2.78]	.667
town	.05	.08	1.05 [.34 – 3.23]	.933
village	-.16	.27	.85 [.27 – 2.69]	.785
Romantic relationship				
single			*Ref.*	
relationship	.06	.16	1.06 [.53 – 2.11]	.873
Subjective classification of the family's social situation				
upper or upper-middle class			Ref.	
middle class	1.51	1.99	4.51 [1.03 – 19.86]	.046
lower or lower-middle class	.76	.84	2.14 [.36 – 12.63]	.400
Religiosity				
religious (in some form)			*Ref.*	
non-religious	.30	.86	1.35 [.68 – 2.69]	.392

Note. Table is made by the author.

Discussion

Smoking remains one of the most significant health risk factors. Despite the obvious risks of smoking, tobacco use is still very widespread in these days. Because of the serious health risks and consequences, investigatin smoking habits and patterns of smoking is particularly important, especially among high-risk groups. Students in higher law enforcement education are at multiple risk of smoking. First, because they have chosen a profession where smoking and alcohol use are traditionally high compared to the general population (Basaza et al., 2020; Ramakrishnan et al., 2013; Richmond et al., 1998; Smith et al., 2005). On the other hand, young adulthood is a developmental period in which addictive behaviors manifest (Arnett, 2000). According to previous studies, tobacco use on college campuses remains a concern due to the high prevalence of smoking (Ickes et al., 2020).

In this study, the prevalence of current smoking among police cadets was 35.6%. Similar prevalence rates were found by Ambrusz and colleges (2024) among police officers in Szabolcs-Szatmár Bereg County (32.3%), and Mácsár et al. (2017) among sworn police in Budapest (33.4%). Our results suggest that

current smoking among police cadets is higher than general population. According to a previous epidemiological study, 28.7% of Hungarian adult population currently smokes (Brys et al., 2022), and the Eurobarometer 2020 survey found that the current smoking in Hungary was 28.0% (European Commission, 2021). It should be noted that in the NSAPH (National Survey on Addiction Problems in Hungary), the prevalence of current smoking was 35.1% among the Hungarian adult population (Urbán & Pénzes, 2021). On the other hand, in a similar study, Erdős (2022) found that 24.4% of law enforcement students (including police, customs and corrections students) currently smokes.

Generally, males tend to use cigarette and other tobacco products at higher rates than females (Higgins et al., 2015). Globally, the smoking prevalence among males stands four times higher than that among females (West, 2017). Previous studies among Hungarian adult population have found similar results for gender differences (Brys et al., 2022; Tombor et al., 2011; Urbán & Pénzes, 2021). It seems that, such differences may relate to a combination of psychological, biological (particularly ovarian hormones), cultural, and behavioral factors (Sieminska & Jassem, 2014). Despite evidence of gender differences in smoking in general population, this study found that current and daily smoking prevalence was not higher among males than females. Similar results have been found in previous national and international studies. Ambrusz and colleges (2024) found in a Hungarian sample that there was no significant differences between male and female police officers (32.8% vs. 29.1%). The prevalence of smoking among Ugandan police officers (male: 25.2% vs. female: 27.8%) also did not differ significantly (Basaza et al., 2020). In Poland, Jankowski and colleges (2021) found that the proportion of daily cigarette smokers (19.5%) was comparable to those observed in the general population (21%). However, gender differences in daily smoking among police employees were lower, compared to the general population. In the Polish general population, 18% of women and 24.4% of men reported daily smoking. Meanwhile, in the study by Jankowski and colleges (2021), the proportion of smokers was, respectively, 19% among females and 19.7% among males. The lack of gender differences in smoking can be explained by professional culture, nature of the profession, police stress and psychological characteristics of police officers. In addition, these results can also be explained by the age of the cadets and their specific socio-cultural environment (university). Previous studies suggest that gender gap in smoking is smaller among young people, especially in Western populations (Giovino et al., 2012). It should be noted, however, that in another representative survey of Hungarian university students, researchers found significant gender differences (Elekes & Arnold, 2024).

Surveys among police personnel have generally focused on regular (daily) smoking, occassiibly smoking and smoking cessation. Nicotine dependence has been studied less frequently in this population. According to Priyanka and colleges (2016) the majority (53.8%) of the smoking police officers had low nicotine dependence. The researchers found that 15.4% of the officers had moderate dependence, and 30.8% had high dependence (Priyanka et al., 2016). Among Tanzanian police officers, the prevalence of low and high tobacco use disorder were 93.8% and 6.2%, respectively (Ndumwa et al., 2023). Our results suggest that most police cadets (85.0%) had low or very low nicitine dependence. These results seem encouraging, especially as the Hungarian adult population is mainly characterised by high and moderate dependence (Urbán & Pénzes, 2021). It should be noted, however, that students in law enforcement training have to cope with greater physical requirements than the general population. Previous research has already shown that smokers have significantly poorer physical performance (Giraldo-Buitrago et al., 2001), and smokers perform worse on pulmonary function tests compared to non-smokers (Bernaards et al., 2003; Higgins et al., 1991).

Generally, our results suggest that different socio-demographical factors do not influence the smoking habits of police cadets. However, it seems, that religiosity and romantic partnership can play a significant role in prevention and cessation of smoking. Several previous studies have shown that religiosity or spirituality is associated with lower prevalence of various forms of substance use (Liu et al., 2007; Pikó & Fitzpatrick, 2004; Wallace & Froman, 1998). Examinig the smoking habits of police students, a significant pattern of religiosity was observed only for the lifetime prevalence of current smoking (p < 0.05). Non-religious cadets were 68% more likely to have smoked in their lifetime or to smoke today, compared to religious cadets. This suggests that religiosity as a whole is a protective factor for smoking. However, it may become less important in the period of university education.). In addition, cadets in a romantic relationship (OR = 2.18) or identified as religios (OR = 3.08) were more likely to quit smoking then their single and non-religious peers.

Young people in their early twenties face a number of risk factors related to health behaviors (e.g. stress, irregular lifestyle, lack of time, and many temptations) that can lead to health risk behaviors such as irregular eating, high intake of sweets, smoking, alcohol consumption and high caffeine intake (Kontor et al., 2016). In addition to public health concerns, smoking among police cadets also poses a particular risk to police recruitment. Thus, prevention should already be an important part of law enforcement training. Especially because the

prevalence of smoking can be worse later on. Previous studies found that older police officers have a higher smoking prevalence compared to younger police officers (Avdija, 2014; Basaza et al., 2020; Richmond et al. 1998). It would be particularly important to provide opportunities for law enforcement students in training to acquire relevant knowledge about the potential risks of consuming this psychoactive substance.

Limitations

The topic of this study bears great importance for law enforcement agencies, police academies, and higher education, as well. Despite the strengths and importance of the present study, this research has some limitations that should be acknowledged. First, our findings were based on a cross-sectional study, self-reported smoking characteristics, and online data collection. Future prospective studies could provide more reliable results. Second, substance use and addictive behavior remain sensitive issues, especially in the police population. This can lead to a deliberate bias in responses. Third, the results of the research apply only to students in higher education in law enforcement. We did not include students at secondary police schools or sworne officers in the survey. Finally, this study did not measure specifically the use of alternative tobacco products such as e-cigarettes or heated tobacco products.

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The data will be made available on request.

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