# RISKY ALCOHOL CONSUMPTION AND NURSING STUDENTS: AN OBSERVATIONAL STUDY
## *RIZIKOVÁ KONZUMÁCIA ALKOHOLU A ŠTUDENTI OŠETROVATEĽSTVA: OBSERVAČNÁ ŠTÚDIA*

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**ABSTRACT**
*Introduction:* Understanding the risk of alcohol consumption in nursing students is critical for pursuing careers dedicated to promoting health and well-being. The purpose of the study is to estimate the prevalence of risky alcohol consumption and to evaluate which factors are associated in our target population.
*Methods:* The study was carried out in April 2024. 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 and Supplementary year students. The Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) was administered to assess risky alcohol consumption. A multivariable logistic regression was performed, considering it as the dependent variable "Risky alcohol consumption", to evaluate the role of the variables of the questionnaire.
*Results:* Of the 806 presents, 801 agreed to answer the questionnaire (99.38 %). The sample is made up of 575 females (71.79 %) and 226 males. In relation to the year of the course, 50.19% are first year students. Regarding the multivariable logistic regression, it emerges that the statistically significant variables associated with risky alcohol consumption are being an off-site student (aOR = 3.11), being a smoker (aOR = 5.46), being single (aOR = 2.91), perceiving a medium health status (aOR = 1.91) or low (aOR = 5.35).
*Conclusions:* The risk of alcohol consumption represents a multifaceted challenge for nursing students entering the healthcare profession. Certainly, this study, even if it has limitations, helps to better understand the phenomenon and allows us to understand which subjects are most at risk and on whom we need to intervene with prevention and information campaigns.

**Key words:** Alcohol Drinking. University students. Nursing students. Italy. Sicily

**ABSTRAKT**
*Východiská:* Pochopenie rizika alkoholizmu u študentov ošetrovateľstva je rozhodujúce pre kariéru zameranú na podporu zdravia a pohody. Cieľom štúdie je odhadnúť prevalenciu rizikovej konzumácie alkoholu a zhodnotiť, ktoré faktory sú asociované v našej cieľovej populácii.
*Metodika:* Štúdia bola vykonaná v apríli 2024. Návrh štúdie je prierezový. Študijnú populáciu tvoria študenti prvého, druhého a tretieho ročníka ošetrovateľstva na Univerzite v Palerme a študenti doplnkového ročníka. Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) bol zadaný na posúdenie rizikovej konzumácie alkoholu. Bola vykonaná viacrozmerná logistická regresia, ktorá sa považovala za závislú premennú „Riziková konzumácia alkoholu", aby sa vyhodnotila úloha premenných dotazníka.
*Výsledky:* Z 806 prítomných súhlasilo s odpoveďou na dotazník 801 (99,38 %). Vzorku tvorí 575 žien (71,79 %) a 226 mužov. V pomere k ročníku kurzu je 50,19 % študentov prvého ročníka. Čo sa týka viacpremennej logistickej regresie, ukazuje sa, že štatisticky významné premenné spojené s rizikovou konzumáciou alkoholu sú: byť študentom mimo školy (aOR = 3,11), byť fajčiarom (aOR = 5,46), byť slobodný (aOR = 2,91), vnímať médium zdravotný stav (aOR = 1,91) alebo nízky (aOR = 5,35).
*Záver:* Riziko alkoholizmu predstavuje mnohostrannú výzvu pre študentov ošetrovateľstva vstupujúcich do zdravotníckeho povolania. Táto štúdia, aj keď so svojimi obmedzeniami, určite pomáha lepšie porozumieť fenoménu a umožňuje nám pochopiť, ktoré subjekty sú najviac ohrozené a na ktorých je potrebné zasiahnuť prostredníctvom preventívnych a informačných kampaní.

**Kľúčové slová**: Pitie alkoholu. Študenti vysokých škôl. Študenti ošetrovateľstva. Taliansko, Sicília

## INTRODUCTION

Alcohol can cause pathologies and problems even when its consumption has not reached the point where an individual can be defined as an "alcoholic", when the quantities of alcohol consumed can expose the person or third parties to danger, thus interfering with the regular functioning of life, socially, at work or at school, we are talking about risky or harmful consumption of alcoholic beverages (Ministry Of Health Italy, 2024). Understanding the risk of alcohol consumption in nursing students is critical for pursuing careers dedicated to

promoting health and well-being (Grant et al., 2015). The risk of alcohol consumption is characterized by a level of consumption or a pattern of drinking that can determine a risk if the habit persists, if prolonged over time it can lead to alcoholism (Grant et al., 2015). Alcoholism, characterized by compulsive and uncontrolled consumption of alcoholic beverages, not only poses significant health risks to individuals but also presents complex challenges for healthcare professionals (Hasin, 2015). Alcoholism, also known as alcohol use disorder, is a chronic relapsing brain disorder characterized by an impaired ability to stop or control alcohol use despite adverse consequences (Hasin, 2015). According to the World Health Organization (WHO), alcoholism contributes significantly to the global burden of disease and injury, with detrimental effects on physical health, mental well-being and social functioning (Rehm, 2019). Numerous factors contribute to the development and progression of alcoholism, including biological, psychological and social determinants (Koob, 2016). Genetic predispositions, neurobiological alterations and environmental influences play a fundamental role in increasing vulnerability to alcohol use disorders. Furthermore, co-occurring mental health conditions, such as depression, anxiety, and trauma-related disorders, often exacerbate the risk of alcohol consumption and complicate treatment efforts (Koob, 2016). Understanding the epidemiology of alcoholism is essential for nursing students to recognize its prevalence and impact on public health (Hasin, 2015; Santangelo et al., 2022). Epidemiological studies highlight disparities in alcohol consumption patterns among different demographic groups and geographic regions. Factors such as age, gender, socioeconomic status, and cultural norms significantly influence alcohol consumption behaviors and susceptibility to alcoholism (Rehm, 2019; Santangelo et al., 2022). The phenomenon of Binge Drinking is also becoming increasingly important, especially among young adults, that is, the consumption of multiple alcoholic beverages in a short period of time with the aim of achieving immediate intoxication. Binge drinking has deleterious effects on metabolism and is associated with cardiovascular problems (Santangelo et al., 2019; Ruth-Sahd et al. 2022; Herrero-Montes et al. 2022). Early diagnosis and intervention are crucial to preventing the progression of alcohol use disorders and minimizing associated health complications. Screening tools such as the Alcohol Use Disorders Identification Test (AUDIT) and clinical assessment protocols allow healthcare professionals to assess alcohol use patterns, assess the severity of dependence, and determine appropriate interventions (Grant et al., 2015; Santangelo et al., 2019). The purpose of the study is to estimate the prevalence of risky alcohol consumption and to evaluate which factors are associated in our target population, nursing students at the University of Palermo, Italy.

## MATERIALS AND METHODS

The study was carried out in April 2024. 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) and Supplementary year students, i.e. students 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. As for the questionnaire, in the first part the interviewee answered questions about any work done, perception of economic and health status and voluptuary habits, in the second part of the survey the Alcohol Use Disorders Identification Test-Consumption (A.U.D.I.T.-C) test was administered to investigate the possible risk of alcohol consumption (Dawson et al., 2005). Each question has five possible answers with a score of 0 to 4. The sum of each score gives a total score, based on which the subjects are classified as "at risk" or "not at risk". A score of 5 or higher for men and 4 or higher for women indicates possible risky alcohol use. The “age” variable was subsequently dichotomized into $< 23$ years and $\geq 23$ 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 4 categories: i) if BMI between 18.50 - 24.99 normal weight subject, ii) if BMI included between 25.00-29.99 overweight subject, iii) if BMI greater than or equal to 30 obese subject and iv) if BMI lower than 18.50 underweight subject (Ministry Of Health Italy, 2022).

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 calcu-

lated for all qualitative variables, categorical variables were analyzed using Fisher's exact test. A multivariable logistic regression was performed, considering it as the dependent variable "Risky alcohol consumption", to evaluate the role of the variables in the first section of the questionnaire. In the final model, all the variables present in the first part were inserted as independent variables, each independent variable is adjusted for all the other independent variables. The statistical significance level chosen for all analyzes was 0.05. Results were analyzed using STATA statistical software version 14 (Statacorp, 2015). 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

The questionnaire was administered to all those present on the days of lessons, lessons which are

**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 in-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 |
| AUDIT-C | Not risk | 713 | 89.01 |
| | At risk | 88 | 10.99 |
| Age | 22.71 (SD ± 5.12) | | |
| BMI score | 23.27 (SD ± 4.05) | | |

**Table 2** Correlation between the risky alcohol consumption and the variables of the first section of questionnaire. Fisher's exact test used.

| Variables | | AUDIT-C | | |
|---|---|---|---|---|
| | | Not at risk (%) | At risk (%) | *p-value* |
| Age class | < 23 years old | 497 (89.07) | 61 (10.93) | 1.000 |
| | ≥ 23 years old | 216 (88.89) | 27 (11.11) | |
| Gender | Male | 187 (82.74) | 39 (17.26) | 0.001 |
| | Female | 526 (91.48) | 49 (8.52) | |
| BMI | Normal weight | 502 (90.61) | 52 (9.39) | 0.002 |
| | Overweight | 125 (86.81) | 19 (13.19) | |
| | Obese | 50 (75.76) | 16 (24.24) | |
| | Underweight | 36 (97.30) | 1 (2.70) | |
| Country of birth | Italy | 701 (88.96) | 87 (11.04) | 1.000 |
| | Other | 12 (92.31) | 1 (7.69) | |
| Year of study | First | 370 (92.04) | 32 (7.96) | 0.013 |
| | Second | 177 (88.50) | 23 (11.50) | |
| | Third | 147 (83.05) | 30 (16.95) | |
| | Supplementary year student | 19 (86.36) | 3 (13.64) | |
| Do you have a job right now? | Yes | 72 (87.80) | 10 (12.20) | 0.709 |
| | No | 641 (89.15) | 78 (10.85) | |
| Do you live with your family? | Yes | 638 (90.50) | 67 (9.50) | 0.001 |
| | No | 75 (78.13) | 21 (21.88) | |
| Are you a student off-site or in-site? | In-site | 449 (93.93) | 29 (6.07) | < 0.001 |
| | Off-site | 264 (81.73) | 59 (18.27) | |
| Do you currently smoke? | I have never smoked | 158 (96.34) | 6 (3.66) | < 0.001 |
| | No | 352 (92.88) | 27 (7.12) | |
| | Yes | 203 (78.68) | 55 (21.32) | |
| Are you engaged or single? | Engaged | 459 (92.91) | 35 (7.09) | < 0.001 |
| | Single | 254 (82.74) | 53 (17.26) | |
| Perceived health status | High | 274 (94.16) | 17 (5.84) | < 0.001 |
| | Medium | 412 (88.98) | 51 (11.02) | |
| | Low | 27 (57.45) | 20 (42.55) | |
| Perceived economic status | High | 97 (94.17) | 6 (5.83) | 0.001 |
| | Medium | 505 (90.34) | 54 (9.66) | |
| | Low | 111 (79.86) | 28 (20.14) | |
| Do you perform regular physical activity? | Yes | 234 (90.35) | 25 (9.65) | 0.469 |
| | No | 479 (88.38) | 63 (11.62) | |
| Have you had any sleep disturbances in the last 2 weeks? | No | 447 (91.98) | 39 (8.02) | 0.001 |
| | Yes | 266 (84.44) | 49 (15.56) | |

mandatory to take the exams. Of the 806 students present, 801 agreed to answer the questionnaire (99.38 %), 5 did not give consent (0.62 %).

The sample is made up of 575 females (71.79 %) and 226 males. In relation to the year of the course, 50.19 % are first year students, 24.97 % second year students and 22.10 % third year students, 2.74 % are Supplementary year students. The average age of the sample is 22.71 years, 98.38 % report being born in Italy, 10.24 % say they are working now and 88.01 % report still living with their family, 10.99 % have risky alcohol consumption, for further details see Table 1.

Referring to Table 2, after the bivariate analysis the statistically significant differences that emerged for risky alcohol consumption were found for the following variables: gender, BMI, Year of study, living in the family, on-site/off-site student, smoking habits, being single or engaged, perception of health and economic status, having had sleep disturbances in the last 2 weeks.

Regarding the multivariable logistic regression reported in Table 3, the adjusted odds ratios (aOR) are shown, considering that each independent variable is correct for all other independent variables, it emerges that the statistically significant variables

**Table 3** Multivariable logistic regression. Each independent variable is adjusted for all the other independent variables. Based on 801 observations.

| Independent Variables | | AUDIT-C: At risk | | |
|---|---|---|---|---|
| | | aOR | 95% C.I. | *p-value* |
| Age | as continuous variable | 0.99 | 0.92 - 1.05 | 0.687 |
| Gender | Male | 1.00 | | |
| | Female | 0.72 | 0.41 - 1.25 | 0.239 |
| BMI | Normal weight | 1.00 | | |
| | Overweight | 1.34 | 0.71 - 2.54 | 0.362 |
| | Obese | 0.93 | 0.38 - 2.26 | 0.873 |
| | Underweight | 0.23 | 0.03 - 1.84 | 0.168 |
| Country of birth | Italy | 1.00 | | |
| | Other | 1.09 | 0.90 - 12.38 | 0.944 |
| Year of study | First | 1.00 | | |
| | Second | 1.37 | 0.71 - 2.61 | 0.347 |
| | Third | 1.62 | 0.82 - 3.19 | 0.165 |
| | Supplementary year student | 1.35 | 0.32 - 5.77 | 0.681 |
| Do you have a job right now? | Yes | 1.00 | | |
| | No | 0.78 | 0.34 - 1.77 | 0.547 |
| Do you live with your family? | Yes | 1.00 | | |
| | No | 0.88 | 0.41 - 1.88 | 0.733 |
| Are you a student off-site or in-site? | In-site | 1.00 | | |
| | Off-site | 3.11 | 1.81 - 5.35 | < 0.001 |
| Do you currently smoke? | I have never smoked | 1.00 | | |
| | No | 2.02 | 0.80 - 5.15 | 0.138 |
| | Yes | 5.46 | 2.19 - 13.60 | < 0.001 |
| Are you engaged or single? | Engaged | 1.00 | | |
| | Single | 2.91 | 1.71 - 4.96 | < 0.001 |
| Perceived health status | High | 1.00 | | |
| | Medium | 1.91 | 1.01 - 3.62 | 0.049 |
| | Low | 5.35 | 1.90 - 15.06 | 0.001 |
| Perceived economic status | High | 1.00 | | |
| | Medium | 1.75 | 0.68 - 4.45 | 0.243 |
| | Low | 1.97 | 0.67 - 5.75 | 0.216 |
| Do you perform regular physical activity? | Yes | 1 | | |
| | No | 0.85 | 0.48 - 1.51 | 0.581 |
| Have you had any sleep disturbances in the last 2 weeks? | No | 1.00 | | |
| | Yes | 1.03 | 0.60 - 1.78 | 0.918 |

associated with risky alcohol consumption are being an off-site student (aOR = 3.11), being a smoker (aOR = 5.46), being single (aOR = 2.91), perceiving an medium health status (aOR = 1.91) or low (aOR = 5.35).

## DISCUSSION

In this study, nursing students from the University of Palermo (Italy) evaluated their alcohol consumption through a self-administered questionnaire (the AUDIT-C test was used), in this way it was possible to classify in relation to the score obtained subjects with dangerous or harmful consumption of alcohol. In our study, 11 % of the interviewees have a risky consumption of alcohol, the result is in line with previous studies (Rodríguez-Muñoz, 2020; Ruth-Sahd, 2022), even if the bivariate analysis (see Table 2) shows a statistically significant difference between men and women (in fact males in percentage have a higher risk of alcohol consumption), subsequently in the multivariable logistic regression after adjusting the models no statistically significant differences emerged between males and females, a result not different from what was previously found in another study (Santangelo et al., 2018a). Of note, consumption is higher in students who live outside the family unit, which coincides with the results of other studies, suggesting that young people

who reside in the family home during their university years are less inclined to intensive alcohol consumption compared to those who live on campus or away from home (El Ansari et al., 2020; Zadarko-Domaradzka et al., 2018; Santangelo et al., 2018b), the same thing should be noted for singles, in fact the partner can generally act as a brake on excessive alcohol consumption (Santangelo et al., 2022). In our study a quarter of the students classified as dangerous drinkers were also smokers, this has been previously described in studies conducted on university students (Hoff et al., 2023; Nazareno et al. 2020; BHATTI et al. 2020), in fact the joint use of alcohol and nicotine increases pleasant side effects as they activate the area of the brain known as the "reward center". In our study, a medium or low perceived state of health compared to a reported high state of health is associated with risky alcohol consumption. This data, which is difficult to interpret, could be read in two ways according to the authors) with a state of lower health, increases stress and the need to take substances that remove it as it could be for alcohol, ii) or it could be that high alcohol consumption reduces the level of well-being regarding perceived health, to be associated to the fact that generally those who consume high quantities of alcohol are more likely to be smokers and therefore to combine the negative effects of smoking and alcohol (Sharma et al. 2015; Santangelo et al., 2018b). Nursing students could represent a particularly fragile and at-risk category of students as alcohol consumption is a reinforced element in a university environment (Salcedo et al. 2011). Furthermore, as students of health professions they have a greater stress and burnout risk than others university students of other degree courses (Hwang et al. 2022).

This study has limitations, even if the response rate was high for first, second and third-year students (and this represents a strong point), not all the so-called "supplementary year students" were reached because they did not have the obligation to be present to take the exam, in fact the majority have followed the compulsory lessons in previous years. The study is single-center and although the results are consistent with those in the literature, the results are not generalizable to other nursing students from other universities. The questionnaire is self-reported, and it is not certain that the interviewees responded truthfully although it should be added that the questionnaire is anonymous and therefore there was no reason not to do so because in any case it is impossible to trace who filled out the questionnaire. The COVID-19 pandemic may have changed students' habits as it changed the way they socialize. Of course, it is possible that some respondents under- or over-estimated their alcohol consumption.

## CONCLUSIONS

In conclusion, the risk of alcohol consumption represents a multifaceted challenge for nursing students entering the healthcare profession. By gaining a thorough understanding of the scientific literature on alcoholism, nursing students can improve their knowledge and skills to effectively address this pervasive public health problem. As healthcare workers they can also set an example for users through their behavior which should at least be evidence-based work, nurses can in fact play a fundamental role in supporting people affected by alcoholism in their journey towards recovery and improvement of the quality of life. As far as our study is concerned, considering that the subjects most at risk are those who live alone and single subjects, we could also intervene by training parents on the prevention of the risk of alcohol consumption, in fact as demonstrated in the study by Turrisi et al. conducted at Pennsylvania State University, parents can play a crucial role in minimizing their children's alcohol use through dialogue (Turrisi et al. 2013), another problem is the perceived low state of health that is associated with risky alcohol consumption, in this case it would be appropriate for universities to have, for example, free medical clinics with free access to facilitate out-of-town students who often have their own trusted doctor in their city of residence and may be cut off from basic health services. Certainly, this study, even if it has limitations, helps to better understand the phenomenon and allows us to understand which subjects are most at risk and on whom we need to intervene with prevention and information campaigns.

***Declaration of Interest statement***

*The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.*

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