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Original Article

Cognitive Protective Factors Against Alcohol Consumption in University Students.

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Resumen: Introduction: Alcohol consumption among university students is complex and multifactorial, with each factor potentially acting as either a risk or protective factor, influencing decision-making regarding their behavior. The purpose of the study was to determine the relationship and effect of resistance self-efficacy and self-control on alcohol consumption among university students. **Methods:** This was a descriptive, correlational, and predictive study that included 228 university students. Participants were selected through stratified random probability sampling with proportional allocation to stratum size. They were administered a Personal Data Form, the Situational Confidence Questionnaire, the Abbreviated Self-Control Scale, and the Alcohol Use Disorders Identification Test. The study adhered to the regulations of the General Health Law. **Results:** Of the participants, 57.0% were women and 43.0% were men. A total of 82.0% of the students consumed alcohol in the past year, 46.1% in the past month, and 24.1% in the past week. Sensible consumption was observed in 42.8%, dependent consumption in 28.3%, and harmful consumption in 28.9% of the students. Resistance self-efficacy (r_s= -0.510, p<0.01) and self-control (r_s= -0.187, p<0.05) were found to have a negative and significant relationship with alcohol consumption. Additionally, resistance self-efficacy (β= -0.381, p=0.001) showed a negative and significant effect on alcohol consumption. **Conclusions:** The results of this study can significantly contribute to the understanding of the phenomenon of alcohol consumption, providing knowledge that may serve as the basis for future research or interventions aimed at preventing alcohol consumption among university students.

Key words: Alcohol Consumption, University Students, Resistance Self-Efficacy, Self-Control, Protective Factors..

1. Introduction

Alcohol consumption is considered a high risk behavior due to its health and social environment implications[1]. Studies carried out with young university students in Mexico report that between 37.4% and 64.9% of them have consumed alcohol in the last year[2, 3].

Furthermore, an alarming practice among young college students is the excessive consumption of alcohol (binge drinking).

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According to the National Institute of Public Health, 51.8% of young people between 20 and 29 years of age engage in this type of consumption, which is characterized by the ingestion of five or more drinks per occasion within a period of two hours in the last month for men; and in the case of women, four or more drinks in the same period[4].

Due to the previously mentioned statistics and the inherent changes of the onset of adulthood, the population of young university students is considered a high-risk population[5], since they undergo psychological experiences related to identity, the instability of the immediate future, interpersonal relationships and multiple characteristics of their environment, which can lead to the onset of risky behaviors, such as alcohol consumption[6].

Alcohol consumption in young college students is a complex and multifactorial issue; thus, each factor can behave as a risk factor or as a protective factor. According to the literature and the Social Cognitive Theory[7] there may be cognitive factors that can affect decision making about one's own behavior. One of the factors that has been associated with alcohol consumption is alcohol resistance self-efficacy; studies have shown that alcohol resistance self-efficacy has a negative and significant relationship with alcohol consumption[8]. Thus, it is established that a higher self-belief of being able to refuse or resist alcohol consumption is associated with lower levels of alcohol consumption and its consequences in university students.

Similarly, studies indicate that resistance self-efficacy has a negative and significant effect on alcohol consumption, and is therefore considered a protective factor for alcohol consumption[9-12]. Another relevant cognitive factor in the drinking behavior of young university students is self-control, which can behave as a risk or protective factor[13]. Studies carried out in young university students report that self-control has a negative and significant relationship with alcohol consumption[14, 15].

It is worth mentioning that no evidence was identified on resistance self-efficacy and self-control in the social and geographic context of the present study. Therefore, it is considered relevant to deepen both variables, in order to contribute knowledge to understand the phenomenon and in the future could be the basis for new and broader studies, as well as to generate strategies to prevent alcohol consumption. Based on the above, our aim was to determine the relationship and effect of resistance self-efficacy and self-control on alcohol consumption in young university students.

2. Method

2.1 Study design and participants

A descriptive, correlational and predictive study was conducted. The population consisted of 3,077 young university students over 18 years of age of both sexes from nursing and industrial engineering courses at a university in the southern region of Tamaulipas. Sample size was determined using the nQuery Advisor 4.0 software under the criteria of a

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significance level of 0.05, a confidence level of 95%, with a power of 0.90 (90%) and a coefficient of determination of 0.09 (median effect size) according to Cohen[16].

A total of 228 young university students were selected by stratified random probability sampling with allocation proportional to the size of the stratum. The combinations were career (2: nursing and industrial engineering) and grade (4: 1st, 2nd, 3rd and 4th year of studies), which formed 8 strata. Within each stratum, one-stage cluster sampling was used, where the group of students formed each cluster.

2.2 Measuring instruments

To assess the sociodemographic characteristics, a Personal Data Questionnaire was used, which included data such as age, sex, career, current semester, as well as the prevalence of alcohol consumption (ever in life, in the last year, in the last month and in the last week). To measure self-efficacy to resist alcohol consumption, the Situational Confidence Questionnaire[17] was used, translated and adapted to Spanish by Echeverría and Ayala[18]. This questionnaire is made up of 39 items with a response scale ranging from 1 to 6, where 1 denotes "I could not resist the temptation to consume alcohol for sure" and 6 denotes "I could resist the temptation to consume alcohol for sure".)

The questionnaire includes the intrapersonal and interpersonal subscales; the intrapersonal subscale comprises items 1 to 3, 7 to 13, 17 to 23, 27 to 33 and 36 to 39, which constitute the categories: negative physical emotional states, positive emotional state, impulses and temptations, and personal control test. The interpersonal subscale is made up of items 4 to 6, 14 to 16, 24 to 26 and 34 to 35; the minimum scale score is 39 and the maximum is 234. This questionnaire has shown Cronbach's Alpha consistency between 0.94 and 0.97 and an explained variance of 68.1% in various studies conducted in Mexican high school students[19,20]. In this study, an internal consistency of 0.95 was obtained.

In order to evaluate self-control, the Abbreviated Self-Control Scale[21] was used, which was designed with the aim of assessing self-control in university students in the United States. This instrument was adapted to Spanish in a population of university students from Argentina with an explained variance of 44% and internal consistency of the total scale (α = .75)[22]. The scale consists of 13 items that are divided into two subscales: self-discipline (items 6, 11, 5, 1, 7, 8, 2) and impulse control (items 12, 13, 3, 9, 10, 4), with five Likert-type response options ranging from 1 (strongly disagree) to 5 (strongly agree) having a minimum score of 13 and a maximum of 65. In the present study, the Cronbach's Alpha coefficient was 0.73.

Alcohol consumption was measured by means of prevalence (once in a lifetime, in the last year, in the last month and in the last week), as well as the Alcohol Use Disorders Identification Test (AUDIT) with the aim of measuring drinking behavior and problems related to alcohol consumption in adults with problematic alcohol consumption[23]. This questionnaire

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was adapted to the Mexican population by De la Fuente and Kershenobich (1992)[24].

The instrument examines alcohol consumption during the last twelve months and its consequences, it identifies sensible, dependent and harmful alcohol consumption, and consists of 10 items with Likert-type response options ranging from 0 to 4.

The AUDIT Questionnaire has a minimum value of 0 and a maximum of 40 points. The classification of the type of consumption is obtained by adding the items and the cut-off points are from 1 to 3 points is considered sensible or low-risk consumption, from 4 to 7 points refers to dependent or risky consumption and from 8 to 40 may represent harmful consumption. The interpretation was made by calculating the index from 0 to 100, which allows us to understand how the higher the score, the higher the consumption and problems derived from alcohol consumption. This questionnaire has been used in studies conducted in young university students in Mexico, in which it has reported a Cronbach's Alpha between 0.80 and 0.89[25,26]. The internal consistency in this study was 0.77.

2.3 *Procedure*

This study was approved by the Research Ethics Committee and the Research Committee with registration number FAEN-D-1919 of the Universidad Autónoma de Nuevo León, Mexico. Subsequently, authorization was obtained from the directors of the faculties of Nursing and Engineering belonging to a university in the southern zone of the state of Tamaulipas, academic departments where the study was carried out on young university students.

After obtaining the authorizations, the lists of students enrolled in the August-December 2023 school period were requested, as well as information on the total number of students and the distribution of groups by career. The above data allowed us to randomly select the participating groups using the Excel program.

Once the groups were selected, the authorities of the two academic departments arranged a day and time to visit the young university students, at which time an invitation was made to participate voluntarily in the study. Data collection was carried out in a single session, which began with the reading and signing of the informed consent form, and then continued with the application of the measuring instruments. At the end of the collection, the participants were thanked. It is worth mentioning that the instruments were kept during the study for later destruction.

2.4 *Data analysis*

The Statistical Package for the Social Sciences (SPSS), version 22 for Windows, was used to analyze the data. In order to determine the internal consistency of the measurement instruments, Cronbach's Alpha Reliability Coefficient was used. Descriptive statistics were also applied and the Kolmogorov-Smirnov Goodness of Fit Test with Lillieffors correction was used. Non-parametric statistics were used for the objectives set by applying

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Spearman's Correlation Coefficient. A Multiple Linear Regression Model was also used.

2.5 *Ethical considerations*

Our study complied with the provisions of the Regulations of the General Health Law on Health Research[27] in its latest update published in the Official Journal of the Federation (DOF) 02-04-2014, which states that all health research must consider ethical aspects that guarantee the dignity and well-being of all individuals who agree to participate. In order to comply with this, the participants were treated with respect, dignity, confidentiality and anonymity during their participation in the study. Likewise, each participant was asked to sign an informed consent form.

3. Results

3.1 *Sample sociodemographic characteristics*

Of the participants, 55.7% indicated that they were enrolled in the nursing program while 44.3% were in industrial engineering. The mean age of the university students was 20.05 (SD=1.76) years, 57.0% were female and 43.0% were male. The average number of years of schooling was 13.85 (SD=1.48) years. Of the young university students, 94.3% indicated that they were single. Regarding occupation, 68.0% reported only studying and 32.0% both studying and working.

3.2 *Alcohol consumption in university students*

Regarding alcohol consumption, 91.7% (95% CI [88, 95]) of the young university students reported having consumed alcohol at some time in their lives, 82.0% (95% CI [77, 87]) did so in the last year, 46.1% (95% CI [40, 53]) in the last month, and 24.1% (95% CI [19, 30]) in the last week. Regarding binge drinking, 37.8% (95% CI [28, 48]) of men reported binge drinking, whereas in women it was 21.5% (95% CI [14, 29]). Likewise, it was identified that the average number of occasions of such consumption in the last month in men was 1.92 (SD=1.27), while in women it was 2.18 (SD=1.58) occasions in the last month.

Relative to the type of alcohol consumption of university students, 42.8% (95% CI [35, 49]) had sensible alcohol consumption, 28.3% (95% CI [21, 34]) were dependent, and 28.9% (95% CI [22, 35]) had harmful or damaging alcohol consumption. With respect to some characteristics of alcohol consumption behavior, 32.5% consumed alcohol with friends, 14.5% with family and 26.8% with both; likewise, it was noted that the place of consumption was mostly in social spaces such as friends' houses, nightclubs or restaurants.

3.3. *Study variable correlations*

Table 1 shows the Correlation Coefficient of resistance self-efficacy, self-control and alcohol consumption, these findings show that there is a negative and significant relationship between resistance self-efficacy and alcohol consumption (r_s= -0.510, $p<0.01$), as well as between self-control and alcohol consumption (r_s= -0.187, $p<0.05$), which could be interpreted as the lower the resistance self-efficacy and self-control, the higher the alcohol consumption and vice versa.

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Table 1. Spearman's correlation coefficient of the study variables.

Variables	1	2	3	4	5
1. Age	1	0.806**	0.040	0.103	-0.065
2. Schooling		1	-0.020	-0.037	-0.007
3. Resistance self-efficacy			1	0.310**	-0.510**
4. Self-control				1	-0.187*
5. Alcohol consumption					1

*p<0.05, **p<0.01, n= 228

3.4 *Multiple Linear Regression Model*

Table 2 shows the Multiple Linear Regression Model of the study variables. The final initial model showed to be significant (F (137) = 16.035, p<0.001), with an explained variance of 26.1%; which showed that resistance self-efficacy (β= -0.381, p=0.001) has a negative and significant effect on alcohol consumption, while age, schooling and self-control reported no significant effect on alcohol consumption (p>0.05).

After the application of the Backward method, the final model showed to be significant (F (137) = 31.758, p<0.001), with an explained variance of 25.7%. In the second model, the negative and significant effect of resistance self-efficacy (β= -0.378, p=0.001) on alcohol consumption was maintained. Likewise, age, schooling and self-control retained the absence of significant effect on alcohol consumption (p>0.05).

Table 2. Multiple Linear Regression Model of resistance self-efficacy, self-control and alcohol consumption.

	SS	*df*	MS	F	*p*
Regression	6560.844	4	1640.211	16.035	0.001
Residual	18616.696	182	102.290		
Total	25177.540	186			
	R^2=26.1%				
Model 1	**Coeficients**				
	β	**E**	***t***		***p***
Constant	45.424	9.373	4.846		0.001
Age	-0.284	0.680	-0.417		0.677
Schooling	0.713	0.797	0.889		0.373
Resistance self-efficacy	-0.381	0.054	-7.072		0.001
Self-control	-0.082	0.053	-1.567		0.119

R^2: Coefficient of determination, SS: Sum of squares, df: degrees of freedom, MS: Mean squares, F: F statistic value, *β*: Beta, *p*: observed significance, E: Standard error, *t*: t-test statistic, *n* = 228.

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Table 2. Multiple Linear Regression Model of Resistance Self-Efficacy, Self-Control, and Alcohol Consumption (Backward) (continued)

	SS	*df*	MS	F	*p*
Regression	6460.931	2	3230.466	31.758	0.001
Residual	18716.609	184	101.721		
Total	25177.540	186			
	R^2=25.7%				
Model 2	**Coeficients**				
	β	**E**	***t***	***p***	
Constant	49.778	4.672	10.654	0.001	
Resistance self-efficacy	-0.378	0.054	-7.069	0.001	
Self-control	-0.088	0.051	-1.713	0.088	

R^2: Coefficient of determination, SS: Sum of squares, df: degrees of freedom, MS: Mean squares, F: F statistic value, *β*: Beta, *p*: observed significance, E: Standard error, *t*: t-test statistic, *n* = 228.

4. Discussion

This study aimed to determine the relationship and effect of cognitive factors, such as resistance self-efficacy and self-control, on alcohol consumption in university students. Among the findings, it is noteworthy that a large portion of the participants were women, which could be due to the inclusion of nursing as one of the university programs in the study, a field characterized by a higher proportion of female students compared to male students. The average age of the university students was 19 years, data consistent with other studies conducted on university students in Mexico[28-30].

Additionally, it was shown that the prevalence of alcohol consumption in the past year was higher than that reported in other studies conducted on university students[2,3,31]. Furthermore, it was identified that binge drinking is a behavior with high rates in both men and women, although this differs from other studies where this type of consumption shows both higher and lower proportions.32-34 Regarding the type of alcohol consumption, higher proportions of dependent and harmful consumption were identified in university students from southern Tamaulipas, whereas, in sensible consumption, a lower proportion was observed compared to other studies conducted on Mexican university students from other states[32,35].

The above allows us to observe that alcohol consumption behavior is more prevalent among university students in southern Tamaulipas, a region where environmental characteristics and social customs normalize the initiation and maintenance of this behavior among young people. Furthermore, there is a noticeable increase in this behavior among women, which could be related to

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sociocultural aspects, where there is an effort to equalize the roles and functions of men and women in various areas of society.

The findings from the Correlation Coefficient showed that both resistance self-efficacy and self-control have a negative and significant relationship with alcohol consumption, which is similar to data from other studies on resistance self-efficacy[8] and self-control in university students[14,15]. This could be interpreted as greater resistance self-efficacy and self-control correlating with lower alcohol consumption, suggesting that they may act as protective factors.

Additionally, the Multiple Linear Regression Model showed that resistance self-efficacy has a negative and significant effect on alcohol consumption among university students, results that align with other studies conducted on university students from countries such as the United States, Japan, and Thailand[9-12]. This could be explained by the fact that, despite the studies being conducted in different social and cultural contexts, the inherent process of change associated with this stage of life is similar among university students, who are characterized by psychological experiences that include identity formation, interpersonal relationships, and environmental characteristics, which may influence decision-making about their behaviors either positively or negatively[6,36].

Thus, a stronger belief in one's ability to resist the temptation of alcohol consumption will be reflected in lower alcohol consumption among university students. Additionally, no significant effect of self-control on alcohol consumption was found, although a negative and significant relationship between self-control and alcohol consumption was observed. In this regard, a study conducted on Australian youth reported that self-control has a negative and significant effect on alcohol consumption[14]. This discrepancy could be explained by the characteristics of the participants in both studies, who are pursuing degrees with different scientific focuses. In this study, more than half of the students were enrolled in the nursing program, which may provide them with greater knowledge and awareness about alcohol consumption and its effects, potentially reflected in greater self-control in alcohol consumption situations[37], in addition to possible cultural differences related to alcohol consumption.

Based on the above, it is emphasized that factors such as resistance self-efficacy and self-control play a significant role in decision-making regarding alcohol consumption. These findings are consistent with what is proposed in Social Cognitive Theory, which highlights the possible influence of cognitive factors on specific behaviors. The variables in this study could be considered for further exploration of this phenomenon using mixed methodologies. Additionally, this information could serve as a basis for developing or strengthening specific prevention strategies for this study population, which, according to the literature, is at high risk for alcohol consumption and its health and societal consequences[4,5].

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5. Conclussion

Resistance self-efficacy and self-control showed a negative and significant relationship with alcohol consumption. Likewise, it was demonstrated that resistance self-efficacy regarding alcohol consumption has a negative and significant effect on alcohol consumption. Thus, the results of this study can significantly contribute to understanding the phenomenon of alcohol consumption, providing knowledge that could serve as a foundation for future research or interventions aimed at preventing alcohol consumption in university students.

One of the limitations of the study was that it was conducted in a single social context of university students (educational institution). Therefore, it is recommended that future studies be conducted in diverse contexts that include other types of careers or schools (public/private), which would allow for a deeper understanding of this phenomenon among university students. Although the results were significant, it is important to consider other young people with different characteristics. It is thus suggested to study these variables and other potential factors that could generate more evidence on alcohol consumption in university students.

6. Statements

6.1. Authorship recognition

Conceptualization: JEDAG; Methodology: MMAC; Validation: KSLG; Formal analysis: JEDAG; MMAC; Research: JEDAG; Resources: JEDAG; Data Curation: JEDAG., MMAC; Writing-Original draft: JEDAG., MMAC; Visualization: KSLG., FCS; Supervision: JEDAG., MMAC., KSLG., FCS; Project management: JEDAG., MMAC.

6.2 Conflict of interest

The authors declare no conflict of interest.

6.3 Acknowledgments

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