



Ministry of Health

National Center of Public Health and Analyses

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**Health and Psychosocial Harms of Alcohol Use by Others on
Young People in Bulgaria**

Dissertation Summary

for the acquisition of the educational and scientific degree “Doctor”

in the scientific specialty

"Social Medicine and Health Management"

SCIENTIFIC SUPERVISOR:

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The dissertation contains 187 pages, including an introduction, literature review, research methodology, results discussion, conclusions, and guidelines. The bibliography includes 79 literary sources. The work is illustrated with 44 tables, 30 figures and 2 appendices. The numbers of the figures and tables in the dissertation summary do not reflect the exact sequence in the dissertation.

The dissertation work was discussed and accepted by the Scientific Collegium of the Health Promotion and Disease Prevention Directorate at the National Center of Public Health and Analysis and was directed for a defense procedure to a scientific board in the professional direction 7.1. "Medicine".

INTRODUCTION

Alcohol consumption and the resulting health, social and economic harms affect millions of people worldwide. In 2016, alcohol caused 3 million deaths, and in the WHO European Region alone, one in four deaths among the young population (23.3%) was attributable to its consumption.

Numerous research studies have demonstrated the serious individual-level consequences associated with the well-being as well as the physical and mental health of the people who consume alcohol. Its use has both immediate and cumulative effects, arising not only from the amount consumed, but also from the complex interrelationship between the user's age and experience, social environment, genetic predisposition, and health status. But the effects of alcohol use go beyond this complex relationship, reaching multiple adverse consequences for the people around those who consume alcohol.

The official statistical data underestimates the pervasive influence of alcohol, missing the overall impact on those around the drinker. In recent years, the scientific community has addressed this gap by considering a new public health perspective in which the impact of use is examined in relation to the individuals around the consumer.

Conceptualizing these experiences, the “impacted” person is identified as a known or unknown person, and the affected as – family members (including children), friends, colleagues, strangers, etc. The harm can range from minor damages in a particular setting/situation (such as excessive noise) to serious negative physical and psychosocial consequences (such as physical violence or sexual assault). Examples of such harms include violence and aggression, neglect or abuse (e.g. neglectful behavior towards children in the environment), criminal behavior (e.g. property damage), unintentional accidents (e.g. traffic accidents), fetal alcohol syndrome (FAS), and other harms of varying degree and intensity. Taking into account the overall impact of alcohol, the cumulative cost to the society is estimated to be twice as high as when considering only the drinker.

Topicality and importance of the problem

Harmful use of alcohol leads to dimensions that affect not only the functioning of the individual, but also the society as a whole. Research on the harms of alcohol use by others is essential from a public health perspective because that will contribute to the wide-ranging impact of alcohol on our society. Data from the World Health Organization, the National Statistical Institute and the latest representative National Survey of Health Risk Factors 2020 demonstrate that over 65% of the Bulgarian population consumes alcohol. Moreover, there is an upward trend of alcohol use levels as well as of households' spending on alcoholic beverages. These facts highlight the urgency to examine the overall effect of alcohol, not only from the traditional consumer's perspective, but also from a the perspective of the prevalence and the negative effect of alcohol use by others on the most vulnerable groups in the population in Bulgaria.

The young population in Bulgaria falls into one of the most vulnerable groups in terms of alcohol consumption. The combination of risky patterns of alcohol use, high rates of injury and the definition of alcohol as a major factor in criminal offences for the young generation in the country, leads to the need to investigate this relationship from a public health perspective.

A wide range of types of harm caused by the use of alcohol by others on young people has not been documented and examined for our country, nor has the prevalence, the socio-demographic characteristics or different drinking patterns that are associated with the harm caused by alcohol use. Identifying the contextual factors that elevate the likelihood of harm among younger adults is an important focus aimed at understanding heightened risks.

The present study aims to highlight the importance of the harms of alcohol use by others on the young population in Bulgaria, by establishing the extent and prevalence of health and psychosocial harms and investigating the individual characteristics that could predict experiences of such harms among one of the most affected groups in our society. For this purpose, data from the National Survey of Health Risk Factors in the Republic of Bulgaria among the population over 20 years of age in 2020 was used, and an additional survey method was applied among students in the country, including adapted sections from the questionnaire from WHO/ThaiHealth Project Protocol “The Harm to Others from Drinking”.

Awareness and acceptance of the negative impact of alcohol consumption on the health and well-being of people around the drinker as well as on the society is low, which is applicable for both decision-makers and general public. Research on the harms of alcohol use on the consumer's environment will provide a further argument in favor of the development and implementation of policies aimed at reducing the effect of alcohol-related harm. The information on the cumulative damage from alcohol in Bulgaria is extremely scarce, leading to an underestimation of the burden of the risk factor on a health, social and economic level. It is imperative to determine the nature, extent and prevalence of alcohol harm to others in order to frame the overall impact of alcohol in our society.

RESEARCH METHODOLOGY

1. Objective

To investigate the prevalence of health and psychosocial harms of others' alcohol consumption on the young population, with a view to develop guidelines for the prevention of alcohol use.

2. Tasks

- To analyze the prevalence of alcohol use among the adult population in Bulgaria.
- To examine the negative effects of alcohol consumption in the field of public health.
- To investigate the prevalence of alcohol harm to others as well as its impact on the young population.
- To analyze if any individual socio-demographic characteristics have a protective effect for the experience of harm caused by other people's alcohol consumption.
- To set main guidelines that provide consistent and organized actions in priority areas in the reduction of the harm caused by other people's alcohol consumption.

3. Thesis

Risky patterns of alcohol consumption among the young population and the definition of alcohol as a major factor for criminal offences in the country leads to the need to examine the

relationship between health and psychosocial harm and young people in Bulgaria. The increased risk is an important focus for identifying contextual factors that make it more likely for young people to experience harm caused by alcohol consumption of others.

4. Hypotheses

- Different socio-demographic characteristics are associated with different harms.
- The risk pattern of alcohol consumption is the most significant predictor of experiencing harm from other people's alcohol use.
- Women who register a more risky pattern of alcohol consumption are more affected than men, regardless of whether the "perpetrator" of the harm is a known or unknown person.

5. Methods

In order to fulfill the set tasks, the methods used include the following:

Sociological method

- *Documentary method* - WHO, EC, OECD, Ministry of Interior documents, and different literary sources were studied.
- *Standardized individual interview* – data from the National Survey of Health Risk Factors in the Republic of Bulgaria among the adult population over 20 years of age in 2020, based on WHO questionnaires, was utilized. The sample selection was carried out by National Statistical Institute. In its design, the territorial distribution of the population in the country by statistical sections in administrative regions (28) and places of residence was used. The sample is two-level, nested, representative at the national level. The overall sample consisted of 3182 individuals, divided into six age groups.
- *Survey method* through a web-based questionnaire, including adapted sections of the validated WHO/ThaiHealth Project Protocol questionnaire "The Harm to Others from Drinking", Version 1, which examines respondents' experiences of harm to others from alcohol use in details. The sample was formed randomly by completing a web-based questionnaire sent via an e-mail to students. The questionnaire was design in sevel scerions:
 - *First section* – demographic characteristics (gender, marital status, religious affiliation, course of study, employment, residence type, number of persons living with).
 - *Second section* – assessment of harms and their frequency, caused by the consumption of alcohol by other people. The main topic here is aggression, violence and misconduct and includes 6 harms. The WHO/ThaiHealth survey protocol contains responses (harms) based on the relationship between the respondent and the person causing the harm. These categories cover harms from a known person - family member/relative or friends/close acquaintances and harms from a stranger or distant acquaintance. The respondents, following the protocol document, had the opportunity to indicate not only the "perpetrator" of the harm, but also the corresponding frequency in the last 12 months.
 - *Third section* – assessment of harms and their frequency during the last year, caused by loved ones (for example family problems) in the perspective of social relationships. 6 types of harms were investigated.

- *Fourth section* – additional 10 harms from a loved ones that add to the influence of social relationships and have a direct effect on the psychological state of the interviewees, such as emotional harm, pressure into sex or acts of a sexual nature, etc., again with the possibility of assessing their frequency.
- Frequency of alcohol consumption – indication of one’s alcohol consumption, assessed on a scale from “every day” to “I have not consumed any alcoholic beverages in the last 12 months”).

Statistical method

Data processing was performed using the statistical software SPSS. Alternative, correlation and graphical analysis were used in the data analysis.

Descriptive and assessment methods:

- Descriptive statistics – frequency analysis and graphical representations
- Chi-square test
- Mann-Whitney method
- T-test for independence
- Ordinal logistic regression analysis
- Multinomial logistic regression analysis

Object of the study – young population, studying in universities in the country.

Study’s observation

- Socio-demographic characteristics – gender, age, residence type, number of persons living with, religion, etc..
- Harms caused by alcohol consumption of other people and their frequency.
- Harms from known or unknown people.
- Young people's alcohol consumption - frequency.

Logical units of observation – young people, students in Bulgarian universities

Time scope of the study

- October - December 2020 - first survey
- May – June 2023 – second survey

Territorial scope of the study – Republic of Bulgaria

ANALYSIS OF THE RESULTS OF THE NATIONAL SURVEY OF HEALTH RISK FACTORS IN THE REPUBLIC OF BULGARIA AMONG ADULT POPULATION OVER 20 YEARS

The study covers 3182 individuals of both genders over the age of 20. Respondents were divided into six age groups (20-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years and 65 years and over) with a total number of men 1317 (41.4%) and of women 1865 (58.6%).

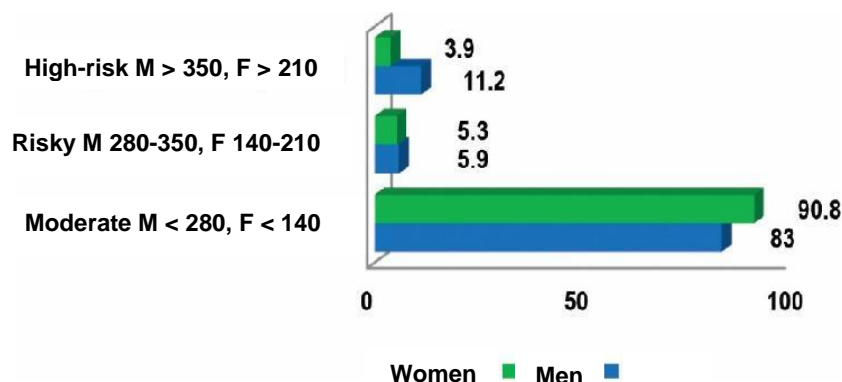
The representative study demonstrates that 65.5% of the respondents consume alcoholic beverages, with 25.5% of them using it on a regular basis, while 40% - use it sometimes (Table 1). Men more often than women consume alcohol regularly (40.8% vs. 14.7%), with the highest relative share in the 45-54 age group (47.3%), also observed in women (18.4%) . The share of men who do not consume alcohol is twice as low as that of women – 21.8% and 43.5%.

Table 1. Alcohol consumption by gender and age groups (%)

	Gender														
	Men							Women							Total
	Age group							Age group							
	20-24	25-34	35-44	45-54	55-64	65+	Total	20-24	25-34	35-44	45-54	55-64	65+	Total	Total
Yes	21.2	31.7	43.3	47.3	46.5	40.3	40.8	14.7	16.8	16.9	18.4	12.5	8.6	14.7	25.5
Sometimes	50.6	45.8	37.6	29.7	37.6	32.7	37.5	52.0	47.6	47.2	37.7	42.8	29.8	41.7	40.0
No	28.2	22.5	19.2	23.0	15.9	27.0	21.8	33.3	35.6	35.9	43.9	44.7	61.5	43.5	34.5

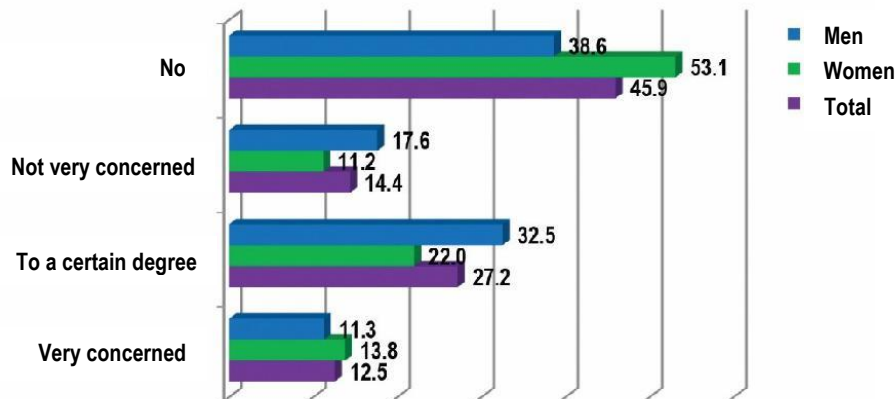
The use of alcoholic beverages can vary from complete abstinence or low consumption to an excessive one. Following the classification for a weekly consumption, the present study indicates that *moderate weekly alcohol use* (<280ml for men and <140ml for women) is present for 83% of men and 90.8% of women. *Risky weekly consumption* is observed in 5.6% of those who consume alcohol (280-350 ml for men and 140-210 ml for women) - 5.8% for men, more often 55-64-year-olds (8.5%) and 35-44-year-olds (7.5%), and 5.3% of women, more often 35-44-year olds (6.3%) and 45-54-year-olds (6.2%). *High-risk consumption* (>350 ml for men and >210 ml for women) is registered for 11.2% of men and 3.9% of women (Figure 1).

Figure 1. Weekly alcohol consumption by gender (%)



The national survey also examines respondents' attitudes about the harmful effects of alcohol use. Almost half of the individuals (45.9%) indicate that they are not concerned about the health damage from alcohol, with the proportion of women (53.1%) being higher than that of men (38.6%) (Figure 2).

Figure 2. Concerns about the effects of alcohol use by gender (%)



While the harms to the health of alcohol users are well known, significantly less research describes the social harm and negative consequences associated with harms to the well-being and health of those around alcohol consumers. The latest report of WHO on alcohol emphasizes the need to describe alcohol not only limiting it to the harm associated with the user, but also to consider it from the perspective of “harms to others”.

Placing a child in an environment where alcohol is abused is a significant factor that increases the likelihood for the child to consume alcohol beverage in an abusive manner in the future, as well as to many adverse consequence for his development. Every eighth respondent in the study states that as a child/teenager, s/he lived with a person who had alcohol-related problems. The share of people aged 35-44 is the highest for both genders (17.4% for men and 17.1% for women).

The research shows that *due to another person's alcohol use*:

- Every third person have been kept awake at night – more often 45-54-year-old men (46.6%) and almost half of 65+-year-old women (41%);
- Every sixth person has been insulted, and almost every third woman aged 55-64 has been in a similar situation (31.6%);
- 5.7% of 20-24-year-olds were physically harmed;
- 18.6% of respondents were involved in a serious dispute, most commonly observed in 35-44-year-old men and women (respectively 27.4% and 22.7%)
- 2.6% were placed in a dangerous situation, as passengers in a car driven by a person who had consumed alcohol. 20-24-year-old women are the group with the highest share (7.1%) among the respondents;
- 2.1% of the interviewees were involved in a road accident;
- One in ten felt in danger in a public place, with the most frequently affected being the women aged 20-24 (14.3%), as well as men aged 20-24 and 55-65 years (12%);

- Every third (30.3%) has been in a situation where s/he felt irritated by manifestations of waste pollution, vomiting, etc. Aa high percentage of young people for both sexes in the 20-24 age category is observed, as every second person has reported the harm as a result of another person's alcohol use.

Main conclusions

- Every fourth respondent consumes alcohol regularly, the share of men being 2.7 times higher than that of women (40.8% - men and 14.7% - women). Among men who consume alcohol, those in the 45-54 and 55-64 age groups predominate, and among women – in age groups 45-54 years and 35-44 years.
- Most of the interviewees reported a moderate weekly consumption of alcohol. Weekly consumption is risky for 5.8% of men and 5.3% of women, high-risk is observed in 11.2% of men and 3.9% of women.
- The most frequent harms caused by the use of alcohol of another person were recorded by individuals in the age groups 20-24 and 55-64, and were observed for those who were kept awake at night, felt irritated, and were insulted or involved in a serious dispute.

Timely monitoring of tendencies of alcohol consumption is imperative. The representative study within the framework of the National Programme for Prevention of Chronic Non-communicable Diseases (NCDP) demonstrates high levels of alcohol use among the Bulgarian population and confirms the need for more efforts in addressing alcohol consumption. Tracking these trends, as well as approaches in the implementation of various policies, should be essential components in national programmes and strategies. The survey data shows that it is of great importance to inform the population about the effects of alcohol concerning both those who consume it and those around the alcohol users.

ANALYSIS OF THE RESULTS FROM A WEB-BASED QUESTIONNAIRE WITH ADAPTED SECTIONS FROM WHO/THAI HEALTH PROJECT PROTOCOL QUESTIONNAIRE “HARMS TO OTHERS FROM DRINKING”

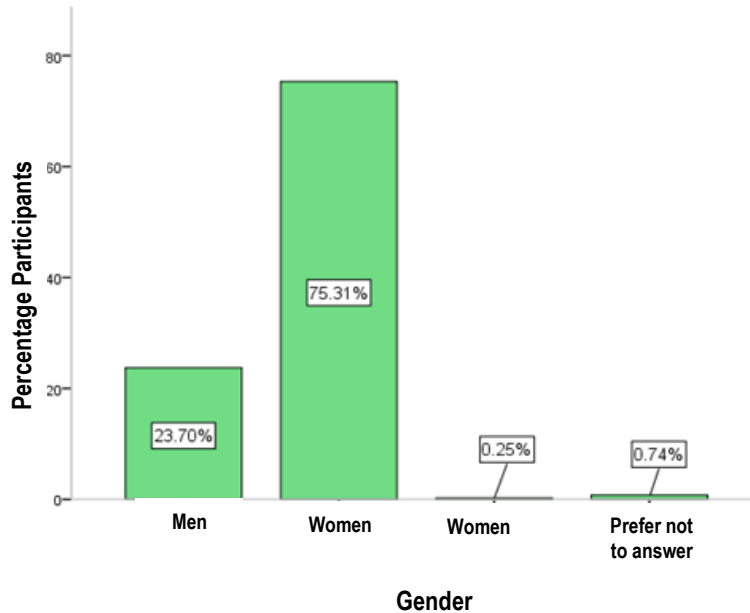
The individual harms of alcohol on the young adult population are well documented, but the associated harms of other people's use on the young individuals are understudied. Consumption among this specific segment of society requires special attention also due to the high frequency of risky patterns of drinking for the young adults. The results of the conducted web-based survey identifies specific characteristics and harms among the young population in the country, as one of the most affected populations by alcohol in Bulgaria.

1. Demographic and household characteristics

Overall 405 students participated in the anonymous survey. After getting acquainted with the information section of the study and giving informed consent, the interviewed participants proceeded to fill out the web-based questionnaire.

The sample is predominated by women (75.31%; n=305) compared to men (23.7%; n=96). The respondents who preferred not to answer to this question were three (0.74%), and those who defined themselves as belonging to “Other” gender were 1 (0.25%).

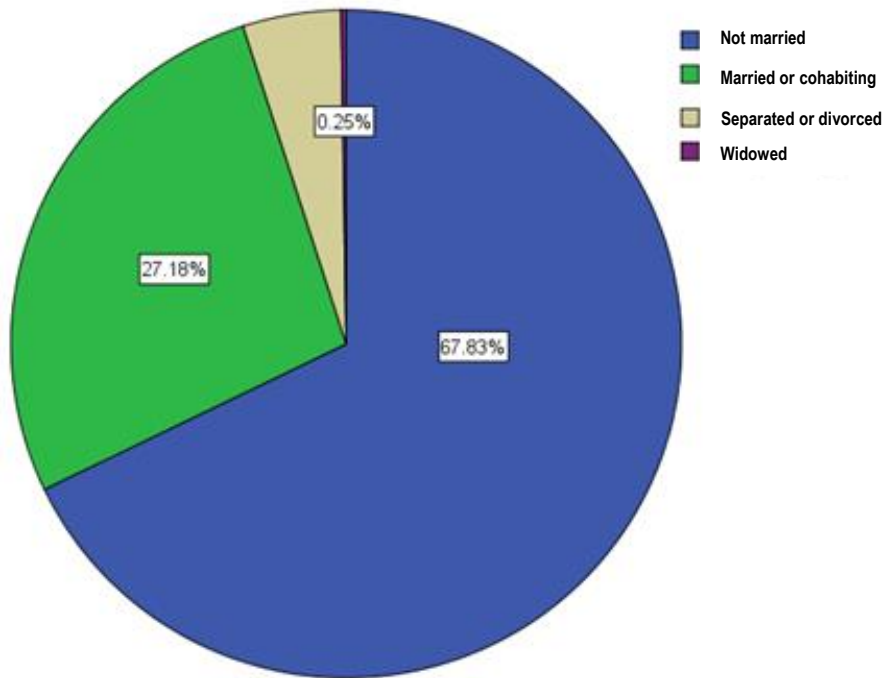
Figure 3. Distribution of participants by gender (%)



Due to the small number of respondents who answered “Other” and “Prefer not to answer” (0.99%), the statistical analyzes of the data presented below do not include an analysis of the responses of these individuals. As a result, the descriptive statistics by gender has the following distribution - 76.06% of the participants are women and 23.94% - men.

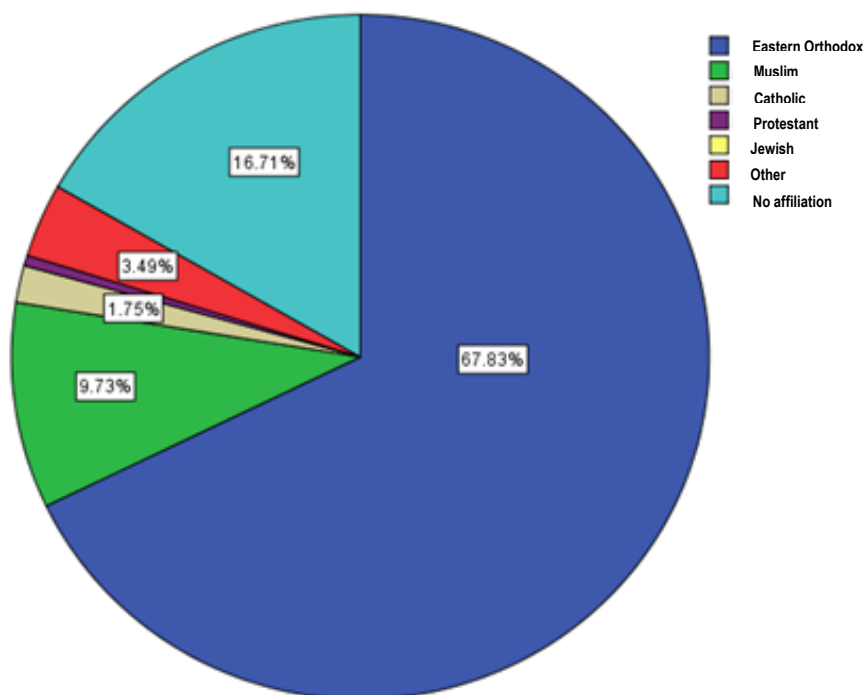
A large part of the participants are not married (67.7%) (Fig. 4). Almost a third registered their status as “married or cohabiting relationship” (27.7%), and a small proportion reported as being “separated or divorced” (4.7%) and “widowed” (0.2 %). When analyzing the data from the sample using a t-test for two independent samples, a statistically significant difference was observed between males ($M = 1.24$, $SD = 0.518$) and females ($M = 1.42$, $SD = 0.602$), $t(399) = 2.887$, $p \leq 0.000$.

Figure 4. Family status of the participants (%)



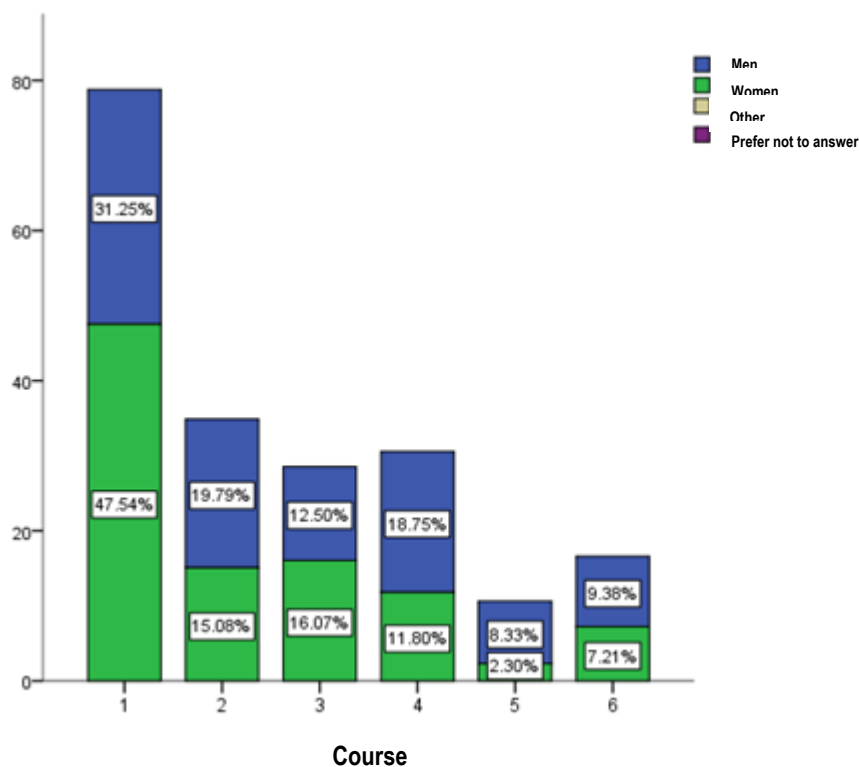
The survey looked at the ethnicity of the participants, with the largest proportion observed for the Eastern Orthodox religion (67.8%), followed by the response “I do not self-identify” (16.7%), Muslim affiliation (9.7%) and Catholic religion (1.75%) (Fig 5). A t-test for differences was generated, defining a statistically significant difference between males ($M = 2.86$, $SD = 2.654$) and females ($M = 2.15$, $SD = 2.175$), $t(399) = 2.642$, $p \leq 0.000$.

Figure 5. Religious affiliation of participants (%)



The proportion of first-course students is 43.6%, followed by those in the second year - 16.2%, third - 15.2%, fourth - 13.5%, sixth - 7.7% and fifth year - 3.7%. Figure 6 presents the distribution by gender, with almost half of the women (47.5%) and one in three men in the sample being first-year students. Among men, sophomores (19.8%) are in second place, followed by fourth-year students (18.7%), third-year students (12.5%), sixth-year students (9.4%) and fifth-year students (8.3%). For women, third-year students (16.1%) are the second most commonly reported ones, followed by second-year (15.1%), fourth-year (11.8%), sixth-year (7.2%) and fifth-year students (2.3%). A t-test for two independent samples was performed; it did not generate a statistically significant difference between males ($M = 2.813$, $SD = 1.675$) and females ($M = 2.279$, $SD = 1.548$), $t(399) = 2.887$, $p = 0.114$.

Figure 6. Training course of students by gender (%)



Data on employment status show that almost half of the participants are unemployed (43.6%), followed by those studying and working full-time (30.7%) and those studying and working part-time, reduced working hours or on hourly rate (24.7%). Applying a T-test for two independent samples did not generate a statistically significant difference between men ($M = 1.86$, $SD = 0.854$) and women ($M = 1.82$, $SD = 0.829$); $t(399) = 0.459$, $p = 0.646$.

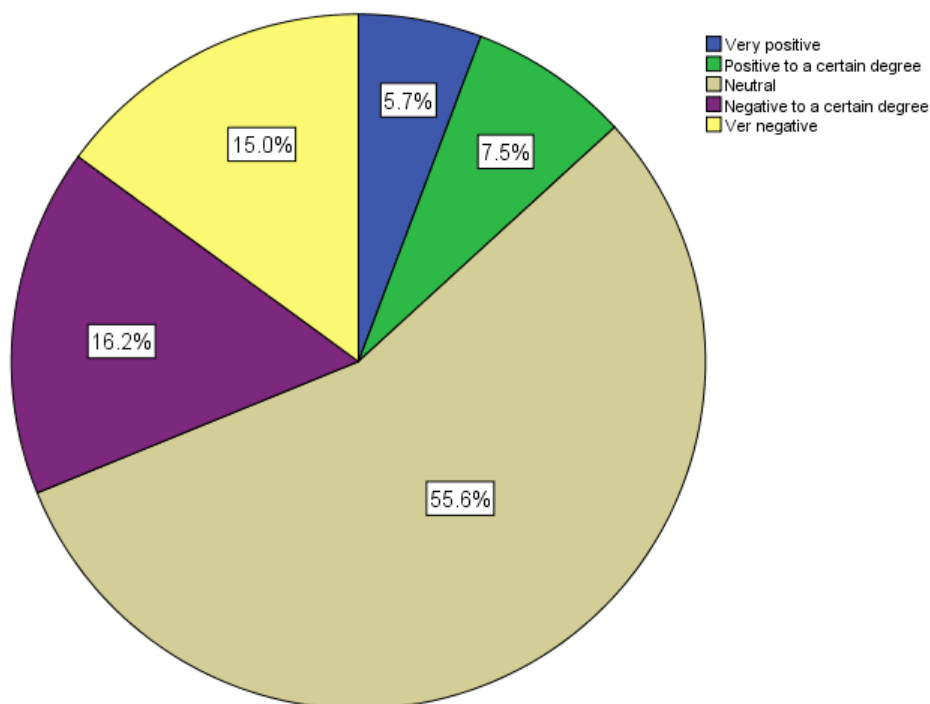
The answers to the question about the type of dwelling in which the respondents live show that more than half live in a rental or in their own dwelling without parents/guardians (51.1%); the second most commonly reported category is “I live with my parents/guardians” (31.7%), while one in six lives in a dormitory (17.2%). There are no statistically significant differences between males ($M = 2.09$, $SD = 0.727$) and females ($M = 2.16$, $SD = 0.672$) in the study in terms of the indicator of dwelling – $t(399) = -0.834$, $p = 0.405$.

The number of women living alone are two and a half times less than the number of men (9.3% and 23.20%); those who share their household with another person are ¼ of the whole sample, valid for both genders (25.0% and 25.3%); and three people living in one household is a response reported by 28.3% of women and 32.6% of men. The answer of living with “4 and with 5 or more people” is recorded by twice as many women, with 4 people in a household being the most common response among women. Through a T-test comparing two independent samples, a statistically significant difference is observed between the two genders (males – M = 2.53, SD = 1.142, females – M = 3.05, SD = 1.152) in terms of the number of people with whom they share the household – $t(399) = -3.875, p = 0.000$.

2. Overall effect of harm from the alcohol consumption of known and unknown people on the life of the respondents in the last 12 months

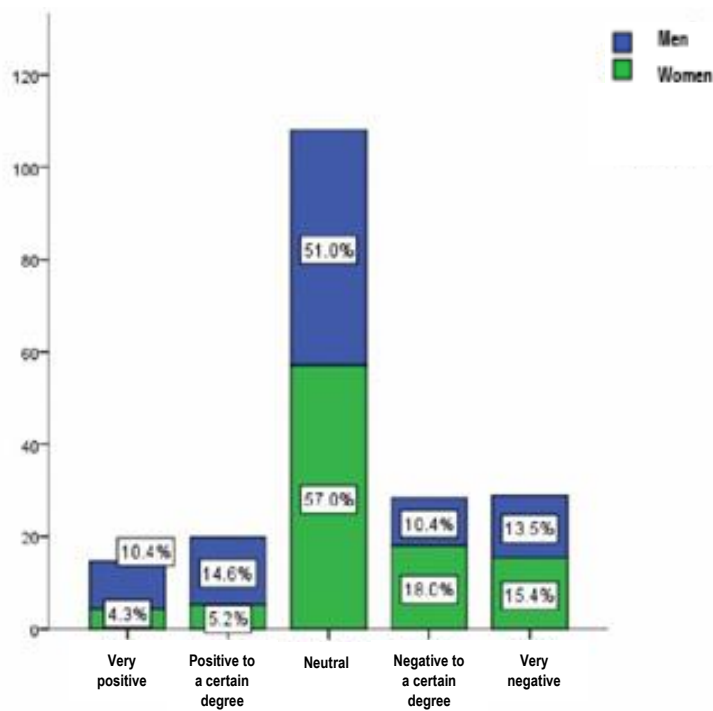
The overall effect of the alcohol use of other people (known and unknown) on students’ lives is rated as neutral by more than half of the respondents (55.6%). A positive effect is reported by 13.2%, with 5.7% indicating “very positive”. A negative effect is registered by 31.2% of students, with 15% answering “very negative”.

Figure 7. Overall effect of other people’s alcohol consumption on the respondents



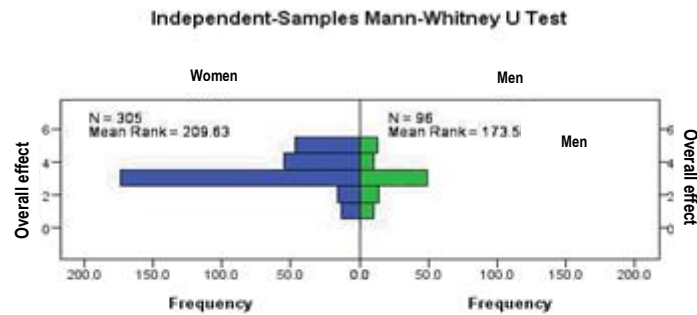
The figure below presents the distribution of the overall effect by gender among the respondents. Men are more likely than women to rate the effect of other people’s alcohol use on their own lives as positive (23%), and women rate its impact more often as negative than positive (33.4%). A difference between the two genders is observed both in participants’ responses to “very positive” – men were 2.5 times more likely to identify the effect as a positive experience (10.4% for men vs. 4.3% for women), and the responses for a “positive to a certain degree” (almost 3 times more men than women).

Figure 8. Overall effect by gender (%)



With the aim to examine the distribution of the total effect between the men and women, a non-parametric Mann-Whitney U Test is used to compare median values. The test result shows a significant difference ($U = 17272.5$, $z = 2.936$, $p = 0.003$) in terms of experiences of overall effect between men and women in the sample. To determine the size of the effect, the coefficient r , not generated by the statistical software SPSS, is used, the values of which are calculated by $z = 2.936$ divided by the square root of the sample ($(2.936/\sqrt{401}) \approx 0.1465$). Interpretation of the coefficient indicates that a small or smaller than the typical effect size is observed (at $0.10 \leq r < 0.30$).

Figure 9. Differences in overall effect estimates between men and women



Total N	401
Mann-Whitney U	17,272.500
Wilcoxon W	63,937.500
Test Statistic	17,272.500
Standard Error	896.734
Standardized Test Statistic	2.936
Asymptotic Sig. (2-sided test)	.003

Special interest of the research are the individual socio-demographic characteristics with a protective effect for experiencing harm from the use of alcohol of other people. For this purpose, an ordinal logistic regression model is applied in which the dependent variable for the overall effect is coded as ranked (“very positive”, “positive to a certain degree”, “neutral”, “negative to a certain degree”, “very negative”), and the factors included in the model are: gender, family status, course, religion, employment, type of dwelling, number of people with whom the respondents live. This model allows examining the influence of socio-demographic characteristics in predicting the level of effect of other people’s alcohol use on the lives of the students in the study.

The resulting analysis generate a warning message indicating a significant percentage of cells with zero frequencies in the ordinal logistic regression analysis, prompting a careful review of the factors in the model. As a result of the review, the factors - course, employment, type of dwelling, number of people with whom the respondents live are removed from the initial analysis due to the high occurrence of zero frequencies, which represents a risk for the stability and reliability for the assessment. Although removing these factors may limit the analysis, it is deemed necessary to ensure robustness of the model.

The factors included in the analysis are – *gender, religion, family status* . Due to the low number of cells in some of the combinations in the models, the categories “Protestant”, “Jewish”, “Other” are removed from the religion category, and “separated or divorced” and “widowed” – from the category family status.

The results of *the empirical value of the coefficient test of the plausibility – Model Fitting Information* (Tab. 2, Tab. 3, Tab. 4), demonstrate the likelihood ratio of the chi-squared test comparing the model with each predictor to the model with no predictor. The results of all three analyzes indicate statistical significance at $p < 0.004$ for the variable gender, $p < 0.004$ for family status, and $p < 0.003$ for religious affiliation. Significant values show that these models contribute to a significant statistical improvement over the null model without the corresponding predictor.

Table 2. Empirical value of the likelihood ratio test – gender

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	50,229			
Final	41,998	8,231	1	,004

Link function: Logit.

Table 3. Empirical value of the likelihood ratio test – family status

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	45,260			
Final	36,968	8,292	1	,004

Link function: Logit.

Table 4. Empirical value of the likelihood ratio test – religious affiliation

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	77,726			
Final	63,733	13,994	3	,003

Link function: Logit.

An additional assessment of the reliability of the models is performed by chi-square Goodness-of-Fit tests, which indicate well-constructed logistic models, as chi-square values are not statistically significant (in the context of the test, a higher p -value is desirable as it implies a better fit between model predictions and observed data).

Table 5. Goodness-of-Fit - gender

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	6,242	3	,100
Deviance	5,916	3	,116

Link function: Logit.

Table 6. Goodness-of-Fit – family status

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	,844	3	,839
Deviance	,851	3	,837

Link function: Logit.

Table 7. *Goodness-of-Fit – religious affiliation*

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	13,602	9	,137
Deviance	11,501	9	,243

Link function: Logit.

The Pseudo R-Square values in the model (to determine estimated variance) used McFadden’s test, with numbers for the gender, family status, and religious affiliation variables calculated as 0.009, 0.009, and 0.015, respectively. The results indicate that the models explained very little of the variance in the outcome in terms of predicting the overall effect of others’ alcohol use.

The parameter estimation provides information on the coefficients associated with each of the three predictor variables (Table 8). Analysis by gender shows that being a male gender acts as a significant predictor variable in the studied model. A statistically significant association is observed with the different categories of effect compared to the female group ($p = 0.004$). Regarding the Wald statistic ($Wald = 8.477$), the higher its value, the more likely the predictor has a significant effect on the outcome (in this case a high value is observed).

The parameter estimate of -0.693 indicates that being a man is associated with a decrease in the log odds of experiencing a more negative effect from alcohol compared to the reference category of women. In other words, interpreting the results, according to the model, being male significantly reduced the odds of reporting more negative effects of alcohol compared to the female group.

Table 8. *Parameter estimates of the overall effect to gender*

Parameter Estimates							
	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold [OverallEffect = 1]	-3,056	,238	164,572	1	,000	-3,522	-2,589
[OverallEffect = 2]	-2,114	,171	153,434	1	,000	-2,448	-1,779
[OverallEffect = 3]	,659	,120	30,096	1	,000	,424	,895
[OverallEffect = 4]	1,582	,148	113,727	1	,000	1,291	1,873
Location [Gender_M_F=1,00]	-,693	,238	8,477	1	,004	-1,159	-,226
[Gender_M_F=2,00]	0 ^a	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Analyzing the results with the variable “marital status” in the ordinal regression model, a statistically significant relationship is observed for students who are “single” with the different categories of the effect compared to those who are “married/cohabiting” ($p = 0.004$). A Wald statistic of 8.230 demonstrates a significant effect of the variable on the model. The parameter estimate of -0.622 indicates that for unmarried individuals the log odds of registering more negative effects of other people’s alcohol consumption decrease compared to the married or cohabiting category.

Table 9. Parameter estimates of the overall effect on family status

Parameter Estimates							
	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold [OverallEffect = 1]	-3,267	,278	137,969	1	,000	-3,812	-2,722
[OverallEffect = 2]	-2,315	,225	105,566	1	,000	-2,756	-1,873
[OverallEffect = 3]	,373	,184	4,124	1	,042	,013	,734
[OverallEffect = 4]	1,324	,201	43,490	1	,000	,931	1,718
Location [FamilyStatus=1]	-,622	,217	8,230	1	,004	-1,047	-,197
[FamilyStatus=2]	0 ^a	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

The study analyzes the influence of religion on the effect of others’ alcohol use (Table 10). The test results shows significance for Eastern Orthodox ($p = 0.020$), Muslim ($p = 0.0001$), and Catholic ($p = 0.019$) affiliations compared to those students who did not self-identify themselves (who are a significant portion of the sample - 17% of the respondents). The parameter estimates for the three religions (0.628, 1.347, 1.739, respectively) demonstrate that each of these categories is associated with an increase in the log odds of experiencing more negative affect than the overall effect of alcohol. The Wald estimates (5.401, 12.032, 5.540,

respectively) indicate a strong impact of each of the variables in the model (strongly applicable to Muslim affiliation).

Interpreting these results, it can be concluded that students who self-identified as Eastern Orthodox, Muslim, and Catholic are significantly more likely to experience more negative effects from alcohol compared to individuals who marked no religious affiliation.

These results highlight the influence of gender, family status, and religion in the model. Results demonstrate that men vs. women and single vs. married are more likely to attribute a positive rather than a negative effect of other individuals' alcohol use; and students of Eastern Orthodox, Muslim, and Catholic faiths are more likely to experience negative effect than respondents who do not identified themselves by a specific religious affiliation.

Table 10. Parameter estimates of the overall effect on religious affiliation

		Parameter Estimates						
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OverallEffect = 1]	-2,310	,301	58,977	1	,000	-2,899	-1,720
	[OverallEffect = 2]	-1,377	,255	29,268	1	,000	-1,876	-,878
	[OverallEffect = 3]	1,411	,255	30,523	1	,000	,910	1,911
	[OverallEffect = 4]	2,357	,274	73,915	1	,000	1,820	2,894
Location	[Religion=1]	,628	,270	5,401	1	,020	,098	1,157
	[Religion=2]	1,347	,388	12,032	1	,001	,586	2,107
	[Religion=3]	1,739	,739	5,540	1	,019	,291	3,187
	[Religion=7]	0 ^a	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

3. Experiencing harms from another people's alcohol use

Harms from alcohol use to other people can take different forms and intensity – they can be specific and tangible, as in injuries and property damage, but they can also be explicitly intangible, caused by psychological triggers, making them more subjective for assessment. In addition to the long list of harms, the frequency rate can vary, and is inversely proportional to the severity of the harm, with more serious harms reporting a lower frequency rate of experiencing them.

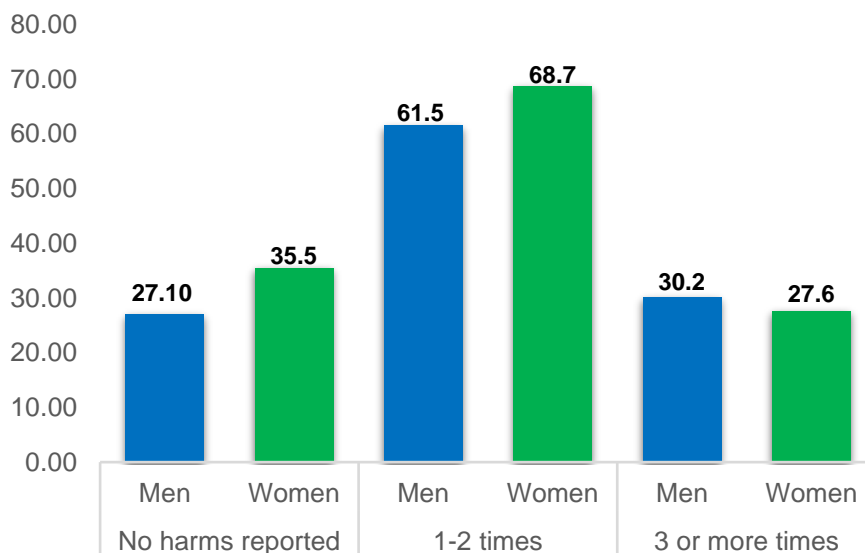
Harm is the type of interaction, in the context of the study, between the respondents and the person/people who have consumed alcohol. Their relationships are determined from the perspective of the respondent and for the purposes of the study, two main groups of “perpetrators” of harm are defined – known people (friends, good acquaintances, family members, partner) and unknown people (including distant acquaintance).

The present study includes 22 harms divided into three sections with questions structured according to the model of the WHO questionnaire. The first section brings together 6 harms under the common theme of aggression, violence and misconduct caused by a known or unknown person, examining also the frequency of occurrence and the “perpetrator” of the harm. The second section covers six harms from known people in the respondent’s environment, representing possible consequences from a social relationships’ perspective (e.g. family problems due to a someone’s drinking). Each question includes reporting the frequency of the particular harm in the last 12 months. The third category of questions consists of 10 harms caused by a known person, which add to the influence of social relationships and have a direct effect on the psychological state of the interviewee, such as emotional harm, being pressed to acts of a sexual nature, etc.

An analysis covering all 22 harms in the study is performed, showing the proportion of individuals who recorded at least one of the harms. 66.5% of the students are directly affected by the alcohol use of a known or unknown person in the last 12 months. 33.5% indicated that they have not experienced alcohol-related harm from another person. For 28.2% of the respondents, a frequency of three or more times in the last year of a specific harm is reported; while a harm with a frequency of one or two times was registered by 63.2% of the respondents.

Differences in percentage between men and women are observed (Figure 10). Women who report no experience of harm are 8.5% more than men. Men who report at least one harm with a frequency of three or more times are almost three percent more than women. 61.5% of women and 68.7% of men note at least one harm with a frequency of 1-2 times in the last year.

Figure 10. Distribution of harm frequency by gender (%)



The results of the data analysis with a T-test for two independent samples shows a statistically significant difference in recorded harms with a frequency of 1-2 times in the last year between men ($M = 2.6875$, $SD = 3.19971$) and women ($M = 1.9867$, $SD = 2.35934$), $t(395) = 2.312$, $p \leq 0.009$.

The next three sections of the current study investigate in detail the individual harms addressed in the questionnaire.

4. Harm related to aggressive, violent and illegal behavior caused by a known or unknown person who has consumed alcohol

The questions in the first section are formulated in terms of the past 12 months, which fits the traditional methodology in the literature to measure the time span of “current” problems. The questions asked look at the number of harms experienced. This approach allows determining the severity of the harm through high frequency cases (three or more times) and thus identifying people who often experience a specific harm.

The questionnaire section examines six types of harms, which refer to the effect of alcohol consumption by other people (known and unknown) on the respondents’ lives. Participants record harms in terms of whether they have been insulted, pushed/shoved, physically harmed, whether their clothing or personal belongings have been damaged, whether they have been involved in a traffic accident, or their house, car or other property has been damaged by a person using alcohol. Responses require marking the frequency of the relevant harm (“yes, three or more times”, “yes, once or twice”, “no”), as well as indicating the person(s) who caused the harm (“Someone you do not know and/or distant acquaintance”, “Friend and/or close acquaintance”, “Family member and/or a partner”, “Never happened”).

A quarter of students registered being **insulted** by someone who had consumed alcohol (25.5%). Every fifth person was in a similar situation once or twice in the last year, and 5.5% were insulted three or more times. 74.6% did not register any insults. (Table 11)

An effect of alcohol use, described as **pushing or shoving**, by a person who had consumed alcohol, was indicated by 13.5% of the participants. Students who have experienced this harm once or twice are 11%, and those who have three or more similar experiences are 2.5%.

Physically harmed one or twice were 2.5% of the respondents, and three or more times –1%. The remaining 96.5% indicated that they had no experience with this harm in the last 12 months.

One in eight reported that someone who had consumed alcohol had **damaged their clothes or personal belongings** once or twice during the last year; a 1.5% noted a frequency of three or more times.

In the last 12 months, 3% of the students indicated that they had once or twice been involved in a **traffic accident** in which a person who had consumed alcohol was the one responsible for the accident. The remaining 97% did not experience this harm.

4.2% had a person who had consumed alcohol damage their **house, car or property** once or twice. Similar situations with a greater frequency of three or more times were noted by 1% of the students.

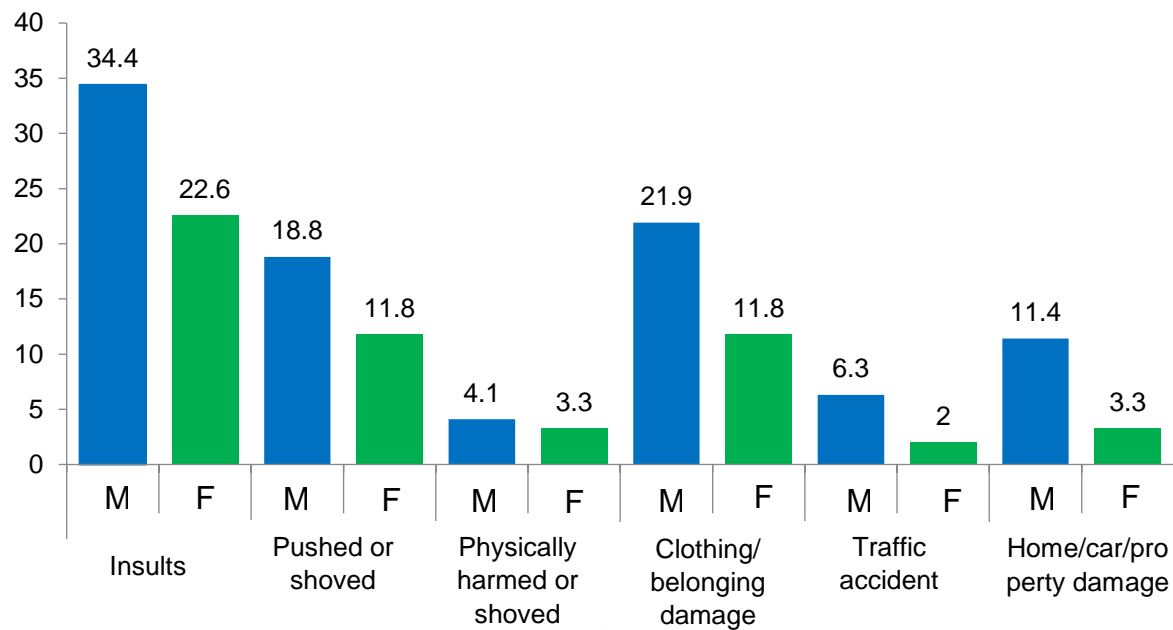
Table 11. Frequency of harms from known and unknown people (%)

	Insults	Pushed/S hoved	Physically harmed	Clothing/bel ongings damage	Traffic accident	Home/car/ property damage
≥ 3 times	5.5	2.5	1.0	1.5	0	1.0
1 - 2 times	20.0	11.0	2.5	12.7	3.0	4.2
No harms	74.6	86.5	96.5	85.8	97.0	94.8

When examining the specific six harms by gender, presented in Figure 11, the most frequent harm registered by men are cases in which they were insulted by a person who had consumed alcohol (every third man, 34.4%), and by women – clothing or personal belonging damages (every fifth woman, 21.9%). The lowest frequency for men are physical harms (4.1%), and for women - traffic accidents (2.0%).

The survey data demonstrates that men are more likely than women to report harms from aggressive, violent and misconduct behavior caused by a known or unknown individual who has consumed alcohol than women.

Figure 11. Frequency of harms from aggressive, violently and misconduct behaviors caused by a known or unknown person, by gender (%)



To analyze **gender differences** for these six harms, chi-square tests of independence are applied; when a statistically significant relationship is established, the magnitude of the effect is determined by Cramer's *V coefficient* (*Cramer's V*); cross-tabulations are used to investigate the relationship of the number of each registered harm by gender. In addition, the survey examines the person(s) who caused the relevant harm, and for this purpose respondents were given the opportunity to choose more than one answer for each harm.

The result of the chi-square test of independence between gender and the frequency of recorded **insults** demonstrated a statistically significant difference - $X(2)=10.713, p < 0.005$, indicating that there is a difference between men and women in the sample and the recorded insults in the study. Cramer's *V coefficient* is used to estimate the effect size of the statistically significant relationship – *Cramer's V* = 0.163 at $p < 0.005$, which generates low values.

To determine where the difference in the significant result is, a post hoc test is performed. Statistical analysis is applied to identify the frequency category that contributes significantly to the association between harm and gender. The Standardized Residuals statistic is used, with a value greater than 2. A value greater than 2 in the frequency cell of once or twice in males suggests a significant deviation between the observed and the expected frequencies in

the category, demonstrating a strong association between males and the specific frequency of insults.

Table 12. *Distribution of the frequency of insults by gender*

			Gender		Total
			Men	Women	
Insults	3 times or more	Count	3	19	22
		Expected count	5.3	16.7	22.0
		% Insults	13.6%	86.4%	100.0%
		% Gender	3.1%	6.2%	5.5%
		Residuals	-1.0	.6	
	1 – 2 times	Count	30	50	80
		Expected count	19.2	60.8	80.0
		% Insults	37.5%	62.5%	100.0%
		% Gender	31.3%	16.4%	20.0%
		Residuals	2.5	-1.4	
	No harms	Count	63	236	299
		Expected count	71.6	227.4	299.0
		% Insults	21.1%	78.9%	100.0%
		% Gender	65.6%	77.4%	74.6%
		Residuals	-1.0	.6	
Total	Count	96	305	401	
	Expected count	96.0	305.0	401.0	
	% Insults	23.9%	76.1%	100.0%	
	% Gender	100.0%	100.0%	100.0%	

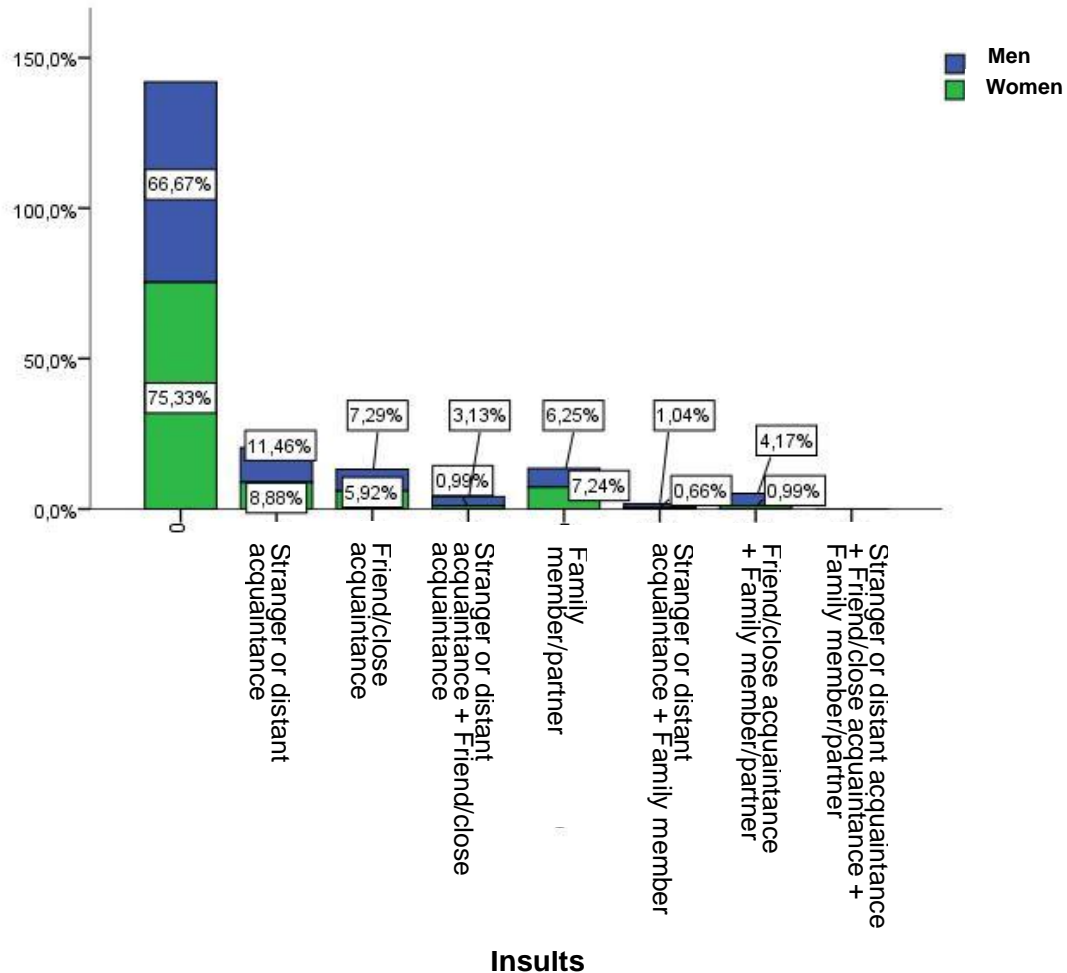
In an additional question, respondents reported the person/people who insulted them as a result of their alcohol use. As described above, students had the option to mark more than one answer. Almost half of those affected (43.5%) said that the perpetrator of the harm was a “stranger and/or distant acquaintance”; almost the same percentage of answered “friend and/or close acquaintance” and “family member and/or a partner” (31.5% and 30.6%). To detect differences between males and females and marked responses for the “offending” person, a chi-squared test is applied, which does not generate statistically significant differences between the two genders, $X^2(6) = 8.161, p = 0.227$.

In order to identify the most frequently registered “perpetrator”, an additional analysis is conducted that indicates the most common *combinations*. The result shows that these are – “Stranger and/or distant acquaintance” (9.5%), “Family member/partner” (7%), “Friend and/or close acquaintance” (6.2%), “Friend and/or close acquaintance” together with “Family member/partner” (1.7%) and “Stranger and/or distant acquaintance” together with “Friend and/or close acquaintance” (1.5%).

Analyzing the differences by gender for these combinations, it is found that in the most common answer (for both genders) is “Stranger and/or distant acquaintance” (men - 11.46%, women - 75.33%), followed by “Friend/close acquaintance” for men (7.29%) and “Family

member/partner” for women (7.24%) (Fig. 12). A chi-square test for the relationship between gender and the observed response combinations is performed. It generates no statistical significance, $X^2(6) = 8.161, p = 0.227$.

Figure 12. Combinations of perpetrators of insults by gender (%)



When looking at the relationship between gender and the frequency of recorded cases of *pushing or shoving* by a person who has consumed alcohol, the result of the chi-square test of independence does not show a statistically significant value - no differences are observed between the two genders in relation to this indicator.

The distribution by gender (Table 13) demonstrates that, in percentage terms, men are more likely than women to report incidents of being pushed and/or shoved at a frequency of one or two times by a person who had consumed alcohol (16.7% and 9.2%).

Table 13. Distribution of the frequency of situations of being pushed or shoved by gender

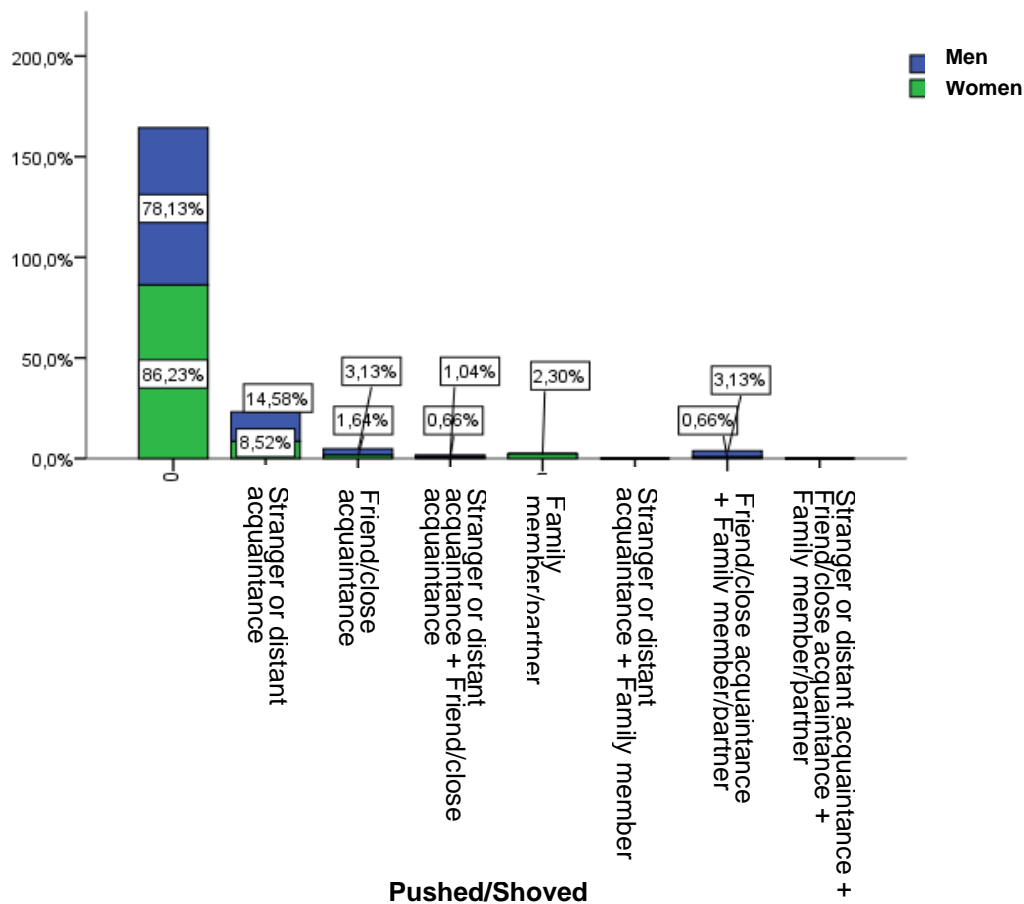
			Gender		Total
			Men	Women	
Pushed/shoved	3 times or more	Count	2	8	10
		Expected count	2.4	7.6	10.0
		% Gender	2.1%	2.6%	2.5%

	1 – 2 times	Count	16	28	44
		Expected count	10.5	33.5	44.0
		% Gender	16.7%	9.2%	11.0%
		Count	78	269	347
		Expected count	83.1	263.9	347.0
		% Gender	81.3%	88.2%	86.5%
Total	Count	96	305	401	
	Expected count	96.0	305.0	401.0	
	% Gender	100.0%	100.0%	100.0%	

Investigating the “perpetrator” in situation of pushing/shoving, the most common answer is “Stranger and/or distant acquaintance” (60.6%), followed by “Friend and/or close acquaintance” (22.5%) and “Family member and/or partner” (16.9%). The applied chi-square test for gender differences does not show statistically significant differences.

The result of the analysis for most common combinations place the option of “Stranger and/or distant acquaintance” first, followed by “Friend and/or close acquaintance” and “Friend and/or close acquaintance” along with “Family member/partner”. Figure 13 demonstrates the differences in gender for these combinations, indicating that men are more likely than women to experience the specific harm caused by all perpetrator combinations except “Family member/partner”. A chi-square test for a statistically significant relationship demonstrates no association between gender and the observed combinations.

Figure 13. Combinations of perpetrators of pushed/shoved by gender (%)



Examining the results of the chi-square test of independence for the **physically harmed** category, there is no statistically significant difference between the two groups. The data in the table below indicates that women reported more cases of physical harm than men among all reported cases in the past year.

Table 14. *Distribution of frequency of physical harm by gender*

			Gender		Total
			Men	Women	
Physical harm	3 or more times	Count	1	3	4
		Expected count	1.0	3.0	4.0
		% Physical harm	25.0%	75.0%	100.0%
		% Gender	1.0%	1.0%	1.0%
		Residuals	.0	.0	
	1 – 2 times	Count	3	7	10
		Expected count	2.4	7.6	10.0
		% Physical harm	30.0%	70.0%	100.0%
		% Gender	3.1%	2.3%	2.5%
		Residuals	.4	-.2	
	No harm	Count	92	295	387
		Expected count	92.6	294.4	387.0
		% Physical harm	23.8%	76.2%	100.0%
		% Gender	95.8%	96.7%	96.5%
		Остатъчни членове	-.1	.0	
Total		Count	96	305	401
		Expected count	96.0	305.0	401.0
		% Physical harm	23.9%	76.1%	100.0%
		% Gender	100.0%	100.0%	100.0%

A total of 19 responses of perpetrators of this harm were marked, with almost half of them (N=10) registered as “Family member and/or partner” (41.7%), followed by the response “Stranger and/or distant acquaintance” (33.3%) and “Friend and/or close acquaintance” (25.0%). The chi-test for independence does not generate a significant relationship.

When examining the combinations, after “Family member and/or partner” (1.7%) and “Stranger and/or distant acquaintance” (1.2%), follows the answer of “Friend and/or close acquaintance” (0.5%), “Stranger/distant acquaintance” together with “Friend/close acquaintance” (0.5%) and “Friend/close acquaintance” with “Family member/partner” (0.5%). It is important to note that one in seven cases of physical harm by a family member or partner was reported by a woman (Table 15). However, there is no statistically significant relationship between gender and harm combinations.

Table 15. *Distribution of combinations of perpetrators for physical harm by gender*

			Gender		Total
			Men	Women	
Physical harm	Not registered	Count	90	292	382

	Expected count	91,5	290,5	382,0
Stranger/distant acquaintance	Count	2	3	5
	Expected count	1,2	3,8	5,0
Friend/close acquaintance	Count	1	1	2
	Expected count	,5	1,5	2,0
Stranger/distant acquaintance + Friend/close acquaintance	Count	1	1	2
	Expected count	,5	1,5	2,0
Family member/partner	Count	0	7	7
	Expected count	1,7	5,3	7,0
Stranger and/or distant acquaintance + Family member/partner	Count	1	0	1
	Expected count	,2	,8	1,0
Friend/close acquaintance + Family member/partner	Count	1	1	2
	Expected count	,5	1,5	2,0
Total	Count	96	305	401
	Expected count	96,0	305,0	401,0

Investigating the cases of *damages to clothes and/or personal belongings*, the analysis shows that there is a statistically significant difference between men and women and the frequency of the respective registered harms - $X^2(2) = 10.713, p < 0.005$; the *Cramer's V* effect size is 0.166, demonstrating a low effect value.

The table below illustrates that such harm is experienced once or twice by 10% of women and almost one in five men; a higher frequency of occurrence of three and more times is noted by 6 women and no men.

Table 16. Distribution of damaged clothes and personal belongings by gender

			Gender		Total
			Men	Women	
Clothes/personal belongings damage	3 or more times	Count	0	6	6
		Expected count	1.4	4.6	6.0
		% clothes/personal belongings	0.0%	100.0%	100.0%
		% Gender	0.0%	2.0%	1.5%
		Residuals	-1.2	.7	
	1 -2 times	Count	21	30	51
		Expected count	12.2	38.8	51.0
		% clothes/personal belongings	41.2%	58.8%	100.0%
		% Gender	21.9%	9.8%	12.7%
		Residuals	2.5	-1.4	
	No harms	Count	75	269	344
		Expected count	82.4	261.6	344.0
		% clothes/personal belongings	21.8%	78.2%	100.0%
		% Gender	78.1%	88.2%	85.8%
		Residuals	-.8	.5	
Total	Count	96	305	401	
	Expected count	96.0	305.0	401.0	
	% clothes/personal belongings	23.9%	76.1%	100.0%	
	% Gender	100.0%	100.0%	100.0%	

The most commonly registered damage was for the answer “Friend and/or close acquaintance” (44.8%) and “Stranger and/or distant acquaintance” (43.1%) and lastly – “Member of the family and /or partner” (20.3%).

The combination analysis places “Friend and/or close acquaintance” (5.2%), “Stranger and/or distant acquaintance” (5.0%) and “Family member and/or partner” (2.7%) in the top three positions, followed by “Stranger/distant acquaintance” together with “Friend/close acquaintance” (1.0%).

Although the result of the analysis between gender and the specific harm shows no significant relationship, the cross-tabulation below demonstrates that the harm is marked by almost twice as many women when the perpetrator was a stranger/distant acquaintance, and by twice and half as many men when he was a friend or close acquaintance.

Table 17. *Combinations of perpetrators of damages of clothing/personal belongings by gender*

			Gender		Total
			Men	Women	
Clothing/personal belongings damages	Not registered	Count	76	267	343
		Expected count	82.1	260.9	343.0
		% Gender	79.2%	87.5%	85.5%
	Stranger/distant acquaintance	Count	7	13	20
		Expected count	4.8	15.2	20.0
		% Gender	7.3%	4.3%	5.0%
	Friend/close acquaintance	Count	9	12	21
		Expected count	5.0	16.0	21.0
		% Gender	9.4%	3.9%	5.2%
	Stranger/distant acquaintance +Friend/close acquaintance	Count	1	3	4
		Expected count	1.0	3.0	4.0
		% Gender	1.0%	1.0%	1.0%
	Family member/partner	Count	2	9	11
		Expected count	2.6	8.4	11.0
		% Gender	2.1%	3.0%	2.7%
	Stranger and/or distant acquaintance + Family member/partner	Count	1	0	1
		Expected count	.2	.8	1.0
		% Gender	1.0%	0.0%	0.2%
	Friend/close acquaintance + Family member/partner	Count	0	1	1
		Expected count	.2	.8	1.0
		% Gender	0.0%	0.3%	0.2%
Total	Count	96	305	401	
	Expected count	96.0	305.0	401.0	
	% Gender	100.0%	100.0%	100.0%	

The chi-square test for independence between the two genders in cases of traffic accidents in which a person who had consumed alcohol was responsible, a statistically significant relationship is generated $X^2 = 4.614$, $p = 0.032$. The coefficient Kramer's V demonstrates an effect size of 0.106, suggesting a relatively weak relationship between the variable in the analysis and gender.

No large deviations are observed between the observed and expected frequencies in the table below, which can be interpreted by the observations in the variables being within the expected range of variation given the sample size. Analysis of the small number of students who answered this question did not identify strong associations. In addition, despite the lack of a strong relationship, the table shows that in the present sample, every 16th man was involved in a road accident once or twice, while the proportion of women was three times lower.

Table 18. Frequency distribution of traffic accidents by gender

			Gender		Total
			Men	Women	
Traffic accident	1 – 2 times	Count	6	6	12
		Expected count	2,9	9,1	12,0
		% Gender	6,3%	2,0%	3,0%
		Residuals	1,8	-1,0	
	No harms	Count	90	299	389
		Expected count	93,1	295,9	389,0
		% Gender	93,8%	98,0%	97,0%
		Residuals	-,3	,2	
Total		Count	96	305	401
		Expected count	96,0	305,0	401,0
		% Traffic accident	23,9%	76,1%	100,0%
		% Gender	100,0%	100,0%	100,0%

The most common registered response of the students who marked a person who caused a harm is “Stranger and/or distant acquaintance” (N=7), followed by the other two options with an equal number of registered cases (N=3). No statistically significant differences are observed between the two genders. In the answers to this question, there are no combinations between the perpetrators of the harm. A possible explanation is that the frequency of experiencing the harm is inversely proportional to the severity of the harm; in this case, the severity of the “traffic accident” accounts for a lower probability of experiencing the harm.

The result of the analysis for house, car or property damage demonstrates a statistically significant relationship with gender – $X^2(2) = 11.233, p < 0.004$; and an effect size of *Cramer's V* = 0.167, indicating a weak effect.

When examining the relationships of the variables, a value greater than 2 is found in the cell for the frequency of three times or more in men, suggesting a strong association between men and damage of a house, car, or property; this also contributes to the explanation of the strong relationship in the particular model. The performed cross-tabulation, which analyzes the relationship of the frequency of the harm by gender, indicates that one in nine men registered such harm, which is almost three times more than the experiences of women.

Table 19. Frequency distribution of damage to a house/ car/ property by gender

			Gender		Total
			Men	Women	
House/car/property damage	3 or more times	Count	3	1	4
		Expected count	1,0	3,0	4,0
		% House/car/property damage	75,0%	25,0%	100,0%
		% Gender	3,1%	,3%	1,0%
		Residuals	2,1	-1,2	
	1 – 2 times	Count	8	9	17
		Expected count	4,1	12,9	17,0
		% House/car/property damage	47,1%	52,9%	100,0%
		% Gender	8,3%	3,0%	4,2%
		Residuals	1,9	-1,1	
	No harms	Count	85	295	380
		Expected count	91,0	289,0	380,0
		% House/car/property damage	22,4%	77,6%	100,0%
		% Gender	88,5%	96,7%	94,8%
		Residuals	-,6	,4	
Total		Count	96	305	401
		Expected count	96,0	305,0	401,0
		% House/car/property damage	23,9%	76,1%	100,0%
		% Gender	100,0%	100,0%	100,0%

The predominant “perpetrators” of this harm is “Friend and/or close acquaintance” (40.7%), followed by “Family member and/or partner” (36.4%) and “Stranger and/or distant acquaintance” (22.73%) . The most common combinations generates a statistically significant association in which the category of men who indicated “Friend/Close Acquaintance” contributes significantly to the association. (Table 20).

Table 20. *Combinations of perpetrators of damages of house/car/property by gender*

			Gender		Total	
			Men	Women		
House/car/property	Not registered	Count	86	295	381	
		% Gender	89.6%	96.7%	95.0%	
		Residuals	-.5	.3		
	Stranger/distant acquaintance	Count	2	2	4	
		% Gender	2.1%	0.7%	1.0%	
		Residuals	1.1	-.6		
	Friend/close acquaintance	Count	5	2	7	
		% Gender	5.2%	0.7%	1.7%	
		Residuals	2.6	-1.4		
	Stranger/distant acquaintance +Friend/close acquaintance	Count	1	0	1	
		% Gender	1.0%	0.0%	0.2%	
		Residuals	1.6	-.9		
	Family member/partner	Count	2	5	7	
		% Gender	2.1%	1.6%	1.7%	
		Residuals	.3	-.1		
			Count	0	1	1

	Friend/close acquaintance + Family member/partner	% Gender	0.0%	0.3%	0.2%
		Residuals	-.5	.3	
Total		Count	96	305	401
		% Gender	100.0%	100.0%	100.0%

5. Harms related to the respondent's social relationships from the alcohol consumption of people close to them (family member, partner, close friend) in the last 12 months

The participating students registered the frequency of alcohol-related harm from people **close** to them in an additional six questions – situations when they were a passenger in a car driven by someone who had consumed too much alcohol; when someone who had consumed alcohol harassed or disturbed them at a party or in another private setting; when someone who had consumed alcohol made them feel threatened or frightened; family problems or difficulties in partner relationships because of the other person’s alcohol use; problem(s) with friend(s) or neighbor(s) because of their alcohol consumption; and financial problems caused by another person’s alcohol use.

The most common harm from a close person is recorded for harassment or disturbance in a private setting, with one in four (23.7%) reporting a frequency of the harm of once or twice in the past one year (Table 21). Indicating the same frequency, 12.7% of students said that someone who had consumed alcohol made them feel threatened or frightened in a private setting, and 12.2% had problem(s) with a friend(s) or neighbor(s) because of their alcohol use. Relationship problems were reported by 9.0% of respondents, followed by 7.5% of respondents who had once or twice been passengers in a car driven by a close person who had consumed too much alcohol.

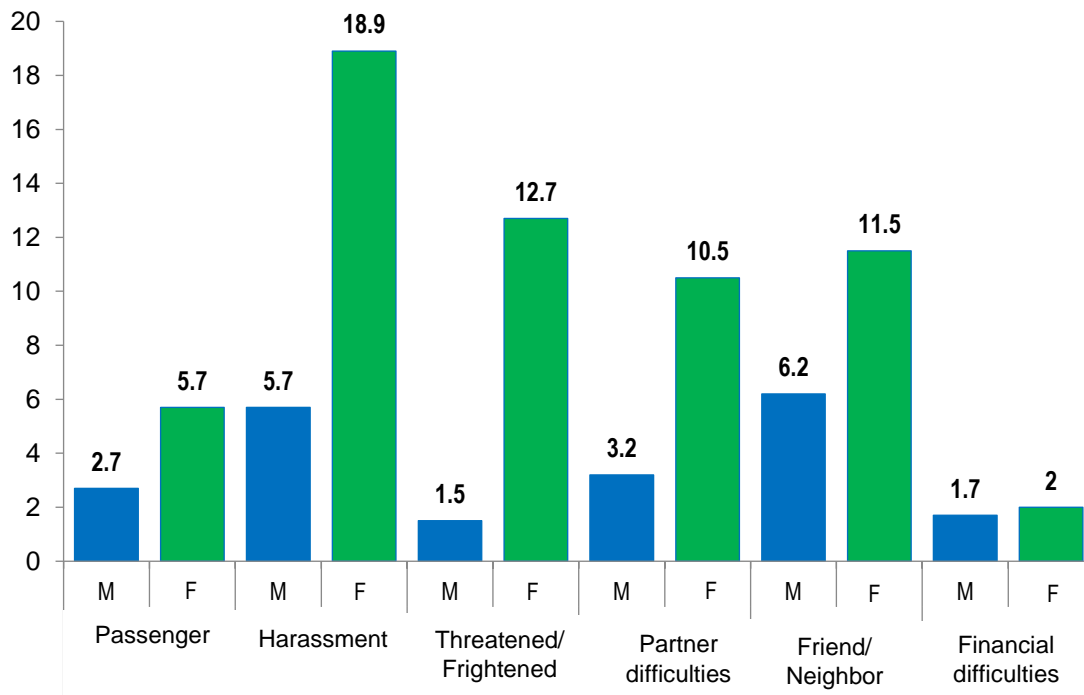
The most common high-frequency harms (three or more times) are recorded for problem(s) with friend(s) or neighbor(s) (5.5%) and family problems/difficulties in partner relationships (4.7%).

Table 21. Frequency of harms related to the social relationships of the respondents (%)

Frequency	Passenger	Harassment	Threatened/Frightened	Partner difficulties	Friend/Neighbor	Financial difficulties
≥ 3	1.0	2.7	1.5	4.7	5.5	1.5
1 - 2	7.5	23.7	12.7	9.0	12.2	2.2
0	91.5	73.6	85.8	86.3	82.3	96.3

The research on the six specific harms by gender indicate that the most commonly reported harm among men is problem(s) with a friend(s) or neighbor(s) (6.2%), while the least prevalent one is when men felt threatened or frightened (1.5%). For women, harassment is recorded by almost one in five women (18.9%), and financial problems caused by someone else’s drinking is registered least frequently (2%). Overall, the data shows that women are more likely than men to report harm caused by a close person among these six harms. (Figure 14)

Figure 14. Frequency of harms related to social relationships of the respondent by gender (%)



Chi-square tests are performed with the aim to examine the relationship between men and women and the six harms from people close to the respondent. The results generate no statistically significant relationship between gender and the prevalence of cases in which the respondents were: passengers in a car driven by a close person who consumed too much alcohol. ($p = 0.454$), were harassed/disturbed in a private setting ($p = 0.738$), had family problems or difficulties in partner relationships ($p = 0.249$), had financial problems because of another person's alcohol use ($p = 0.067$).

The P -value of the chi-square test between men and women and the frequency of cases in which respondents felt threatened or frightened demonstrate a statistically significant relationship ($p = 0.014$). The frequency of problem(s) with a friend(s) or neighbor(s) because of their alcohol use also correlates with the gender of the respondents ($p = 0.020$).

A post hoc test for residuals demonstrates a strong association between male students and the high frequency of reported problems with friend(s) and/or neighbor(s) caused by alcohol consumption.

Table 22. Frequency distribution of problems with friends/neighbors by gender

			Gender		Total
			Men	Women	
Friends/neighbors problems	3 times or more	Count	10	12	22
		Expected count	5,3	16,7	22,0
		% Friends/neighbors problems	45,5%	54,5%	100,0%
		% Gender	10,4%	3,9%	5,5%
		Residuals	2,1	-1,2	
	1 -2 times	Count	15	34	49
		Expected count	11,7	37,3	49,0
		% Friends/neighbors problems	30,6%	69,4%	100,0%
		% Gender	15,6%	11,1%	12,2%
		Residuals	1,0	-,5	
	No harms	Count	71	259	330
		Expected count	79,0	251,0	330,0
		% Friends/neighbors problems	21,5%	78,5%	100,0%
		% Gender	74,0%	84,9%	82,3%
		Residuals	-,9	,5	
Total		Count	96	305	401
		Expected count	96,0	305,0	401,0
		% Friends/neighbors problems	23,9%	76,1%	100,0%
		% Total	23,9%	76,1%	100,0%

The statistical analysis for residuals on the relationship between gender and the frequency of times respondents felt threatened or frightened is performed. The crosstab below shows residuals with a value greater than -2 in the cell at a frequency of one or two times for men. A cell with a negative value means that the observed frequency in men is significantly lower than expected. In other words, men are significantly more likely to report a lower frequency of harm than women.

Table 23. *Distribution of the frequency of registered cases of “threatened/frightened” by gender*

			Gender		Total
			Men	Women	
Threatened/frightened	3 times or more	Count	2	4	6
		Expected count	1,4	4,6	6,0
		% Threatened/frightened	33,3%	66,7%	100,0%
		% Gender	2,1%	1,3%	1,5%
	1 -2 times	Count	4	47	51
		Expected count	12,2	38,8	51,0
		% Threatened/frightened	7,8%	92,2%	100,0%
		% Gender	4,2%	15,4%	12,7%
	No harms	Count	90	254	344
		Expected count	82,4	261,6	344,0
		% Threatened/frightened	26,2%	73,8%	100,0%
		% Gender	93,8%	83,3%	85,8%
Total	Count	96	305	401	
	Expected count	96,0	305,0	401,0	
	% Threatened/frightened	23,9%	76,1%	100,0%	
	% Gender	100,0%	100,0%	100,0%	
	% Total	23,9%	76,1%	100,0%	

6. Additional harm from close people's alcohol consumption (family member, partner, close friend) related to one's social relationships and psychological state

The last section focuses on additional six harms of alcohol use to close people (family members, partner, close friends) associated with their social relationships and their psychological state. A total of 10 harms are included. Questions consist of situations in which the student interviewed was emotionally harmed or neglected; when he/she avoided seeing someone because of other person's alcohol consumption; when he/she was pressured to have sex or acts of a similar nature; when a close person's drinking had negatively affected a social event the interviewee attended; in cases when a close person failed to do something for which he was relied upon; when the student did not see friends/family because they were ashamed that someone else they lived with was drinking; in cases where the respondent was left without food; when he/she had to leave the place where s/he lives due to the alcohol consumption of another individual; when the available financial means in the household were less because of the alcohol use of a close person; and situations where any of these individuals took money or valuables from the student.

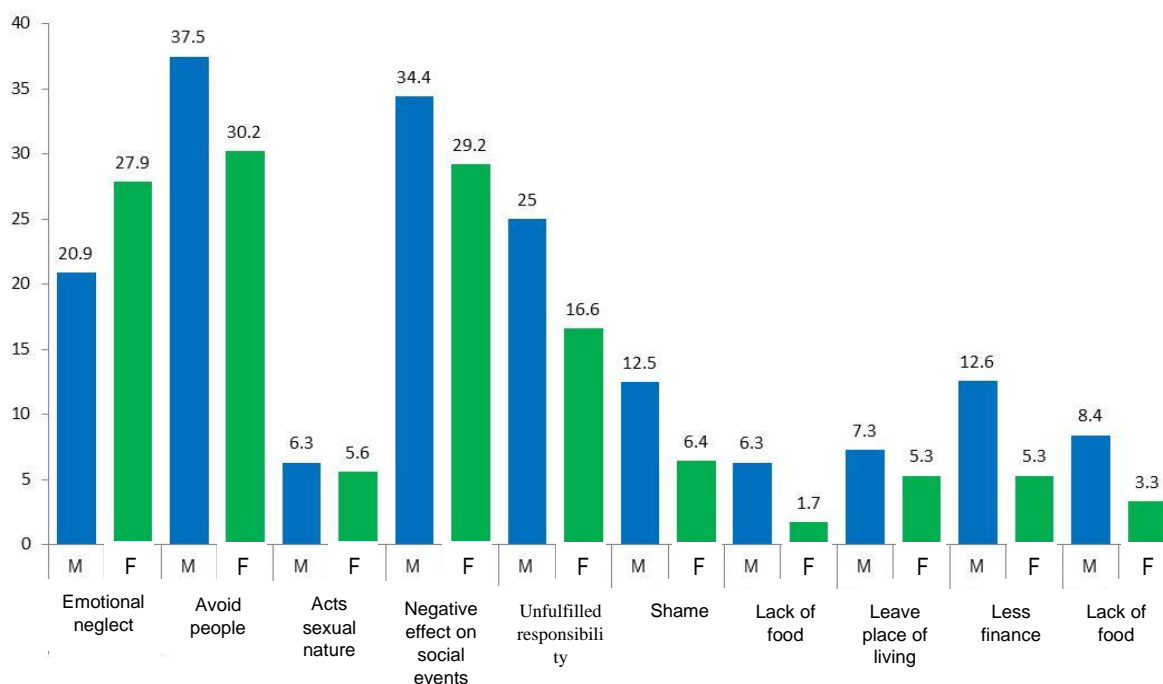
The most widespread harm is registered in the cases in which the persons avoided seeing people close to them due to the alcohol consumption of the specific persons (Table 24). Every third student reported such a situation (32%), with 13.1% reporting that this had happened three or more times. A similar frequency of distribution is noted when the drinking of a close person negatively affected a social event attended by the student (30.5%). One in four felt emotionally hurt or neglected (26.2%); and the harm from cases where a loved one failed to do something that was relied on because of his alcohol use, ranks fourth in prevalence (18.6%). The remaining six harms are all recorded by less than 8% of respondents.

Table 24. Frequency of harms, related to respondents' social relationships and psychological state (%)

	Emotional neglect	Avoid people	Acts sexual nature	Negative effect on social event	Unfulfilled responsibility	Shame	Lack of food	Leave place of living	Less finance	Money/ valuables
≥ 3	8.3	13.1	1.5	5.3	5.8	3.3	1.0	2.8	3.0	2.0
1 - 2	17.9	18.9	4.3	25.2	12.8	4.5	1.8	3.0	4.0	2.5
0	73.8	68.0	94.2	69.5	81.4	92.2	97.2	94.2	92.9	95.5

When examining the specific six harms by gender, it was found that the most frequently registered harm for men and women was avoiding seeing someone close to them because of their alcohol use (37.5% and 30.2%, respectively). The second place in prevalence, again for both sexes, is the negative impact of a social event caused by the use of a person close to the respondent (34.4% and 29.2%). The lowest prevalence values in men are recorded in the absence of food (93.8%) and pressure to acts of a sexual nature because of another person's alcohol consumption (93.8%); while for women, it is the lack of food reported by 98.3% of all women. Analysis of the data found that women are more likely than men to report harm caused by a close person in these section of harms. (Figure 15)

Figure 10. Frequency of harm, related to respondents' social relationships and psychological state by gender (%)



Chi-square tests are performed to examine the relationship between men and women and the ten harms from people close to the respondent who had consumed alcohol. The results demonstrate no statistically significant relationship in cases where the student was emotionally hurt/neglected ($p = 0.200$); when he/she avoided seeing someone because of his/her alcohol consumption ($p = 0.394$); when he/she was pressured to have sex or actions of a similar nature ($p = 0.869$); when a close one's drinking negatively affected a social event he/she attended ($p = 0.398$); in cases when the close person failed to do something for which he was relied upon ($p = 0.178$); when the student did not see friends/family because he/she was ashamed that a

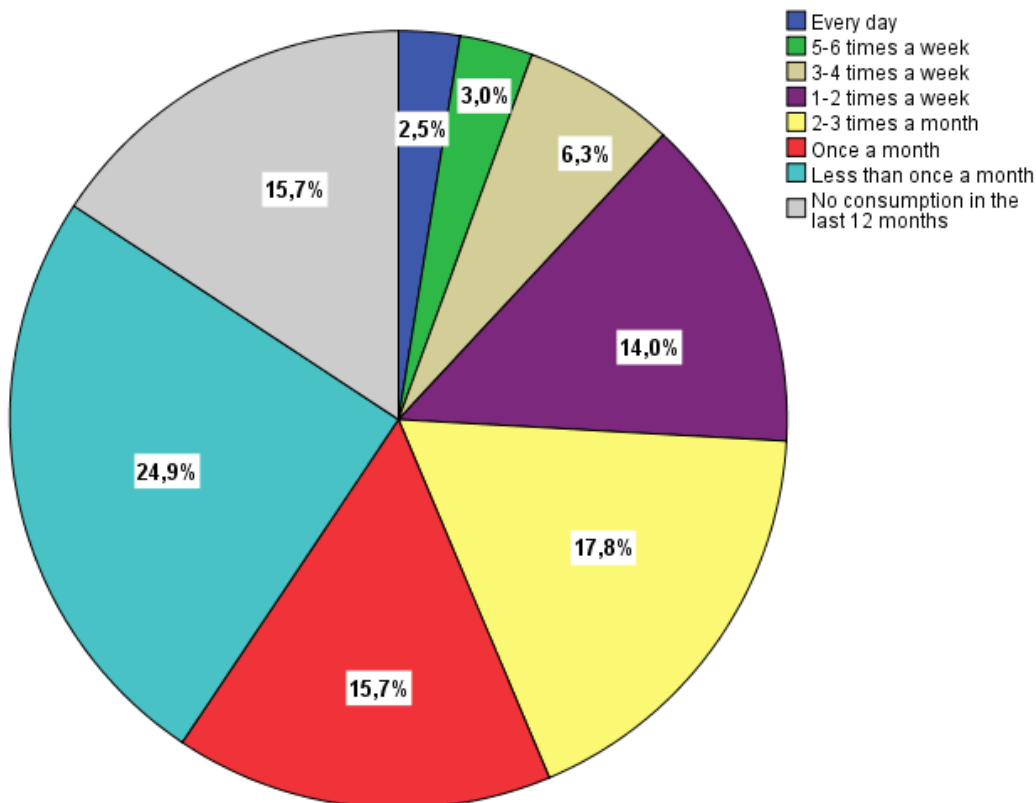
person he/she lived with drinks ($p = 0.144$); in cases where the respondent was left without food ($p = 0.56$); when he/she had to leave the place where he/she lives because of the alcohol consumption of another person ($p = 0.325$); and cases where one of these people took money or valuables from the student ($p = 0.107$).

The P -value of the chi-square test between men and women and the frequency of the cases in which the available financial means in the household were less because of the alcohol use of a close person demonstrates a statistically significant relationship ($p = 0.043$). It is important to note that the total number of people in the study reporting the particular harm is low ($N=28$) and the standardized residual of 2 (indicating a strong association) is not observed. Another possible explanation (besides the low number of responses) is that the significance in the test between the two groups may have been influenced by other factors.

7. Frequency of alcohol consumption among men and women

The last section refers to the respondents' personal alcohol use in the last 12 months. Respondents indicated the frequency of consumption of alcoholic beverages, ranging from "Every day" to "I have not consumed any alcoholic beverages in the last 12 months". (Figure 16)

Figure 16. Alcohol consumption frequency



The students who reported drinking alcohol are 84.3%; the rest 15.7% did not consume alcohol in the last 12 months. According to the data from the National Survey of Health Risk Factors among the adult population in Bulgaria, 35.5% are abstainers. The WHO data indicates

that among the population aged 15+, 34.0% are abstainers, which resonates with the data of the NCPHA. The present study, however, demonstrates a two-fold lower percentage of individuals who do not consume alcoholic beverages.

Comparing the current data by gender, it is observed that the most common frequency for both genders is “Less than once a month” (men - 22.8%, women - 25.5%), along with 1-2 times a week recorded by the same percentage among men (22.8%). The second place, for both genders, is the frequency of 2-3 days a month (men – 15.2%, women – 18.5%). Weekly use is common for a total of 31.5% of men and 20.9% of women. Daily consumption is present in 5.4% of men and 1.7% of women. A difference of 2% is reported between the two genders in the reported total abstinence response for the past year. A statistically significant difference, applying T-test for independent samples, is observed between men ($M = 5.35$, $SD = 1.941$) and women ($M = 5.76$, $SD = 1.733$); $t(392) = -1.964$, $p = 0.050$.

Table 25. Alcohol consumption frequency by gender (%)

Frequency	Men	Women
<i>Every day</i>	5.4	1.7
<i>5-6 times a week</i>	2.2	3.3
<i>3-4 times a week</i>	6.5	6.3
<i>1-2 times a week</i>	22.8	11.3
<i>2-3 time a months</i>	15.2	18.5
<i>Once a month</i>	10.9	17.2
<i>Less than once a month</i>	22.8	25.5
<i>No consumption</i>	14.1	16.2

7.1. Frequency of alcohol consumption as a predictor of experiencing harm

In order to investigate whether the frequency of alcohol consumption can predict the overall effect of other persons’ alcohol use on the respondent’s life, multinomial logistic regression is applied. The conducted analysis using SPSS generates a warning message about convergence problems affecting the reliability of the estimate of the model and the validity of the results. In exploring the possibilities of overcoming this problem, the relationship between the variables is examined by means of a cross-tabulation. The crosstabulation indicates a low number of some of the observations and an imbalance in the distribution of the independent variable across categories in the overall effect. However, it is important to emphasize the differences between the frequency of use in the individual categories in the overall effect.

Almost half of those who abstain from alcohol (43.5%) noted that the overall effect of other people’s alcohol use on their lives is very negative. Those who drink alcohol once a month or less are more likely to report a negative effect than those with more regular consumption. Half of those who indicate positive and positive to a certain degree effect (48.8%) drink alcohol 1-2 times a week.

To investigate if frequency of alcohol use can act a predictor of for the studied harms, multinomial logistic regression is performed for each of the 22 harms.

- Offenses - the analysis does not indicate statistical significance in the specified model, but when examining the parameter estimates there is a significance between consumption of alcoholic beverages every day and 5-6 times a week and the experienced harm of one or

two times in the last year (1.833, $p = 0.022$; 1.633, $p = 0.021$). Those who drink alcohol every day or 5-6 times a week are more likely to report harm from insults than abstainers.

- Damage to personal belongings/clothing – lack of statistical significance of the model, but significance when examining the parameter estimates. Consumption of alcoholic beverages every day, 5-6 times a week and 2-3 times a month suggests registering of the harm of one or two times in the last year ($p = 0.020$, $p = 0.008$, $p = 0.016$, respectively).
- Problem(s) with friend(s) or neighbor(s) - the analysis does not indicate statistical significance in the specified model, but when examining the parameter estimates, some individual coefficients indicate statistical significance. Consumption of alcoholic beverages 5-6 times a week is positively associated with the experienced harm of three or more times (2.556, $p = 0.045$). Alcohol use once a month also acts as a predictor of experiencing the harm of 1-2 times (1.597, $p = 0.018$).
- Emotionally hurt/neglect – the analysis does not generate statistical significance, but individual coefficients in the model indicate such. The coefficient for use of 5-6 times a week (1.702, $p = 0.030$) is statistically significant, indicating a positive association with the specific harm experienced once or twice compared to those who did not experience the harm. Consumption with a frequency of 2-3 times a month and about once a month are also significant in predicting harm with a frequency of one to two times (1.099, $p = 0.048$ and 1.099, $p = 0.027$, respectively).

The analysis of all other examined harms, the results demonstrate convergence problems due to the low number of some of the observations and imbalance in the distribution of the independent variable.

7.2. The frequency of alcohol consumption as a predictor of experiencing harm by gender

The results presented below repeat the methodology of the multinomial logistic regression procedure in section 7.1., but with the addition of an independent variable “gender”, which would allow identifying how specific frequencies of alcohol consumption and gender affect individual harms.

- Insults - the statistically significant result of the analysis ($X^2(16) = 26.628$, $p = 0.046$) shows a relationship between certain levels of frequency of harm insults and the probability of men and women experiencing harm with different alcohol consumption. (Table 26). The specified model explains approximately 8.7% of the variation in the dependent variable (Nagelkerke's R-squared).
- Analysis of the parameter estimates (Table 27) generate four statistically significant results. Frequency of alcohol consumption *every day* is associated with a greater likelihood of experiencing insults *three or more times* ($p = 0.045$) and *one or two times* ($p = 0.050$). The results show that people who consume alcohol every day are more likely to experience three or more times and one or two times the harm insults compared to those respondents who do not consume alcohol.

The B coefficient for every day use is 2.070, meaning that for every one-unit increase in drinking frequency from another category to the daily consumption category, the log odds of experiencing the harm three or more times increases by 2.070. In other words, people who drink every day are about 2.070 times more likely to experience three or more time insults compared to those with other drinking frequencies.

Alcohol consumption with a frequency of 5-6 times a week is a significant predictor of insults with a frequency of one or two times. The coefficient B for predicting the harm with prevalence of 1-2 times is 1.600. This suggests that for every one unit increase in the frequency of drinking 5-6 times a week, the logarithmic odds of experiencing one or two situation of insults increases by 1.600.

Alcohol use 3 to 4 times a week is a significant predictor of one to two occasions of the harm ($p = 0.017$). The coefficient B is 1.721, meaning that for every one-unit increase in drinking frequency to 5-6 times a week, the log odds of experiencing harm at the 1-2 level increases by 1.721.

Variable of men assumes a significance value of 0.007, which contributes significantly to explaining part of the variance in predicting harm from one or two times insults. Men are more likely than women to be assaulted once or twice by someone who has been drinking, compared to women. The coefficient B takes the value 0.775, which confirms that, considering gender as a predictor, a difference in the log odds of experiencing the harm can be observed at the level of one or two times.

Table 26. Empirical value of the likelihood ratio test – alcohol frequency and gender

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	109,990			
Final	83,372	26,618	16	,046

Table 27. Parameter estimates of insults with alcohol frequency and gender as predictors

Parameter Estimates

		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Insults ^a									
3 or more times	Intercept	-2,384	,525	20,635	1	,000			
	[DrinkingFrequency=1]	2,070	1,035	4,002	1	,045	7,926	1,043	60,231
	[DrinkingFrequency=2]	,680	1,201	,321	1	,571	1,975	,188	20,793
	[DrinkingFrequency=3]	-,407	1,152	,124	1	,724	,666	,070	6,373
	[DrinkingFrequency=4]	,083	,798	,011	1	,917	1,087	,227	5,196
	[DrinkingFrequency=5]	-,308	,791	,152	1	,697	,735	,156	3,464
	[DrinkingFrequency=6]	-,248	,792	,098	1	,754	,781	,165	3,689
	[DrinkingFrequency=7]	-,470	,731	,413	1	,520	,625	,149	2,620
	[DrinkingFrequency=8]	0 ^b	.	.	0	.	.	.	.
	[Gender_M_F=1,00]	-1,098	,781	1,978	1	,160	,334	,072	1,541
[Gender_M_F=2,00]	0 ^b	.	.	0	.	.	.	.
1 -2 times	Intercept	-2,041	,395	26,764	1	,000			
	[DrinkingFrequency=1]	1,600	,818	3,829	1	,050	4,954	,997	24,604
	[DrinkingFrequency=2]	1,721	,724	5,656	1	,017	5,589	1,353	23,079
	[DrinkingFrequency=3]	,483	,637	,575	1	,448	1,621	,465	5,645
	[DrinkingFrequency=4]	,601	,505	1,416	1	,234	1,824	,678	4,906
	[DrinkingFrequency=5]	,780	,478	2,666	1	,103	2,181	,855	5,562
	[DrinkingFrequency=6]	,625	,498	1,574	1	,210	1,869	,704	4,966
	[DrinkingFrequency=7]	,090	,482	,035	1	,852	1,094	,425	2,816
	[DrinkingFrequency=8]	0 ^b	.	.	0	.	.	.	.
	[Gender_M_F=1,00]	,775	,286	7,358	1	,007	2,171	1,240	3,801
[Gender_M_F=2,00]	0 ^b	.	.	0	.	.	.	.

- Problems with friend(s)/neighbor(s) – when examining problems with friend(s)/neighbor(s), the overall model does not generate statistical significance ($X^2(16) = 19.266, p = 0.255$) ; but individual predictors indicate one. It suggests that while the model does not explain variance well, specific predictors matter in interpreting the dependent variable. The frequency of alcohol consumption of 5-6 times a week is statistically significant ($p = 0.040, B = 2.636$) – students who drink 5-6 times a week are more likely to experience three or more such problems compared to those who don't drink. Additional significance is also observed for a frequency of about once a month in predicting one or two times of problems with friend(s)/neighbor(s) ($p = 0.016, B = 1.621$). Although the overall model is not significant and no gender difference is observed, the two significant

predictors demonstrate that a frequency of 5-6 times a week and that of about once a month contributed to understanding the likelihood of experiencing harm.

- Emotionally harmed or neglected – the model does not show a significant result ($X^2(16) = 17.694$, $p = 0.342$), but for three of the frequencies of alcohol use there is statistical significance for experiencing the harm of one or two times. These include alcohol consumption of 5-6 times a week ($p = 0.030$, $B = 1.696$), 2 to 3 days a month ($p = 0.048$, $B = 1.097$) and less than once a month ($p = 0.028$, $B = 1.225$). This suggests that among all frequencies of use, students who use 5-6 times a week, 2 to 3 days a month, and less than once a month are more likely to experience emotional harm or neglect once or twice in compared to non-drinkers. There is no statistically significant association with the gender of the respondents.

The results of the analysis with the model used, by entering all remaining harms as independent variables, result in warning about convergence, which may affect the reliability and validity of the model estimation and results.

MAIN CONCLUSIONS, RECOMMENDATIONS AND CONTRIBUTIONS

The present work provides initial data on the experience of the effect of people's drinking alcohol on others, highlighting not only the prevalence of harm but also its severity, which shifts the focus of the individual responsibility for preventing alcohol-related harm to a more societal perspective. The study is an important step towards determining the prevalence of various types of harm among students in the country, whose group is defined as one of the most affected ones by alcohol in Bulgaria.

Conclusions

- The overall effect of alcohol use by other individuals (known and unknown) on students' lives is rated as neutral by more than half of the respondents (55.6%). Substantial differences are noted in terms of those who perceive its effect as positive – with men 2.5 times more likely to identify it as “very positive” and almost three times more likely to identify it as “positive to a certain degree” compared to women.
- Gender, family status, and religious affiliation are been identified as defining demographic characteristics in the perception of the effects of alcohol.
- Harms related to aggression, violence and misconduct caused by a known or unknown people are registered more often by men than women.
- Strangers/distant acquaintances are the most common “perpetrators” of harm for both genders, followed by a friend/close acquaintance for men and a family member/partner for women. Women are more likely to report problems in the family environment related to alcohol.
- Consequences in the sphere of social relationships are the most common harms among students, more typical for women than for men (except for financial problems and harassment).

- Harms with a direct effect on respondents' psychological well-being are reported by more men than women, and only in the category of emotional harm/neglect women report more harms than men.
- Frequency of alcohol consumption has traditionally been accepted as a predictor of harms, as found in the present study in at-risk use of 5-6 days a week, but not valid for most high-risk frequencies of alcohol consumption (e.g. daily consumption, 3- 4 days a week).
- Alcohol use of 5-6 times a week interacts with the most harms examined, namely insults, problems with friend(s)/neighbor(s), family problems/partnership difficulties, emotional harm/neglect, and negative impact on social event.
- Personal alcohol consumption acts as a prerequisite for experiencing more harm, and in cases of family problems and partner difficulties, a strong statistical association is observed with a frequency of harm of three or more times in the last 12 months.
- Students who drink less often and those who are abstainers are more likely not to register cases of harm from alcohol use, i.e. low frequency of alcohol consumption protects from the experience of harm from alcohol consumption of close and familiar persons.

Basic recommendations for reducing the harm caused by alcohol consumption of others.

As a result of the scientific data and the conducted research, the following recommendations have been developed at **the national level**:

- Improving *pricing policies* with a focus on increasing excise duty on alcohol to reduce its availability. Implementation of the specific policy is considered to be the most effective measure with the most health benefits for the least investment of resources.
- *Update all alcohol-related fiscal policies*, inflation-adjusted, ensuring lower levels of affordability for specific groups exposed to a higher risk of experiencing harm (direct and indirect).
- Stricter regulation regarding the *physical availability* of alcoholic beverages, including legal measures concerning the number and distribution of places where alcohol is served and sold; limiting the time and days for sale in commercial establishments; control over online sales, etc.
- Raising the *legal minimum age* for purchasing alcoholic beverages and/or strategies to limit the types of alcoholic beverages that can be sold to young people.
- Additions and amendments to the Health Act, Radio and Television Act and revision of the National Ethical Rules for Advertising and Commercial Communication in the Republic of Bulgaria regarding the marketing of alcoholic beverages, with an emphasis on developing stricter content restrictions in the communication of advertising messages. Limiting marketing strategies to factual messages, without celebrities-related contents, which directly contribute to the targeting and segmentation of specific groups (such as young people).

- Develop *strategies to reduce psychological effects*, related to alcohol, and their implementation in the system of the education.
- Further measures in the Road Traffic Act for *drink-driving*, including lowering the blood alcohol limit to zero for under 20 years of age.
- Introducing warning *labels* of health risks of alcohol consumption, similar to the warning labels on cigarette packs.
- Improving primary care engagement, particularly among at-risk groups, and expanding alcohol-related activities, providing more opportunities for *screening and brief interventions*.
- Development of good practice *guidelines* for medical and non-medical professionals on the harm of alcohol use to others.
- *Expanding research* on the harms of alcohol consumption on others, using data from various institutions (health records or police reports).

Main recommendations at **the regional level** :

- Provision of *alcohol-free spaces* with the goal of stimulating healthy behavior patterns and support among young people at regional level.
- Restrictions on *the sale and use of alcoholic beverages during sports and cultural events*.
- *Raising the awareness* of the service staff in common places, frequented by the young population.
- Development and application of *innovative and digital method*, aimed at reducing alcohol use, with a focus on young people.
- Community-level *initiatives to raise awareness* of the health and psychosocial harm caused by the use of alcohol to other people.

Contributions

Contributions of an applied-methodological nature:

- A theoretical analysis of the harms of alcohol use on other people with a focus on young people was carried out in the current research.
- For the first time, the prevalence and severity of alcohol-related harm among a sample of students in the country was analysed.
- Specific guidelines are developed in order to address the challenges of alcohol harm to others at national and regional level.

Contributions of a scientific and applied nature:

- For the first time in Bulgaria, a methodological tool has been developed and validated for the study of the harm caused by the use of alcohol on other persons.
- An analysis and assessment of the health and psychosocial harms of alcohol consumption by other people on the ones around them was carried out.

- The methodology can be used to conduct representative research study among the general population and can act as a predictive tool in the field of public health.
- Analysis of the harms of alcohol use on others can serve as a catalyst for the development of initiatives, interventions and strategies at local and national levels.
- The inclusion of environmental damage to the topic of alcohol provides an additional argument in the development and implementation of policies aimed at reducing the alcohol-related harm from its burden at the health, social and economic level.

The present study is a basis for a more in-depth examination of the problem of the harm of alcohol use on other people. The wide range of negative experiences offers a new perspective on tackling the overall impact of alcohol on a population level, indicating a need to frame the effect and limit the culturally-ingrained perception of alcohol consumption as a normal behavior rather than a risk factor for one's psychological and physical health.

PUBLICATIONS AND SCIENTIFIC FORUMS PARTICIPATION

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- Strandzheva, M., E. Todorova, G. Tsoleva, P. Dimitrov. Alcohol use among the population in the Republic of Bulgaria. Collection of abstracts from the XI National Congress on Nutrition with International Participation (ISBN 978-954-9977-68-4), Varna, May 2022.