SMOKING HABITS AMONG NURSING STUDENTS: A CROSS-SECTIONAL STUDY
FAJČIARSKE NÁVYKY MEDZI ŠTUDENTMI OŠETROVATEĽSTVA: PRIEREZOVÁ ŠTÚDIA

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ABSTRACT

Introduction: the prevalence of smoking among college students is a significant public health concern; this condition gives rise to various problems, such as the risk of alcohol abuse, anxiety symptoms and gambling. The objective is to estimate the prevalence of smoking in nursing students and evaluate associated factors with smoking risk.

Material and methods: The study design is cross-sectional. The study population is made up of first, second and third-year nursing students at the University of Palermo (Italy). Three questionnaires were administered. The Alcohol Use Disorders Identification Test (AUDIT-C) was administered to assess risky alcohol use. Beck Anxiety Inventory (BAI) is a self-report instrument that assesses the severity of anxiety symptoms in adults. The "Canadian Problem Gambling Index" (CPGI) is a test that investigates gambling. An ordered logistic regression was carried out, considering it as the dependent variable "Do you currently smoke? Yes", all the variables present in the questionnaire were entered as independent variables.

Results: 801 agreed to answer the questionnaire. 32.21% respondents reported being smokers, and among them, the average weekly consumption was 44.55 cigarettes. The average age of the sample is approximately 23 years. Factors statistically significantly associated with the dependent variable "Do you currently smoke? Yes" are having had sleep disorders in the last 2 weeks (aOR = 1.72), having risky alcohol consumption (aOR = 2.86), being a subject with severe anxious symptoms (aOR = 2.10) and having serious problems with gambling (aOR = 2.97).

Conclusions: Targeted interventions are needed to effectively reduce smoking prevalence and promote healthier lifestyles among this population.

Key words: University students. Nursing students. Italy. Sicily. Smoke. Tobacco use.

ABSTRAKT

Úvod: Prevalencia fajčenia medzi vysokoškolskými študentmi je významným problémom verejného zdravia; tento stav spôsobuje rôzne problémy, ako je riziko zneužívania alkoholu, úzkostné príznaky a hazardné hry. Cieľom je odhadnúť prevalenciu fajčenia u študentov ošetrovateľstva a vyhodnotiť súvisiace faktory s rizikom fajčenia.

Materiál a metódy: Štúdia je prierezová. Populáciu štúdie tvoria študenti ošetrovateľstva prvého, druhého a tretieho ročníka na Univerzite v Palerme (Taliansko). Boli aplikované tri dotazníky. Na posúdenie rizikového užívania alkoholu bol použitý Test identifikácie porúch užívania alkoholu (AUDIT-C). Beckov inventár úzkosti (BAI) je nástroj sebahodnotenia, ktorý hodnotí závažnosť úzkostných príznakov u dospelých. „Kanadský index problémového hazardu" (CPGI) je test, ktorý skúma hazardné hry. Bola vykonaná usporiadaná logistická regresia, pričom sa za závislú premennú „Fajčíte v súčasnosti? Áno" považovala všetky premenné prítomné v dotazníku ako nezávislé premenné.

Výsledky: 801 respondentov súhlasilo s vyplnením dotazníka. 32,21 % uviedlo, že sú fajčiari, a medzi nimi bola priemerná týždenná spotreba 44,55 cigariet. Priemerný vek vzorky je približne 23 rokov. Faktory štatisticky významne spojené so závislou premennou „Fajčíte v súčasnosti? Áno" sú: poruchy spánku v posledných 2 týždňoch (aOR = 1,72), riziková konzumácia alkoholu (aOR = 2,86), závažné úzkostné príznaky (aOR = 2,10) a vážne problémy s hazardnými hrami (aOR = 2,97).

Závery: Na účinné zníženie prevalencie fajčenia a podporu zdravšieho životného štýlu v tejto populácii sú potrebné cielené intervencie.

Kľúčové slová: Vysokoškolskí študenti. Študenti ošetrovateľstva. Taliansko. Sicília. Dym. Užívanie tabaku.

INTRODUCTION

Smoking represents a major public health challenge, with significant implications for morbidity and mortality worldwide [1]. Among different population categories, college students are particularly

susceptible to starting, persisting or quitting smoking, because of social, psychological and economic factors that characterize this period of life [2]. Previous studies have highlighted that the prevalence of smoking among college students varies considerably depending on geographic, cultural, and social context [3]. For example, the prevalence of smoking among university students in European and American countries exceeds 30% [4]. While some studies have identified socio-demographic, behavioral and environmental variables associated with tobacco use in this population [5], others have highlighted the importance of psychological factors and social influences in determining students' smoking habits [6, 7]. Other studies have identified several factors associated with smoking risk among college students, including gender, age, socioeconomic status, alcohol consumption, and psychoactive substance use [8]. Smoking habits are associated with a greater risk of anxiety and depression [9]. Furthermore, students who smoke appear to have a greater risk of drinking or being involved in alcohol consumption, degenerating into binge-drinking behaviors [10]. From a study carried out by Weinberger et al. [11], smoking occurs more among adolescents who practice gambling. The present study aims to conduct an in-depth investigation into a representative sample of nursing students at the University of Palermo. Through the analysis of the data collected, we aim to identify the main determinants of tobacco consumption and provide useful information for the development of interventions aimed at reducing smoking and promoting healthy lifestyles within academic institutions. The objective of the study is to estimate the prevalence of smoking in nursing students at the University of Palermo and to see what factors are associated with smoking risk.

MATERIALS AND METHODS

The study was conducted in April 2024 and employed a cross-sectional design. The study population consisted of first-, second- and third-year nursing students at the University of Palermo (Italy), as well as a supplementary-year students, defined as those who do not fall into the first, second or third years but who they have not yet finished their studies and do not belong to one of the three years of the degree course. Informed consent was requested from each participant. In the first part, participants were asked to answer personal questions regarding their studies, employment, perception of economic and health status, and lifestyle habits. For smokers, the number of cigarettes consumed per week was also recorded. The complete list of questions is available in Table 1. In the second part of the survey, the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) was administered. This test includes three questions designed to assess the potential risk of alcohol consumption [12]. Each question offers five possible answers, scored from 0 to 4. In the third part of the survey the Beck Anxiety Inventory (BAI) questionnaire was administered, a self-report tool that allows to assess the severity of anxiety symptoms in adults by administering 21 items (investigating somatic anxiety symptoms, subjective or related to phobias) with four possible answers to which are assigned a score ranging from 0 to 3. Based on the score the subjects are assigned to one of the following categories: 0 – 21 mild, 22 – 35 moderate, ≥ 36 severe [13].

In the fourth section of the questionnaire "Canadian Problem Gambling Index" (CPGI) was administered, a test that consists of nine questions that investigating on gambling, each question has four possible answers with a score from 0 to 3. A total score is calculated by summing the individual item scores. Based on this total, participants are classified as follows: "Unproblematic player" (score = 0), "Player at risk" (score = 1 – 2), "Moderate gambling problems" (score = 3 – 7), or "Severe gambling problems" (score > 7) [14]. The "age" variable was subsequently dichotomized into < 23 years and ≥ 23 years as the average age of the sample was 22.71 years. The Body Mass Index (BMI) was calculated with the weight and height variables and then based on the value obtained the subjects were categorized into four groups: (i) normal weight if BMI was between 18.50 and 24.99, (ii) overweight if BMI was between 25.00 and 29.99, (iii) obese if BMI was greater than or equal to 30, and (iv) underweight if BMI was below 18.50 [15].

To take the exams, students must attend lessons, so the test was administered at the end of the lessons during the lesson days.

Absolute and relative frequencies were calculated for all quantitative variables; categorical variables were analyzed using Pearson's chi-squared test. A multivariable logistic regression was performed, considering it as the dependent variable "Do you currently smoke? Yes", all the variables present in questionnaire were inserted as independent variables. Each independent variable is adjusted

for all the other independent variables. A linear regression adjusted for gender and age was also performed with the dependent variable "number of cigarettes consumed in a week by smokers" to verify the association with AUDIT-C, BAI and CPGI test scores. The statistical significance level chosen for all analyses was 0.05. Results were analyzed using STATA statistical software version 14 [16]. Results are expressed as adjusted odds ratio (aOR) with 95 % confidence intervals (95 % CI).

The study was approved by the Ethics Committee of the P. Giaccone" University Hospital of Palermo, Minutes no. 14/2024 (1. Study BMSI) of June 6th, 2024.

RESULTS

Table 1 shows the characteristics of our study population. The questionnaire was administered to all those present on the day of the lessons, we collected 801 questionnaires out of 806 present (99.38 % of those present), 5 subjects did not give

Table 1 Description of the sample

Variables		N	%
Age class	< 23 years old	558	69.66
	≥ 23 years old	243	30.34
Gender	Male	226	28.21
	Female	575	71.79
BMI	Normal weight	554	69.16
	Overweight	144	17.98
	Obese	66	8.24
	Underweight	37	4.62
Country of birth	Italy	788	98.38
	Other	13	1.62
Year of study	First	402	50.19
	Second	200	24.97
	Third	177	22.10
	Supplementary year student	22	2.74
Do you have a job right now?	Yes	82	10.24
	No	719	89.76
Do you live with your family?	Yes	705	88.01
	No	96	11.99
Are you a student off-site or off-site?	In-site	478	59.68
	Off-site	323	40.32
Do you currently smoke?	I have never smoked	164	20.47
	No	379	47.32
	Yes	258	32.21
Are you engaged or single?	Engaged	494	61.67
	Single	307	38.33
Perceived health status	High	291	36.33
	Medium	463	57.8
	Low	47	5.87
Perceived economic status	High	103	12.86
	Medium	559	69.79
	Low	139	17.35
Do you perform regular physical activity?	Yes	259	32.33
	No	542	67.67
Have you had any sleep disturbances in the last 2 weeks?	No	486	60.67
	Yes	315	39.33
BAI	Mild	507	63.30
	Moderate	193	24.09
	Severe	101	12.61
AUDIT-C	Not risk	713	89.01
	At risk	88	10.99
CPGI	Unproblematic player	691	86.27
	Player at risk	57	7.12
	Moderate gambling problems	24	3.00
	Serious gaming problems	29	3.62
Number of cigarettes per week	44.55 (SD ± 40.83)		
Age	22.71 (SD ± 5.12)		
BMI score	23.27 (SD ± 4.05)		

the consent to complete the questionnaire. 32.21 % reported being smokers and among these the average weekly consumption of 44.55 cigarettes, the study population is made up of 71.79 % women, the average age of the sample is approximately 23 years, for further details see the Table 1.

The students enrolled in the degree course in the various years are: first year 410 students, second year 210 students and third year 200 students.

Table 2 shows the bivariate analysis. From this analysis it emerges that the statistically significant variables with smoking habits are Age class, Gender, Year of study, living with family, Student off-site or in-site, Perceived health status, Perceived economic status, having sleep disturbances in the last 2 weeks, AUDIT-C, BAI, CPGI.

Table 3 shows the logistic regression; factors statistically significantly associated with the dependent variable "Do you currently smoke? Yes" are having had sleep disorders in the last 2 weeks (aOR = 1.72), having risky alcohol consumption (aOR = 2.86), being a subject with severe anxious symptoms (aOR = 2.10) and having serious problems with gambling (aOR = 2.97).

Table 4 shows the linear regression. As the number of cigarettes consumed per week increases, the

Table 2 Correlation between the smoking habits and the variables of the first section of questionnaire. Used Pearson's Chi-square test

Variables		**Do you currently smoke?**		
		No (%)	**Yes (%)**	***p-value***
Age class	< 23 years old	392 (70.25)	166 (29.75)	0.024
	≥ 23 years old	151 (62.14)	92 (37.86)	
Gender	Male	138 (61.06)	88 (38.94)	0.011
	Female	405 (70.43)	170 (29.57)	
BMI	Normal weight	383 (69.13)	171 (30.87)	0.161
	Overweight	96 (66.67)	48 (33.33)	
	Obese	37 (56.06)	29 (43.94)	
	Underweight	27 (72.97)	10 (27.03)	
Country of birth	Italy	532 (67.51)	256 (32.49)	0.191
	Other	11 (84.62)	2 (15.38)	
Year of study	First	293 (72.89)	109 (27.11)	0.010
	Second	130 (65.00)	70 (35.00)	
	Third	105 (59.32)	72 (40.68)	
	Supplementary year student	15 (68.18)	7 (31.82)	
Do you have a job right now?	Yes	49 (59.76)	33 (40.24)	0.100
	No	494 (68.7)	225 (31.29)	
Do you live with your family?	Yes	491 (69.65)	214 (30.35)	0.002
	No	52 (54.17)	44 (45.83)	
Are you a student off-site or in-site?	In-site	341 (71.34)	137 (28.66)	0.009
	Off-site	202 (62.54)	121 (37.46)	
Are you engaged or single?	Engaged	339 (68.62)	155 (31.38)	0.522
	Single	204 (66.45)	103 (33.55)	
Perceived health status	High	211 (72.51)	80 (27.49)	<0.001
	Medium	315 (68.03)	148 (31.97)	
	Low	17 (36.17)	30 (63.83)	
Perceived economic status	High	69 (66.99)	34 (33.01)	0.004
	Medium	396 (70.84)	163 (29.16)	
	Low	78 (56.12)	61 (43.88)	
Do you perform regular physical activity?	Yes	185 (71.43)	74 (28.57)	0.128
	No	358 (66.05)	184 (33.95)	
Have you had any sleep disturbances in the last 2 weeks?	No	364 (74.90)	122 (25.10)	<0.001
	Yes	179 (56.83)	136 (43.17)	
AUDIT-C	Not risk	510 (71.53)	203 (28.47)	<0.001
	At risk	33 (37.50)	55 (62.50)	
BAI	Mild	370 (72.98)	137 (27.02)	<0.001
	Moderate	127 (65.80)	66 (34.20)	
	Serious	46 (45.54)	55 (54.46)	
CPGI	Unproblematic player	488 (70.62)	203 (29.38)	<0.001
	Player at risk	34 (59.65)	23 (40.35)	
	Moderate gambling problems	14 (58.33)	10 (41.67)	
	Serious gambling problems	7 (24.14)	22 (75.86)	

Table 3 Ordered logistic regression. Adjusted Odds Ratios are presented. Each independent variable is adjusted for all the other independent variables. Based on 801 observations.

Independent Variables		Do you currently smoke? Yes		
		aOR	95% C.I.	*p-value*
Age	as continuous variable	0.99	0.96 - 1.03	0.712
Gender	Female	1.00		
	Male	0.79	0.53 - 1.18	0.244
BMI	Normal weight	1.00		
	Overweight	0.96	0.62 - 1.47	0.840
	Obese	0.91	0.48 - 1.72	0.774
	Underweight	0.92	0.42 - 2.03	0.837
Country of birth	Italy	1.00		
	Other	0.28	0.06 - 1.38	0.118
Year of study	First	1.00		
	Second	1.15	0.77 - 1.73	0.475
	Third	1.24	0.80 - 1.91	0.339
	Supplementary year student	0.82	0.29 - 2.30	0.712
Do you have a job right now?	Yes	1.00		
	No	0.64	0.37 - 1.10	0.107
Do you live with your family?	Yes	1.00		
	No	1.24	0.72 - 2.13	0.445
Are you a student off-site or in-site?	In-site	1.00		
	Off-site	1.21	0.86 - 1.71	0.274
Are you engaged or single?	Single	1.00		
	Engaged	0.99	0.70 - 1.40	0.972
Perceived health status	High	1.00		
	Medium	0.91	0.63 - 1.31	0.597
	Low	1.03	0.44 - 2.43	0.947
Perceived economic status	High	1.00		
	Medium	0.74	0.46 - 1.20	0.222
	Low	0.91	0.49 - 1.67	0.755
Do you perform regular physical activity?	Yes	1.00		
	No	1.14	0.80 - 1.64	0.462
Have you had any sleep disturbances in the last 2 weeks?	No	1.00		
	Yes	1.72	1.22 - 2.42	0.002
AUDIT-C	Not risk	1.00		
	At risk	2.86	1.71 - 4.81	< 0.001
BAI	Mild	1.00		
	Moderate	1.27	0.85 - 1.90	0.244
	Severe	2.10	1.21 - 3.65	0.009
CPGI	Unproblematic player	1.00		
	Player at risk	1.59	0.82 - 2.72	0.187
	Moderate gambling problems	1.52	0.60 - 3.83	0.376
	Serious gaming problems	2.97	1.07 - 8.24	0.037

Table 4 Linear regression. Based on 241 observations.

Independent Variables		Number of cigarettes per week		
		Coefficient	95% C.I.	*p-value*
Age	as continuous variable	1.87	0.93/2.81	< 0.001
Gender	Female	1		
	Male	14.54	3.58/25.51	0.010
Score AUDIT-C	as continuous variable	3.82	1.14/6.50	0.005
Score BAI	as continuous variable	0.32	-0.02/0.66	0.061
Score CPGI	as continuous variable	1.08	-0.11/2.27	0.076

score for the AUDIT-C increases in a statistically significant manner, is not statistically significantly correlated with the BAI and CPGI scores. Furthermore, it is associated in a statistically significant manner with increasing age and male sex.

DISCUSSION

Nursing students can play a significant role in the fight against smoking. It's recognized that health professions students have a responsibility to serve as positive role models for patients regarding to-

bacco cessation. However, their smoking or non-smoking status may affect their effectiveness as health promoters, as smoking students are less likely to provide smoking cessation advice [17].

In our study the prevalence of subjects who smoke is 32.21%, with an average weekly consumption of 44.55 cigarettes. Furthermore, the habit of smoking increases as the university years progress, this data is comparable to a study carried out in Australia [18].

From our analysis, a correlation emerges between those who declared having greater insomnia problems in the last two weeks and their daily smoking habit, as highlighted by a study carried out in 2018 among students at another Italian university [19].

Our study shows that smoking significantly increases the likelihood of risky alcohol consumption. This represents a significant public health challenge on a global scale, especially among young people and students. Among these, excessive alcohol use can be a detrimental aspect of dealing with academic, social, and economic pressures. Previous studies have shown that one of the countries with the highest prevalence of alcohol consumption among students is Italy. In this study, 63% of the cases were students of health professions who had risky alcohol consumption [20]. Furthermore, our analysis showed that as the number of cigarettes consumed per week increases, the AUDIT-C score increases statistically significantly, especially among male students. The phenomenon of alcohol consumption is frequent among the university population, often accompanied by the habit of smoking [21].

Another important aspect is the association between smoking and the onset of severe anxiety symptoms; in fact, as has emerged in other studies, the use of nicotine can temporarily reduce the feeling of anxiety, but once the effect has worn off, the addiction to smoking and a more frequent manifestation of anxiety-provoking symptoms remain [22].

Previous studies estimate that gambling problems among college students are up to three times higher than in the general population, and college students are mostly regular smokers [23]. This aspect is also present in our study, in fact smoking university students have a significantly higher risk of developing serious problems related to gambling.

The study has limitations; it is a cross-sectional study and therefore does not provide information on the casual effect of the elements that were detected. The study is monocentric and therefore it is not possible to say whether the results are superimposable and generalizable in other situations. The interviewees may not have answered sincerely due to social desirability, in fact those who respond to a questionnaire could give answers that can be considered more socially acceptable than others even if it was an anonymous questionnaire, this limitation could have been reduced. Furthermore, the lived context of the COVID-19 pandemic may have changed smoke use habits. As shown by a recent cross-sectional study by Khamees et Al., the lockdown had a significant impact on people's lifestyles including smoking habits and most of sample's smoker participants experienced a change in their smoking level mostly, an increase. [24]. Today, in Italy, smoking is a more female than male habit, women start smoking for various reasons, but often they do it just to appear more self-confident and more adult. Smoking is also often used as a tool for weight control and many girls fear gaining weight if they stop smoking. A significant influence is also exerted by factors such as the smoking habits of parents or the ideals of beauty and trends communicated by the media [25].

CONCLUSION

In conclusion, smoking habits present a challenge for nursing students entering the healthcare profession. Smoking university students are at higher risk of developing further unhealthy habits in their daily lives; of particular concern are increased risks of gambling, excessive alcohol consumption, and the onset of severe anxiety symptoms. These findings underscore the importance of targeted interventions to address smoking and related behaviors. Prevention programs and treatment interventions should consider not only smoking, but also all associated variables. It would also be appropriate to carry out information campaigns that specify that with the help of smoking cessation specialists, it is possible to undertake effective paths to quit permanently. Furthermore, there are alternative solutions thanks to less harmful and non-combustion products. Additionally, it is crucial to educate students about the risks associated with smoking and promote healthy alternatives for managing stress and anxiety.

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