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Alcohol and nicotine use among Polish undergraduate students – the preliminary results

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ABSTRACT

Introduction and aim. “DiSCO” (Dietary Supplements Consumption of Undergraduate Students) study aimed to characterize the chosen elements of lifestyle among university students, including alcohol consumption and nicotine use.

Material and methods. The cross-sectional study was realized in cooperation with Italian Universities. The anonymous online survey was conducted from 01.02.2022 to 30.06.2023 among 294 Polish students (age range: 19-37): 202 women (mean age: 21.77; median: 21; SD: 2.46) and 92 men (mean age: 22.73; median: 22; SD: 2.89). The statistical analysis was performed with the use of Excel (Fisher's exact test; Chi² test; a significance level $p < 0.05$)

Results. 89.8% of students consumed alcohol in the last six months. 36.7% of students used tobacco products in the last year. The analysis of the frequency and type of nicotine products used and the frequency and circumstances of alcohol consumption by students did not reveal any significant differences among the sexes and age groups ($p > 0.05$). Most of the students declared to occasionally use nicotine products (up to 3 times a week), most often traditional cigarettes or shredded tobacco. Most students consume alcohol 2–4 times a month, most often regardless of the meals.

Conclusion. Alcohol consumption and nicotine use among Polish students are similar in both sexes.

Keywords. alcohol, nicotine, students

Introduction

The lifestyle can change in different stages of life. Recent studies pay attention to the fact that students often follow unhealthy lifestyles.¹⁻⁴ It can impact not only their physical health but also their psychological well-being.² Bad habits include alcohol and nicotine use.¹⁻³ The student's behavioral changes in everyday functioning were revealed during the SARS-CoV-2 pandemic.⁵ The results showed that additional support

would be beneficial in these groups.⁵ It seems that the knowledge about the consequences of unhealthy choices is insufficient to change the behavior.⁶

The concern about alcohol and nicotine among young adults is a key topic and a worrisome phenomenon. Although alcohol consumption has long been considered a part of human culture, nowadays more is known about its adverse effects. The researchers confirm the relationship between chronic heavy alcohol consumption and physical and mental diseases. Among them are various types of cancer, liver disease, pancreatitis, and dementia.^{7,8} It is also worth underlining the fact alcohol's contribution to injury-related premature loss of life, disability and ill-health are pervasive, touching individuals, families, and societies throughout the world remains significant.⁹

According to Lasota et al., 22% of all deaths from suicide can be attributed to the use of alcohol.¹⁰ Alcohol not only increases the risk of suicide but also other auto-aggressive behaviors.^{11,12} The devastating influence of chronic alcohol consumption on human health is well established. Even authors who document the association of moderate wine consumption in a Mediterranean diet model with health benefits, underline the necessity to promote behavioral education to prevent abuse among young people.¹³

Greń et al. underline that the harm associated with psychoactive substances can be different in different people due to the fact, that the influence of psychoactive substances results from the interaction of many factors.¹⁴ According to the Drug, Set & Setting model, these factors include for example individual susceptibility and expectations of the substance's effects.¹⁴ A recent meta-analysis of 33 databases from alcohol use studies indicates that the amount and frequency of alcohol drinking alone explained only about 23% of the variance in related harms among college students.¹⁵

Wysokińska et al. showed that the knowledge of alcohol consumers about the negative effects of alcohol consumption on health is insufficient.¹⁶ The consumers were not aware of the term “standard drink” for ethyl alcohol and underestimated the energy value of alcoholic beverages and the health consequences of excessive consumption.¹⁶ There was a lack of knowledge on the impact of ethyl alcohol on pregnancies, and lactation.¹⁶

In Italy a cross-sectional Study on Dietary Supplements Consumption – DiSCo was carried out involving undergraduate students from public universities located in northern, central, and southern Italy to investigate the elements of young adults' lifestyle.¹⁷

Aim

To characterize the use of nicotine and alcohol among Polish university students.

Material and methods

The cross-sectional study “DiSCo” (Dietary Supplements Consumption of Undergraduate Students) is realized among Polish students in co-operation with Italian Universities.

The questionnaire designed by the Italian team (questions about lifestyle, use of alcohol and nicotine, etc.) was translated from Italian into Polish. The Italian team adapted to the Italian language and the guidelines of the Italian Ministry of Health the questionnaires used in the studies of Malinauskas et al. and Barnes et al. and structured in a Google module.¹⁷⁻²⁰ The questionnaire included questions about the sociodemographic information, behavioral features of participants, alcohol use, amount of weekly time spent in moderate-vigorous activities, and practice of sport, and specifically investigated the undergraduates' habits of dietary supplement consumption¹⁷. The study was performed by the principles of the Declaration of Helsinki after the ethical approval was obtained from the research committee of the University of Rome "Foro Italico" (approval no. University Research Committee (CAR) 104/2021).¹⁷ To make sure that there was no misunderstanding in the questions the translation of the questionnaire from Italian to Polish also took place in the other direction – from Polish to Italian.

The anonymous online survey was created with the use of a Google module and distributed via the Internet to the Polish students. The distribution took place directly by the teachers who gave the students a link to the online questionnaire, also the QR code was generated and distributed via posters on the university campus and advertisements on social media.

A total of 294 students participated in the study. Among 294 participants of the study, there were 202 women (mean age: 21.77; median: 21; SD: 2.46) and 92 men (mean age: 22.73; median: 22; SD: 2.89). The students studied medicine (170), psychology (68), food technology and human nutrition (15), human biology (13), quality management and food analysis (6), pharmacology (4), medical analytics (3), dentistry (12), nursing (1), and biotechnology (1), robotics (1). The data were collected from 01.02.2022 to 30.06.2023.

The database was created in Excel. The statistical analysis was performed with the use of Excel (Fisher's exact test; Chi² test; a significance level $p < 0.05$).

To perform the Italian part of the study ethical approval was obtained from the research committee of the University of Rome "Foro Italico" (approval no. University Research Committee (CAR) 104/2021). However, to perform the study in Poland also the Bioethics Committee of the Medical University in Poland gave a positive opinion about the study (KB 240/2022).

Results

The participants were asked a question about the use of alcohol in the last six months. In 89.8% the answers were positive. 182 female and 82 male students drank alcohol during the last 6 months. Among the students who did not drink alcohol were 20 women and 10 men ($p > 0.05$).

The students were also asked if they used tobacco products (cigarettes, roll-your-own tobacco, pipe tobacco, cigars, cigarillos, e-cigarettes, smokeless tobacco products) in the last 1 year. In 36.7% the answers were positive (70 women and 38 men). Among students who did not use tobacco products last year were 132

women and 54 men ($p>0.05$) (Table 1). No differences were seen among students in different age groups (Table 2).

Table 1. The use of alcohol and nicotine products by students according to sex

| | | n | % | n | % | p |
|---|-----|-----|-------|----|-------|-------|
| Have you used tobacco products (cigarettes, roll-your-own tobacco, pipe tobacco, cigars, cigarillos, e-cigarettes, smokeless tobacco products in the last 1 year)? | no | 132 | 65.35 | 54 | 58.7 | 0.273 |
| | yes | 70 | 34.65 | 38 | 41.3 | |
| Have you consumed alcohol in the last 6 months? | no | 20 | 9.9 | 10 | 10.87 | 0.799 |
| | yes | 182 | 90.1 | 82 | 89.13 | |

Table 2. The use of alcohol and nicotine products by students in different age groups

| | | n | % | n | % | p |
|---|-----|-----|-------|----|-------|-------|
| Have you used tobacco products (cigarettes, roll-your-own tobacco, pipe tobacco, cigars, cigarillos, e-cigarettes, smokeless tobacco products in the last 1 year)? | no | 130 | 61.32 | 56 | 68.29 | 0.266 |
| | yes | 82 | 38.68 | 26 | 31.71 | |
| Have you consumed alcohol in the last 6 months? | no | 18 | 8.49 | 12 | 14.63 | 0.119 |
| | yes | 194 | 91.51 | 70 | 85.37 | |

The analysis of the frequency and type of nicotine products used by students did not reveal any significant differences among the sexes and age groups (Tables 3 and 4). Most of the students declared to occasionally use nicotine products (up to 3 times a week), most often traditional cigarettes or shredded tobacco.

Table 3. Frequency and types of used nicotine products by female and male students

| | Total | | Women | | Men | | p |
|---|--------------|------|--------------|-------|------------|-------|----------|
| | n | % | n | % | n | % | |
| Frequency of use | | | | | | | |
| Yes, but I quit within a year | 6 | 5.56 | 3 | 4.29 | 3 | 7.89 | 0.549 |
| Yes, at least once a day | 40 | 37.0 | 24 | 34.29 | 16 | 42.11 | |
| Yes, 4 to 6 times a week | 6 | 5.56 | 5 | 7.14 | 1 | 2.63 | |
| Yes, occasionally/ up to 3 times a week | 56 | 51.8 | 38 | 54.29 | 18 | 47.37 | |
| | 4 | | | | | | |
| Type of nicotine products | | | | | | | |
| electronic cigarettes (e-cigarettes) | 30 | 27.7 | 22 | 31.43 | 8 | 21.05 | 0.450 |
| tobacco heating products (e.g. IQOS, GLO, JUUL, etc.) | 11 | 10.1 | 6 | 8.57 | 5 | 13.16 | |
| traditional cigarettes or shredded tobacco | 67 | 62.0 | 42 | 60.00 | 25 | 65.79 | |
| | 4 | | | | | | |

Table 4. Frequency and types of used nicotine products in different age groups

| | Total | | 19–23 years old | | ≥24 years old | | p |
|---|--------------|------|------------------------|-------|----------------------|-------|----------|
| | n | % | n | % | n | % | |
| Frequency of use | | | | | | | |
| Yes, but I quit within a year | 6 | 5.56 | 5 | 2.36 | 1 | 1.22 | 0.719 |
| Yes, at least once a day | 40 | 37.0 | 32 | 15.09 | 8 | 9.76 | |
| Yes, 4 to 6 times a week | 6 | 5.56 | 5 | 2.36 | 1 | 1.22 | |
| Yes, occasionally/ up to 3 times a week | 56 | 51.8 | 40 | 18.87 | 16 | 19.51 | |
| | 4 | | | | | | |
| Type of nicotine products | | | | | | | |
| electronic cigarettes (e-cigarettes) | 30 | 27.7 | 26 | 12.26 | 4 | 4.88 | 0.269 |
| tobacco heating products (e.g. IQOS, GLO, JUUL, etc.) | 11 | 10.1 | 8 | 3.77 | 3 | 3.66 | |
| traditional cigarettes or shredded tobacco | 67 | 62.0 | 48 | 22.64 | 19 | 23.17 | |
| | 4 | | | | | | |

Most students consume alcohol 2-4 times a month, most often regardless of the meals. The analysis of the frequency and circumstances of alcohol consumption did not reveal any significant differences among the sexes and different age groups (Tables 5 and 6).

Table 5. Frequency and circumstances of alcohol consumption^a

| Frequency | Total | | Women | | Men | | p |
|--------------------------------|-------|-------|-------|-------|-----|-------|-------|
| | n | % | n | % | n | % | |
| 2-3 times a week* | 44 | 16.67 | 31 | 17.03 | 13 | 15.85 | 0.353 |
| 2-4 times a month | 123 | 46.59 | 81 | 44.51 | 42 | 51.22 | |
| 4 times a week or more* | 3 | 1.14 | 0 | 0 | 3 | 3.66 | |
| once a month or less | 94 | 35.61 | 70 | 38.46 | 24 | 29.27 | |
| Circumstances | | | | | | | |
| most often regardless of meals | 206 | 78.03 | 144 | 79.12 | 62 | 75.61 | 0.524 |
| usually with a meal | 58 | 21.97 | 38 | 20.88 | 20 | 24.39 | |

^a*groups were analyzed together

Table 6. Frequency and circumstances of alcohol consumption in different age groups

| Frequency | Total | | 19–23 years old | | ≥24 years old | | p |
|--------------------------------|-------|-------|-----------------|-------|---------------|-------|-------|
| | n | % | n | % | n | % | |
| 2-3 times a week | 44 | 16.67 | 32 | 15.09 | 12 | 14.63 | 0.947 |
| 2-4 times a month | 123 | 46.59 | 89 | 41.98 | 34 | 41.46 | |
| 4 times a week or more | 3 | 1.14 | 2 | 0.94 | 1 | 1.22 | |
| once a month or less | 94 | 35.61 | 71 | 33.49 | 23 | 28.05 | |
| Circumstances | | | | | | | |
| most often regardless of meals | 206 | 78.03 | 156 | 73.58 | 50 | 60.98 | 0.119 |
| usually with a meal | 58 | 21.97 | 38 | 17.92 | 20 | 24.39 | |

Evaluation of the concomitant consumption habits evaluated that 104 (35.37%) students admitted to consuming alcohol and using nicotine products.

Discussion

The main advantage of the study is the fact that it uses the same questionnaire to study undergraduate students' lifestyles in different countries. Because the cross-sectional study "DiSCO" (Dietary Supplements Consumption of Undergraduate Students) is realized in other countries it facilitates the comparison between Polish and Italian students. Similarly to Polish students, most students do not smoke and no differences

were found in smoking habits between the sexes.¹⁷ However, the results indicate that smoking is more popular among Polish male students because in Italy 63% of them do not smoke (in Poland 58.3%).¹⁷ However, among female students, more non-smokers were in Poland than in Italy (65.5% vs. 63.3%).¹⁷ In the study realized among students in Southern Thailand 93.3% of participants did not smoke.²¹ No differences were found among the nicotine products chosen by Polish students. The study realized among the students of medical colleges in Saudi Arabia men were more prone to e-cigarette use than women.²² It is worth noticing that medical students represent significant percentage of the participants of the study. It can be explained that the study is realized by researchers from medical universities. Moreover, it can be assumed that medical students are more interested in the topic of health than other students.

Prijic et al. noticed that even medical students use cigarettes during studies despite their knowledge about the health effects of smoking.⁶ They underline the role of the proper local environment in increasing the motivation for smoking cessation, for example, all the hospitals and university campuses should be smoke-free.⁶ In their opinion, the government is responsible for mobilizing the public media, school educators, youth organizations, and universities to keep schools and universities smoke-free.⁶

It is important to underline that in this study, the number of "light smokers" (62) was much higher than the number of most probably "heavy smokers" (addicted to nicotine) (40). These findings indicate that the questions probably were confusing for the responders and the answers could not reflect the situation. In the next study, with a higher number of participants, it would be worth considering the modification of the Italian questionnaire. For example, in the section "Frequency of use" should also be the answer "Yes, but I quit.". Moreover, it would be also useful to add the following questions: "If you are a smoker, when do you light your first cigarette in the morning after you get up from the bed - within 30, 45, 60 minutes, or later?", "How many cigarettes a day do you usually smoke?", "If you smoke occasionally, not every day, how many cigarettes a week do you smoke?". In this way, the obtained data on smoking tobacco or other tobacco/nicotine products would be more adequate. In addition, it would be interesting to know how many students 'light smokers' would be candidates for easier weaning from smoking because they only have a psychological addiction. On the other hand, for "heavy smokers" it is very difficult to quit because they have both a physical and psychological addiction.

The use of e-cigarettes is a relatively new and important aspect of nicotine addiction. According to Mroczek et. al., who conducted a questionnaire survey in 2022–2023 in a group of 79 medical students (47 women and 32 men) aged 19–37 at the Medical University of Silesia in Katowice, the vast majority of respondents were exposed to passive smoking of e-cigarettes.²³ Moreover, many students did not know the harmful substances contained in e-cigarette smoke and e-cigarettes were often considered to be a healthier nicotine delivery system than cigarettes and supposed to help quit smoking.²³ Thus, the knowledge concerning the harmful effects of e-cigarette usage (such as increasing the risk of cancer or cardiac ischemia) should be disseminated, especially about the toxic compounds contained in e-cigarette smoke.²³ On the other hand,

Mroczek et al. suggest that the awareness of the harmfulness of the e-cigarette aerosol is not bringing about any change in social behavior, even among young people studying medicine²³. Mroczek suggests that the solution could be the introduction of regulations banning e-cigarette smoking in public spaces in the future.²³ It could be a promising option. Opoczyńska-Świeżewska et al. indicate that the respondents who participated in the study aimed to gather the opinions of smokers, non-smokers, and those who had quit smoking regarding the smoking ban (concerning traditional tobacco products) in public places, expressed satisfaction with the smoking ban in public places.²⁴

Similarly to Italian students, most Polish students used alcohol two to four times in 1 month¹⁷. In Italian students, alcohol consumption differed among sexes.¹⁷ Women significantly more often did not consume alcohol than men (16.7% vs. 11.4%, $p=0.008$).¹⁷ In Polish students alcohol consumption was similar among sexes and fewer students declared not to consume alcohol (9.9% of women and 10.87% of men). The study realized among the Swedish students also did not detect significant differences between the proportions of male and female students concerning engagement in alcohol use.²⁵ However, significant differences between sexes were found in hazardous alcohol use by Spanish university students.²⁶ In general, alcohol consumption was less frequent among university students in Southern Thailand.²¹ Only 36% of them reported consuming alcohol in the last 6 months.²¹ However, the fact that 71.8% of participants declared the Islamic religion can play a role in this situation.²¹ The authors noticed that Muslim students were less likely to consume alcohol.²¹ There were also significant differences between the sexes.²¹ Males reported drinking more than females.²¹ The cultural differences in alcohol consumption were confirmed by Chu et al. who compared the alcohol consumption among Chinese and German university students and demonstrated a much lower consumption of alcohol in Chinese students.²⁷

Gambles et al. suggest that the consumption of alcohol among students is related to the perception of a heavy-drinking student culture.²⁸ Moreover, it is also determined by the knowledge about how drinking alcohol helps successful integration with peers.²⁸ Singh noticed that male students use alcohol as a source of courage to enact hegemonic heterosexual masculinities.²⁹ Moreover, the author concluded that when alcohol is seen as a tool to enhance men's capacity to control women, it is also used to explain men's loss of control over their behavior.²⁹

Gajda et al. aimed to characterize the determinants of alcohol consumption among medical students and analyzed data from the POLLEK cohort study on alcohol consumption and possible influencing factors. They revealed that 30.9% of students were hazardous drinkers according to the AUDIT test.³⁰ The risk factors of hazardous/harmful drinking according to the results of this study were male gender and smoking cigarettes.³⁰ The worrisome discovery was the fact that in own study the evaluation of the concomitant consumption habits in the study group indicated that 35,37% of students consume alcohol and use nicotine products.

Alcohol consumption in Polish society is a known, and widely discussed problem. The results of Wilczyński et al. show that 95.5% of Polish students use it with a significant tendency towards overusing it.³¹ They revealed that their study group 3.32% of students may be in the group of a high alcoholism risk.³¹

The researchers confirm the negative impact of alcohol consumption on female health, especially the increasing risk of breast cancer.⁸ Also, the link between alcohol consumption during pregnancy and adverse birth outcomes is well documented.²²⁻³² The expected differences in alcohol consumption between women and men were not confirmed in the results of the own study.

Moreover, the fact that the differences between genders in the amount of alcohol consumed are blurred was noticed by other Polish authors. Brodziak-Dopierała et al. performed a study in a group of 196 students from two Silesian universities.³⁴ The authors also noticed that the popularity of alcohol use by students is associated with the fact that some of them already used alcohol during adolescence.³⁴

The realized study has some limitations. The presented data are preliminary results. Thus, more participants should be recruited to obtain more representative data for the whole population of Polish undergraduates. Moreover, the questionnaire was self-reported, which is related to the possibility of under- or overestimation of some habits. The fact that the questionnaire was designed to characterize different aspects of the student's lifestyle (mainly dietary supplement consumption) and translated from Italian to Polish, restricted the number of additional questions asked about nicotine and alcohol use due to length limitation. The results of the study indicate the need for prevention. Wysokińska et al. proposed to conduct educational activities, taking into account the participation of health professionals and educational institutions, aimed at increasing consumer awareness of the impact of ethanol on health.¹⁶

The study of Bujalski aimed to investigate the prevalence of alcohol cancer awareness and examine the impact of drinking and sociodemographic variables on alcohol-attributable cancer awareness among the adult population in Poland.³⁵ Bujalski's results confirmed existence of the considerable differences in cancer awareness regarding different types of alcohol-attributable cancer and indicated that over 50% of the Polish adult population is aware that alcohol may affect the aerodigestive tract.³⁵ However, the awareness of alcohol's impact on breast cancer is much lower.³⁵ The author underlines the importance of paying particular attention to increased breast cancer risk in public awareness campaigns on cancer and alcohol.³⁵

However, it seems that increasing knowledge about the negative impact of smoking and alcohol consumption on health seems to be insufficient to change human behavior. Surprisingly, according to the study of Bryl et al. realized on 268 Polish medical students drinking alcohol was a way of coping with stress in students of medical faculties.³⁶ These people were aware of the negative consequences related to alcohol use. It seems essential to create an environment for medical students that would enhance healthy stress-coping strategies and promote early prevention of alcohol abuse.³⁶ It would be necessary to change young people's perspectives about alcohol and nicotine use. Case et al. noticed the phenomenon of the social

stigma evolved as a perceived disadvantage to e-cigarette use.³⁷ Nowadays, a socio-ecological approach that pays attention to the individual, social, and psychological influences seems to be the most effective way of reducing the hazardous use of alcohol and other substances.³⁸

The advantage of the study is the fact that it uses the same questionnaire to study undergraduate students' lifestyles in different countries. However, at the same time, this fact can be a disadvantage, because the questionnaire could not be adapted to the Polish population. Moreover, the length of the questions due to the questions about many elements of lifestyle included in the questionnaire sections did not afford the extension. However, in the future when performing the study on a larger population it would be useful to extend the questionnaire and include the questions such as the CAGE questionnaire or the Fagerstrom Test of Nicotine Dependence. In this way, the obtained results would have a greater value.³⁹⁻⁴¹

Conclusion

Alcohol consumption among Polish students is high (almost 89.8% of students consume alcohol) and does not differ among the sexes. 63.3% of students do not use tobacco products.

Traditional cigarettes or shredded tobacco are the most often chosen type of nicotine products.

The need for the implementation of preventive strategies, including the promotion of a healthy lifestyle, and education about the negative impact of alcohol and nicotine (including e-cigarettes) on human health is crucial.

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Declarations

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Author contributions

Conceptualization, A.K.; Methodology, A.K.; Software, A.K.; Validation, A.K.; Formal Analysis, A.K.; Investigation, A.K.; Resources, A.K.; Data Curation, A.K.; Writing – Original Draft Preparation, A.K.; Writing – Review & Editing, A.K.; Visualization, A.K.; Supervision, A.K.; Project Administration, A.K.

Conflicts of interest

The author declare no competing interests.

Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval

All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Wroclaw Medical University (KB 240/2022).

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