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**Original Article**

# Consumption of Alcohol and Psychosocial Determinants among Students of Medicine and Medical Technology

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The objective was to evaluate alcohol consumption and its association with psychosocial determinants among students of medicine and medical technology at the Faculty of Medicine, in the Universidad Nacional Mayor de San Marcos, Peru. This cross-sectional study was designed with 219 students. The Alcohol Use Disorder Identification Test and psychosocial determinants were used. The prevalence of alcohol use in the last year was 69.5%, with predominance of use by male (71.6%) and young students (79.9%). Associations were observed between the use of alcohol and stress, with predominance of academic overload. The results provide information relevant to the planning of preventive actions of alcohol use for this population.

Descriptors: Alcohol-related Disorders; Psychosocial Determinants; Education; Undergraduate in Medical; Social Determinants of Health.

# Uso de álcool e determinantes psicossociais entre estudantes de medicina e tecnologia médica

O estudo teve por objetivo avaliar o uso de álcool e as possíveis associações com os determinantes psicossociais em estudantes de medicina e tecnologia médica da Faculdade de Medicina da Universidade de San Marcos, Peru. O estudo é do tipo transversal da abordagem quantitativa realizados com 219 estudantes. O Teste de identificação do uso de álcool e os determinantes psicossociais relacionados ao álcool foram utilizados. A prevalência de uso de álcool no último ano foi de 69,5%, com predominância de uso pelo sexo masculino (71,6%), e jovens (79,9%). As associações foram entre o uso de álcool e o estresse, com predominância da sobrecarga acadêmica, esses dados são relevantes para o planejamento de ações preventivas do uso de álcool nessa população.

Descritores: Transtornos Relacionados ao Uso de Álcool; Determinantes Sociais da Saúde; Educação; Graduação em Medicina.

# Consumo de alcohol y determinantes psico-sociales en estudiantes de medicina y tecnología médica

El estudio tuvo por objetivo evaluar el consumo de alcohol y con los determinantes psicosociales en estudiantes de medicina y tecnología médica de la Facultad de Medicina de la Universidad de San Marcos, Perú. Estudio del tipo transversal, de abordaje cuantitativo realizado con 219 estudiantes. El test de identificación del uso de alcohol y los determinantes psicosociales relacionados al alcohol fueron utilizados. La prevalencia de consumo en el último año fue de 69.5%, con predominancia de uso entre el sexo masculino (71,6%) y jóvenes (79,9%). Las asociaciones fueron entre el uso de alcohol y estrese, predominando la sobre carga académica, eses datos son relevantes para el planeamiento de acciones preventivas frente al uso de alcohol en esa población.

Descriptores: Trastornos Relacionados con Alcohol; Determinantes Sociales de la Salud; Educación; Pregrado en Medicina.

## Introduction

The consumption of alcoholic drinks is an important risk factor which results in high mortality and morbidity rates in certain countries, especially in Latin America[1-5]. Several studies show higher rates of alcohol and drug use with negative consequences among young adults (18 to 25 years old), a large proportion of whom are university students. Data from the II Andean Epidemiological Study on drug consumption among university students[5] show that alcohol is the most commonly consumed drug among Andean university students (71.9%), and it is estimated that around 8% of Peruvian students have shown signs of alcohol addiction. These figures were higher when only those students, especially young men, who reported having used alcohol at least once in the last year, were considered. The perception of risk or harm from drinking alcohol was high in all the four countries (75%) and that form of consumption in males affected 32.5% in Peru, 48.3% in Bolivia, 35.5% in Colombia and 43.9% in Ecuador. On the other hand, among women, the rates were 29.7% in Bolivia, 27.1% in Colombia, 28.8% in Ecuador and 17.7% in Peru[3].

A comparison with studies of CAN university students in 2009 and 2012 showed a significant increase in alcohol consumption (64.4% in 2009 and 71.7% in 2012), among both men (from 72.5% to 78.3%) and women (57.4% to 65.9%). An increase was also observed in harmful alcohol use from 29.5% in 2009 to 31.9% in 2012, with little variation in women's consumption between 2009 (15.9%) and 2012 (18%). The percentage of university students showing signs of alcohol addiction also increased significantly, from 8.3% in 2009 to 10.8% in 2012, leading to the conclusion that this is a deeply worrying health problem affecting academic performance and dropout rates[3-4].

In 2010, according to the National Commission for Developing Life without Drugs (DEVIDA) in Peru the prevalence of drug use at some time in the general population (12 to 65-year- old) in a 12-year period (1998 to 2010) showed a trend of decreasing alcohol consumption, most evident in the decrease from 83.0% in 2006 to 75.4% in 2010. The annual incidence of those reporting having begun to consume alcohol in 2006 was 30.2%, and 26.4% in 2010[5].

The social conditions in which students live and work may strongly influence alcohol consumption. Lifestyle and environment, as well as human biology and health care service structure are now recognized as the main health determinants of an individual, according to the WHO, although these have been more studied in Europe and the United States of America, and little in Latin American countries[6].

In the microsocial context, surrounding the student of a public university, there are some social conditions that encourage alcohol consumption, considering that most of them come from lower socio-economic classes and from immigrant families from the Andes region, with culture, habits and lifestyles learned in their family environment through parental models, influencing the habit of alcohol consumption. A study on dentistry students reported that for 84.4% of them, the career courses are stressful and among the elements considered stressful are having to present a certain number of clinical assignments in a short period of time as well as providing uncooperative patients with dental treatment[7].

In Lima, the prevalence of alcohol consumption among adolescents was 42.2%, being a severe psychological distress, the psychological factor most strongly associated with the problem of drugs[8].

The evidence suggests that among the main psychosocial determinants of substance use in young people are the way they deal with stress in their lives, their expectations of the substance's effects, peer pressure and perceived norms, as well as self-efficacy in refusing substances offered to them. The results of research of their relationship with academic stress range from acknowledging the relationship to stating that there is a direct relationship, enabling it to be stated that the most stressed students are the ones who get the best grades[9].

This situation was evidenced in medicine students by the presence of academic stressors such as competitiveness within the group, exams, overload of homework, presentations, problems relating with lecturers and classmates, a disagreeable social environment and limited time, among other factors that provoke stressful situations, producing inappropriate coping mechanisms under pressure to be part of a group. Moreover, small or large scale drug consumption is often observed at celebrations or social events at the university, provoking euphoria and recklessness that may result in behavior with negative consequences. There is evidence that Latin America shows results that are similar to those of other countries, with some variations in trends such as in Peru, where alcohol consumption has tended to decrease in recent years[10].

On the other hand, there is little evidence from Latin American studies that cover psychosocial factors related to alcohol consumption among university students, and there are no studies from the perspective of psychosocial determinants.

This study is based on the theory of social determinants of health (SDH), understood as the social conditions in which the university students live, study and work. This model proposes that individuals and their behavior are influenced by their community and social networks that may support, or not, the subjects'

health. Socio-economic stratification can mean better or worse opportunities for health. It does not act directly, but it is rather a media for a variety of factors: housing, psychosocial circumstances and behavior (smoking, alcohol habit or poor diet)[11].

Alcohol consumption is defined by a series of interrelated factors such as: individual characteristics, characteristics of the immediate microsocial surroundings (family, friends, work and community and the physical geography) in which the individuals develop their behavior[11].

The main determinants of alcohol consumption in the young students are deemed to be family and the general culture of consumption. Friends and colleagues are of particular importance, given their social influence and their relationships. Factors involved in decisions concerning alcohol consumption, consumption patterns and the probability of harmful or beneficial results may be grouped into four broad categories: genetic predisposition; individual characteristics; social and economic factors and environmental determinants. Abusive alcohol consumption and family dysfunction are factors that influence consumption of psychoactive substances in university students[12].

Academic stress is another relevant factor in alcohol consumption. Entering an educational institution, supporting oneself as a regular student and graduate, tends to be considered a stressful experience by many students. Academic stress covers different aspects, such as: vulnerability to stress with 69% of medicine students considered to be vulnerable to stress. In Chile, the prevalence of stress is 36.3% greater among women than for men (p<0.05), Medicine is a more stressful career than others. The first year of studying Medicine is more stressful than in other careers (p<0.01)[13]. In Peru, high levels of stress were found in Medical students, with a prevalence of having used/abused cigarettes or alcohol; anti-social and violent behavior as well as habits affected by the demands of studying medicine with few opportunities for social enjoyment or entertainment[10]. In the case of Nursing students, academic overload was the most prevalent stressor[14]. Given this situation, there is a justifiable need to study alcohol consumption in students of Medicine and Medical Technology from the perspective of health determinants.

The aim of this study was to evaluate alcohol use among students of Medicine and Medical Technology and its possible relationships with psychosocial determinants.

## Methods

This was a descriptive cross-sectional study with a quantitative approach. It was carried out at the Faculty of Medicine, in the Universidad Nacional Mayor de San Marcos in Lima, Peru.

The eligibility criteria were: being aged 18 or over and enrolled for undergraduate courses in medicine or medical technology. Students who were on medical leave from classes or who missed three consecutive days of classes, during the days when data were collected, were excluded.

Being 1192 students enrolled, 219 were selected through simple random sampling. 127 (58%) were studying medicine and 92 (42%) medical technology.

A questionnaire composed with the Alcohol Use Disorder Identification Test (AUDIT) and an Evaluation of psychosocial determinants of alcohol consumption was prepared.

AUDIT was developed by the WHO[15-16], with the aim of identifying levels of risk of alcohol use and suggesting brief interventions on alcohol use. The questionnaire consisted of 10 items to respond. It was validated in the USA before being culturally adapted and validated for its use in Spanish in several Latin American countries, including Peru. The sensitivity of the AUDIT was 57 – 59% with a specificity of 91 – 96%[16].

The questionnaire to evaluate psychosocial determinants assessed the presence or lack of specific psychosocial determinants. The instrument has undergone semantic validation. Information is processed in the concordance table and binomial test. Pearson's coefficient of correlation (r>0.2) showed that the items are valid, binomial p values are 0.036 and p<0.05 is the degree of concordance. Statistical reliability is shown by a Cronbach's Alpha>0.7. A pilot test was conducted with 20 students, and the instrument was reliable, with Cronbach's Alpha=0.951.

The directors of the Faculty of Medicine of the Universidad Nacional Mayor de San Marcos were formally requested to authorize the study. The data were collected at the end of class, in coordination with the lecturer. Those students who voluntarily agreed to participate in the study, signed a consent form. Data were collected during the first semester of 2016.

The project was approved by the local Research Ethics Committee, Process Nº 314, according to the Peruvian norms for research involving human beings, guaranteeing anonymity, respecting privacy and with participants able to withdraw at any stage of the research.

The data were analyzed using SPSS (Statistical Package for Social Sciences) version 17.0. The statistical analysis used the Chi square and Fisher's exact tests to evaluate the associations between socio-economic variables and alcohol use. The absolute(N) and relative (%) frequencies were calculated for the categorical variables. The continuous variables were described in terms of the mean and standard deviation. A level of significance of 5% was adopted for all tests.

## Results

Table 1 shows the socio-demographic data and alcohol use within the last year. The sample was formed by 219(100%) students of medicine and medical technology, characterized as being predominantly male 119(58.9%), aged between 21 and 25 years old 132(65%), single 201(99%), from the coast region 173(85.3%) and living with a family member 165(81.7%). Of the total, 141(69.5%) had consumed alcohol within the last year. In the sample, the differences between consuming alcohol and gender (p≤.001) and age (p=.011) were statistically significant. Alcohol consumption was predominantly among male students 101(71.6%), and those aged 21 – 25 100(79.9%).

Table 1 – Socio-demographic information and alcohol use within the last year, in students of Medicine and Medical Technology at the Universidad Nacional Mayor de San Marcos. Lima Peru, 2015. N=219

|  |  | Total | | Alcohol consumption | | | | p-value |
|  |  | | | Yes | | No | | |
|  |  | f* | % | f* | % | f* | % | |
| Sex | Female | 84 | 41.4 | 40 | 28.4 | 44 | 71.0 | < 0.001[†‡] |
|  | Male | 119 | 58.6 | 101 | 71.6 | 18 | 29.0 | |
| Age group | < 20 | 41 | 20.2 | 21 | 14.9 | 20 | 32.3 | 0.011[§‡] |
|  | 21 – 25 | 132 | 65.0 | 100 | 70.9 | 32 | 51.6 | |
|  | ≥ 26 | 30 | 14.8 | 20 | 14.2 | 10 | 16.1 | |
| Marital status | Single | 201 | 99.0 | 141 | 100.0 | 60 | 96.8 | 0.092[†] |
|  | Married | 2 | 1.0 | 2 | 3.2 | - | - | |
| Origin | Coast | 173 | 85.2 | 121 | 85.8 | 52 | 83.9 | 0.771[§] |
|  | Mountains | 23 | 11.3 | 16 | 11.3 | 7 | 11.3 | |
|  | Jungle | 7 | 3.4 | 4 | 2.8 | 3 | 4.8 | |
| Living with | Family member | 165 | 81.7 | 113 | 80.7 | 52 | 83.9 | 0.625[§] |
|  | Alone | 18 | 8.9 | 12 | 8.6 | 6 | 9.7 | |
|  | Friend/ other | 19 | 9.4 | 15 | 10.7 | 4 | 6.5 | |

*f=frequency; †Fisher's exact test; ‡p-value < 0.05; §*Chi*-square Test

Table 2, shows data on social determinants and alcohol use. In the overall sample we observed a predominant lack of family- 129(63.3%) and friend related problems 126(62.1%). The predominant type of problems were those related with work 114(56.2%), studies 132(65%), stressors 147(72.4%) and pressure to consume alcohol. The differences between alcohol use and stressors (p=.011) were statistically significant. A higher percentage of students with stress-related problems was observed among those who did not drink alcohol 52(83.9%), compared with those who did drink 95(67.4%).

Table 2 – Social determinants and alcohol use within the last year in students of Medicine and Medical Technology at the Universidad Nacional Mayor de San Marcos. Lima, Peru, 2015. N=219

|  |  | Total | | Alcohol consumption | | | | p-value |
|  |  | | | No | | Yes | | |
|  |  | f* | % | f* | % | f* | % | |
| Family | Absent | 129 | 63.5 | 43 | 69.4 | 86 | 61.0 | 0.163[†] |
|  | Present | 74 | 36.5 | 19 | 30.6 | 55 | 39.0 | |
| Friends | Absent | 126 | 62.1 | 36 | 58.1 | 90 | 63.8 | 0.266[†] |
|  | Present | 77 | 37.9 | 26 | 41.9 | 51 | 36.2 | |
| Work | Absent | 89 | 43.8 | 33 | 53.2 | 56 | 39.7 | 0.051[†] |
|  | Present | 114 | 56.2 | 29 | 46.8 | 85 | 60.3 | |
| Studies | Absent | 71 | 35.0 | 24 | 38.7 | 47 | 33.3 | 0.280[†] |
|  | Present | 132 | 65.0 | 38 | 61.3 | 94 | 66.7 | |
| Stressors | Absent | 56 | 27.6 | 10 | 16.1 | 46 | 32.6 | 0.011[‡§] |
|  | Present | 147 | 72.4 | 52 | 83.9 | 95 | 67.4 | |
| Pressure to use alcohol | Absent | 45 | 22.2 | 13 | 21.0 | 32 | 22.7 | 0.470[†] |
|  | Present | 158 | 77.8 | 49 | 79.0 | 109 | 77.3 | |

*f=frequency; †*Chi*-square Test; ‡Fisher's exact test; §p-value < 0.05

## Discussion

This study seeks to better understand alcohol use and its possible associations with psychosocial determinants in a sample of Peruvian students of Medicine and Medical Technology. The prevalence of alcohol use by the students within the last year of studies was 69.5%. Alcohol is a drug that is largely present in the students' lives. This data contrast with the prevalence of drug use in students of medicine and other areas of health care[17-18] as well as in the Peruvian population, both of which would indicate higher figures.

The findings of a study[10] on the prevalence of having drunk alcohol at some time in Peruvian university students were of 95.6% and 86.8% respectively. The indices are quite low when compared to young people in the Peruvian general population, the prevalence of alcohol use in life was 61% among the youngest (15 to 17 years) and 89% among the 21 to 24 year olds, age of alcohol use among students was 15 years[10].

In a study of Mexican students, 71.9% had used alcohol at some point, and the mean age of starting to drink was 12.5 years old. Frequency of consumption was low, but quantity was high, and the males especially, consumed up to drunkenness. In these students, the relationship between drug use (legal and illegal) and alcohol use was found to be 52.6%, levels similar to those of other countries[18].

Very high levels of alcohol consumption, 90%, were found among Colombian university students, compared with observations in the latest studies[19]. A study in

Honduras, reported that only 25% of medicine students drank alcohol recreationally[20].

Regarding psychosocial determinants, this study (Table 2) shows no differences when comparing alcohol use with determinants related to family and friends. It could be assumed that integration; family support and friendship networks play a determining, favorable role in students' alcohol consumption by providing fundamental support. Another fact that may explain this is that the majority lives with a family member and probably receives support, environment, communication, relationships, role models and love of the family, these being elements that may contribute to decreasing the chances for higher consumption. A family environment, friends and social support networks influence an individual's development of alcohol consumption patterns over time. Family influence persists into adulthood, which may be a factor against problematic consumption[21-22].

Those with stronger family ties tend to be less influenced by friends and with abilities to avoid risky alcohol consumption. Thus, closer family ties, together with greater participation in family characteristics are important protection factors[22].

Our study, on the other hand, observed the existence of work-related problems (job satisfaction, income, relationships), studies (performance) and pressure to consume alcohol (social celebrations and permissive norms). This indicates that the students with these characteristics are more at risk, created by exposure to stressful conditions at work, in their studies and the presence of stressors related to alcohol.

The job, the quality of the workplace environment, physical, mental and social security at work, including the ability to control demands and pressure are important determinants of health. Equal access to education, the quality of the education received and the opportunity to put into practice the skills learned are also highly important factors in the population's living and health conditions[23].

One of the main results of this study was the positive association between alcohol use and stressors, by which we refer to the ability to resolve problematic situations, to cope with exams and homework and relate to professors and health care professionals. There were more students with stress-related problems among those who did not drink, compared with those who did. This may be explained by the adoption of other negative coping styles, such as smoking, eating too much as well as denial. Studies on stressors are divided into two categories; those which cover general stressors, including the academic one, and those which focus only on academic stressors.

General stressors include the following: lack of time or limited time to complete academic activities. Specific stressors could be academic overload from homework, exams, presentations, compulsory assignments, exercises, classroom activities, maintaining performance and evaluations by the professors. It was identified that 84.4% of dentistry students considered the career courses to be stressful, with stressful elements including having to present a certain number of clinical assignments over a short period of time as well as providing dental treatment to uncooperative patients[24].

In Chile, the prevalence of stress found was 36.3%, higher in women than in men ($p<0.05$). Students of medicine suffer from significantly more stress, especially in the first year ($p<0.01$), than students on other courses, with the lowest prevalence in Psychology ($p<0.005$)[13].

In medical students, in Peru, alcohol use at some time showed a prevalence of 61% among those aged between 15 and 17 and 89% among those aged 21 to 24, the age of onset of alcohol use among these students was 15, which was within the expected limits[10].

Academic overload represents the greatest stressor in nursing students, due to the excessive number of credits, compulsory assignments, and stress, and is responded to with excessive smoking and drinking, being the prevalence of alcohol use 50%. It can be concluded that all situations produce different levels of stress related to the activity/time factor and with worries being the most common response to stress[14].

Some limitations of this study include data being collected from only one faculty. The sample of students may not be representative of the population of students using alcohol, as it was conducted using simple, convenience sampling and thus the results should be evaluated with caution.

## Conclusions

The students of medicine and medical technology showed high levels of alcohol use within the last year of studies. The predominance of alcohol consumption was greater among young males. Alcohol use is related to stress, academic stressors predispose to stress and are a risk factor in using negative coping mechanisms such as alcohol consumption. The findings have implications for rethinking how to deal with prevention in the context of a university, implementing strategies that contribute to minimize the harm caused by alcohol on the lives of these future professionals.

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