

Prevalence Study among University Students in Belarus: To What Extent Do Foreigners Experience Alcohol Problems?

M. O. Welcome, Y. E. Razvodovsky, V. A. Pereverzev

Abstract—There is a paucity of data on the prevalence of alcohol use and related problems among foreign students in Belarus. We therefore screen for the prevalence of alcohol related problems among the general foreign students' population in Minsk, Belarus. Participants were 135 male university foreign students (average age – 21) from three major universities in Minsk, Belarus. All respondents were administered questionnaire, containing the AUDIT, CAGE, MAST and other alcohol related questions. Overall, 62.2% (n=84) alcohol users and 31.1% (n=42) problem drinkers were identified on the AUDIT. There was a significant increase (from 39.3% to 60.7%) of the total alcohol users after arrival in Belarus ($\chi^2 = 7.714$, $p < 0.02$). This study shows that the prevalence of alcohol related problems is high among the foreign students' population in Minsk, Belarus.

Keywords—Alcohol related problems, Male foreign students, Prevalence.

I. INTRODUCTION

INTENSIFICATION of migratory processes is one of the characteristic features of the contemporary world. Isolation from traditional background and coming in contact with a new culture leads to assimilation of some elements of the new culture. It has been suggested that immigrants sometimes are faced with different cultural believes, and turmoil, they experience change in culture. Some might use alcohol, especially in a society where alcohol use is not prohibited [1]. High level of harmful alcohol use in the society calls for the necessity of carrying out preventive measures aimed at early diagnosis of alcohol related problems, with subsequent consultation and therapeutic intervention [2]. In particular, this concerns the students' population, inasmuch as recent epidemiological data show high level of alcohol related problems among students [2], [3].

It has been suggested by [4] that alcohol problems might greatly defer among students of different ethnicities in the general Belarusian students' population and might show unexpected high prevalence in respect to the period of stay in

this country (especially for students who came from countries where alcohol use against cultural and religious norms). The suggestion that alcohol problems might show increase in prevalence, especially among foreign students is however, subject to criticism [1]. Yearly, there is a gradual increase in the number of foreigners who arrive for studies in Belarus. Unfortunately, no data identify the rate of alcohol related problems in this group of students. Hence a screening survey that will address this issue will be of great significance to public health [1] – [3].

Evidence suggests that drinking patterns tend to change under the influence of interaction with those representing religious groups stressing different attitudes towards alcohol. It has been demonstrated that members of religious groups that prohibit alcohol are disadvantaged if they experiment with it [5] – [7]. The lack of guidelines leads to a high rate of problems among those who do consume [8], [9].

It should be noted that the rate of alcohol-related problems in Belarus is high and is caused by a combination of such factors as the high per capita consumption and harmful drinking patterns [10]. The level of alcohol consumption in Belarus is among the highest in the world, with an average annual sale rate around 14 liters of pure alcohol per person, while the estimate shows a figure around 20 liters for people aged 15 years and above [8]. In regards to indications of harmful drinking patterns, it may be noted that 60-80% of all alcohol consumption in Belarus is in the form of spirits [8], [10]. Although population surveys generally underestimate alcohol consumption, screening results suggest that 57.1% of the men and 8.8% of the women use alcohol hazardously according to the Alcohol Use Disorders Identification Test definition. Furthermore, recent studies reveal that 28% men and 2.8% women in the general Belarusian population are alcohol dependents [11].

Recent epidemiological data suggest that the pattern of alcohol use may vary substantially even in the same environment with people of different cultural and ethnic backgrounds [1] – [2]. The aim of this study was to investigate the prevalence alcohol use and related problems among the foreign students' population in Minsk, Belarus.

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II. METHODS

A. Study Population

The study was conducted in three major universities in Minsk, Belarus – Belarusian State Medical University (BSMU), Belarusian National Technical University (BNTU) and Belarusian State Agro-Technical University (BATU). Minsk is the capital city of Belarus with the highest population of students from Iran, Jordan, Syria, Pakistan, Nigeria, and Ghana. Relatively significant number of foreign students study in this city. The foreign students represent less than 0.1% of the total students' population in these universities. There are approximately 2000 foreign students in these universities.

B. Sampling Size and Techniques

The study was anonymous. A total of 221 male students at random from the three universities in Minsk, Belarus were explained the study aims and objectives. Only those who agreed to participate were involved in the study. Out of the 221 male students, 159 students responded for the study. Out of this number, 24 could not complete the questionnaire satisfactorily, so only 135 male students (average age – 21yrs) were considered for analysis. Out of the 135 respondents, 65 were Christians and 70 – Muslims. Only males were considered in this study since there was significantly lower proportion of females (less than 0.1% of the males).

C. Procedures

The Ethics and Research Committee of the various universities approved the study protocol. Students were recruited from class to participate in a study of the prevalence of alcohol use and related problems. General informed consent was verbally obtained from the students to be screened after the aims and objectives of the survey had been explained. Participants were administered the Alcohol Use Disorders Identification Test (AUDIT), MAST (Michigan Alcohol Screening Test), and CAGE (the Cut, Annoyed, Guilty and Eye questionnaire) [2], [11], including other alcohol related questions. All questionnaires were distributed evenly among first year students through final year of university education in all three universities.

D. Screening Instruments

Three instruments were utilized in this study are available from the first and second author: AUDIT, MAST (NCADD standard) and CAGE. All three instruments have been verified and adopted for screening alcohol problems in the general Belarusian population by the Ministry of Health and the Association of Narcologists in Belarus [2], [11].

The CAGE as an instrument of screening has a sensitivity of 85-94% and specificity of 79-88. A score of 2 through 4 on the CAGE is considered clinically significant. The CAGE is aimed at disclosing dissimulative symptoms of alcoholism, initial signs of alcoholism, and its anamnesis [2].

The MAST is one of the most used tests for analysis of alcohol related problems. The sensitivity and specificity of the MAST is 90% and 80% respectively. A score of ≥ 3 defines problem drinking [2].

The AUDIT is a validated and superior screening instrument and corresponds with the DSM-IV and ICD-10 definition of alcohol dependence and abuse [2], [11]. The AUDIT is a structured interview of 10 questions with a sensitivity of 92% and specificity of 93%. It correlates with both the MAST and CAGE [2], [12]. The AUDIT gives a more accurate result in comparison with the CAGE and MAST. A total score of ≥ 8 defines the presence of alcohol related problems and a necessary referral to a specialist [2], [11].

E. Data Analysis

All statistical analyses were performed using the SPSS (Statistical Package for the Social Sciences) 16.0 version for Windows; the criteria of Pearson and Student's t-tests. The probability value for significance was set at $p < 0.05$. All volumes of alcohol are given in values of absolute ethanol. A standard drink was defined as 8g (10ml) of absolute ethanol. Results are reported as means and standard error of means ($M \pm m$), as well as in percentages (%).

III. RESULTS

According to the screening results, 62.2% of the students were alcohol users and 31.1% were identified as problem drinkers on the AUDIT; a result that was approximately the same for both CAGE and MAST (Table 1).

A total of 37.8% ($n=51$) of all respondents reported abstinence before entrance into the universities (i.e. before arrival in Belarus). Among the alcohol users there was 1.5 times increase in the percentages of alcohol users after arrival in Belarus ($\chi^2 = 7.714$, $p < 0.02$).

The results in table 2 show that the frequency of alcohol use and related problems are significantly higher among the problem drinkers, compared to the non-problem drinkers. The increase in the frequency of alcohol use by 3.6 times and dose per session by 1.7 times was associated with increased alcohol problems (like injuries, blackouts, hangover etc) by ~ 4.2-28.0 times ($p < 0.01$). For example, among the problem students, cases of alcohol related injuries was 28.0 times high ($\chi^2=38.39$); blackouts by 7.7 times ($\chi^2=22.28$); hangover by 23.0 times higher ($\chi^2=28.23$); loss of control by 4.2 times higher ($\chi^2=18.46$), compared to the non-problem drinkers (Table 2).

TABLE I
PERCENTAGES OF ALCOHOL USERS, PROBLEM DRINKERS AND
THE AVERAGE AUDIT, CAGE, MAST SCORES OF ALL
RESPONDENTS (n=135)

Average scores (M ± m)			Alco- hol users, %	Problem drinkers, %		
AUDI T	CAGE	MAS T		AUDIT	CAGE	MAS T
6.13± 0.71	0.90± 0.10	2.56± 0.33	62.22 (n=84)	31.11 (n=42)	31.85 (n=43)	31.11 (n=42)

TABLE II
THE DOSE AND FREQUENCY OF ALCOHOL USE, INCLUDING
VARIOUS ALCOHOL RELATED PROBLEMS AMONG THE PROBLEM
AND NON-PROBLEMS DRINKERS

Parameters	Problem drinkers (n=42)	Non-problem drinkers (n=42)
Frequency/person/month	4.1±1.4	1.1±0.9
Dose/person/per session	44.9±4.1ml	26.3±2.3ml
Dose/person/month	182.6±8.7ml	29.5±3.7ml
Loss of control, %	59.52 (n=25)	14.29 (n=6)
Hangover, %	54.76 (n=23)	2.38 (n=1)
Feeling of guilt, %	64.29 (n=27)	7.14 (n=3)
Blackouts, %	54.76 (n=23)	7.14 (n=3)
Injuries, %	66.67 (n=28)	2.38 (n=1)

The monthly quantity of alcohol use by the problem drinkers was significantly more than the quantity use by the non-problem drinkers by ~ 6 times (Table 2).

TABLE III
RATIOS AND PERCENTAGES OF PREFERENCES FOR ALCOHOLIC
DRINKS AND MOTIVES OF ALCOHOL USE BY PROBLEM AND NON-
PROBLEM DRINKERS

Parameters		Problem drinkers (n=42), %	Non-problem drinkers (n=42), %	Ratio (problem/ non-problem drinkers)
Alco- holic drinks	Beer	38.10 (n=16)	52.38 (n=22)	0.73 ($\chi^2=1.73$)
	Wine	16.67 (n=7)	33.33 (n=14)	0.50 ($\chi^2=8.89$)
	Spirits	45.24 (n=19)	14.29 (n=6)	3.17 ($\chi^2=9.62$)
Major cause for drin- king	Celebrations	45.24 (n=19)	73.81 (n=31)	0.61 ($\chi^2=7.12$)
	Trouble/un- pleasant situations	21.43 (n=9)	4.76 (n=2)	4.50 ($\chi^2=5.13$)
	Day of wages and stipends	33.33 (n=14)	21.43 (n=9)	1.56 ($\chi^2=1.50$)
Why do you use alco- hol?	Tradition to use alcohol	30.95 (n=13)	57.14 (n=24)	0.54 ($\chi^2=5.84$)
	Sweet qualities of wine	19.05 (n=8)	11.90 (n=5)	1.60 ($\chi^2=0.82$)
	Drinking to get drunk	50.00 (n=21)	30.95 (n=13)	1.62 ($\chi^2=3.16$)

The use of strong strength alcoholic beverages (spirits e.g. vodka) was associated with a significant number of cases of drinking to get drunk among the problem drinkers, compared to the non-problem drinkers. Majority of the non-problem students prefer beer and wine, and use it mainly during celebrations (Table 3). Trouble and unpleasant situations, days of wages and stipends, tradition to use alcohol and for the sweet qualities of wine were causes for the drinking habits among the foreign students (Table 3).

No significant difference was recorded in the percentages of alcohol users among the Christians (67.69%, n=44) and Muslims (57.14%, n=40), as well as on the average scores and the number of problem drinkers on the three screening instruments (Table 4). A total of 26 Christians and 25 Muslims reported abstinence before arrival in Belarus.

TABLE IV
AVERAGE AUDIT, CAGE, MAST SCORES AND THE PERCENTAGES
OF PROBLEM DRINKERS AMONG THE CHRISTIANS AND MUSLIM
STUDENTS

Para- meter	Christian students (n=65)			Muslim students (n=70)		
	AUDIT	CAGE	MAST	AUDIT	CAGE	MAST
Ave- rage score, M±m	5.58± 0.86	0.78± 0.14	2.28± 0.45	6.63± 1.12	1.01± 0.14	2.83± 0.48
Pro- blem drinke rs, %	27.69 (n=18)	27.69 (n=18)	27.69 (n=18)	34.29 (n=24)	35.71 (n=25)	34.29 (n=24)

IV. DISCUSSION

The recommended cut-off point for problematic alcohol use in this study is in agreement with the recommended cut-off for the various screening tools in Belarus [1].

Before entrance into the university (before arrival in Belarus) more than half of the present alcohol users (60.7%) reported abstinence. The high proportion of problem drinkers in relation to the alcohol users might be linked to many factors (Table 1). It has been suggested that foreigners might find it very difficult to cope in a society where alcohol use is part of the daily life of the people, especially when the former society where they had been prohibits alcohol use. Subsequently, their means of socialization are affected, and this might probably result in alcohol use. The high rate of alcohol use in the general population in this country must have also contributed to the significant number of problem drinkers.

The low level of alcohol consumption in Muslims' population was not confirmed in this study. Over half (62.5% and 59.1%) of the present Muslim and Christian drinkers respectively reported abstinence before arrival in Belarus. Epidemiological data suggest that Muslims might experience high rate of alcohol problems in case of its use, as a result of their lack of experience regarding alcohol use [2], [4], [5], [12], [13]. This could likely be one of the reasons why the percentage of alcohol users and problem drinkers were high

(increased after arrival in Belarus) and almost the same for all religious groups (Table 1 and 4).

It has been noted in earlier studies that the MAST might show low sensitivity when used for determining the level of alcohol problems in some populations and that the AUDIT and CAGE might be highly sensitive [2], [11], [14]. This was the rationale for using multiple screening tests in this study. All three screening tests (AUDIT, CAGE and MAST) in this study showed approximately the same results (Table 2 and 4). It is probably that the AUDIT, CAGE and MAST are extremely reliable screening instruments among the foreign students' population. Discussing the sensitivities of the various screening tools used in this study is not necessary here, as a result of the limitations of this study.

Study Limitations: Some respondents with alcohol related problems may have under- or even over-reported them in the AUDIT, MAST and CAGE. Another limitation is that the questionnaire was administered ones and so the reliability indices of the various tests were not assessed. Another source of bias is the cultural tendencies to hide alcohol related problems and this may affect reliability of estimations by self-reporting. The relatively small sample of the participants could have affected the reliability and significance of the results. This is based on the hypothesis that if all foreign students would have participated, the prevalence rate could have been different.

V. CONCLUSION

Prevalence of alcohol related problems (31.1%) is high among foreign students in Belarusian universities. There was a significant increase (from 39.3% to 60.7%) of the total alcohol users after arrival in Belarus ($\chi^2 = 7.714$, $p < 0.02$). The use of strong strength alcoholic beverages (like vodka) was associated with high level of alcohol problems. No significant differences in the pattern of alcohol use and related problem were noted among Christians and Muslims in this study.

REFERENCES

- [1] K. Bloomfield, A. Allamani, F. Beck, K. H. Bergmark, L. Csemy, I. Eisenbach-Stangl, et al., "Gender, Culture and Alcohol Problems: A Multi-national Study. Project Final Report," Berlin: Institute for Medical Informatics, Biometrics & Epidemiology, Charité Universitätsmedizin Berlin, 2005, pp. 10-46.
- [2] M. O. Welcome, Y. E. Razvodovsky, E. A. Dotsenko, V. A. Pereverzev, "Prevalence of alcohol-linked problems among Nigerian students in Minsk, Belarus and their academic performance," *Port Harcourt Med J.*, vol. 3, no. 2, pp. 120-129, 2008.
- [3] H. Davenport A, G. Dowdall, B. Moeykens, S. Castillo, "Health and Behavioral Consequences of Binge Drinking in College: A National Survey of Students at 140 Campuses," *JAMA*, vol. 272, no. 21, pp. 1672-1677, 1994.
- [4] M. O. Welcome, Y. E. Razvodovsky, V. A. Pereverzev, "Alcohol problems among young adults in Belarus (Unpublished work style)," unpublished.
- [5] K. Mullen, "Religion and health: a review of the literature," *Int. J. Sociol. Soc. Policy.*, vol. 10, no. 1, pp. 85-96, 1990.
- [6] R. Jessor, S. Jessor, "Problem Behaviour and Psychological Development: A Longitudinal Study of Youth," New York: Academic Press, 1977.
- [7] A. M. Greeley, W. C. McCready, G. Theisen, "Ethnic drinking subcultures," New York: Praeger, 1980.
- [8] Y. E. Razvodovsky, "All-cause mortality and fatal alcohol poisoning in Belarus, 1970-2005," *Drug, Alcohol, Rev.*, vol. 27, pp. 562-565, 2008.
- [9] R. Caetano, C. L. Clark, T. Tam, "Alcohol Consumption Among Racial/Ethnic Minorities," *Alcohol. Health. Res. World.*, vol. 22, no. 4, pp. 233-234, 1998.
- [10] Y. E. Razvodovsky, "Alcohol and mortality crisis in Belarus," Grodno: Grodno State Medical University Press, 2003.
- [11] Y. E. Razvodovsky, "A psychometric analysis of the Russia version of the AUDIT," *Alcohol. Alcohol.*, vol. 38, suppl. L, p. 31, 2005.
- [12] R. Caetano, C. L. Clark, T. Tam, "Alcohol Consumption Among Racial/Ethnic Minorities," *Alcohol. Health. Res. World.*, vol. 22, no. 4, pp. 233-234, 1998.
- [13] Y. E. Razvodovsky, "Epidemiology of alcoholism in Belarus," Grodno: Grodno State Medical University Press, 2004.
- [14] M. J. Bohn, T. F. Babor, H. R. Kranzler, "The Alcohol Use Disorders Identification Test (AUDIT): Validation of a screening instrument for use in medical settings," *J. Stud. Alcohol.*, vol. 56, pp. 423-432, 1995.