Original Article

Illegal drug consumption and the relation with the environment

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The research objective is to discover the relation between illegal drug consumption in secondary education students and the family environment, friends and social vulnerability. The data were taken from the III National Study for the Prevention of Drug Consumption in secondary education students, developed at educative institutions in Lima Metropolitana, Peru, with information from 6233 students. The analysis evidences that having a family member with alcohol problems increases the risk of illegal drug consumption by 47%, and having a family member with drug problems increases the risk by 2.5 times. About drug consumptions and involvement of the peer group in criminal activities, these increase the risk for illegal drug consumption by up to 2.2 times in the first case and by up to 39% in the second case. This study offers scientific evidence for the development of substance consumption prevention strategies in the State of Peru.

Descriptors: Street Drugs; Adolescents; Risk Factors; Family; Friends.

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Consumo de drogas ilegais pelos estudantes e a relação com o entorno

O objetivo dessa pesquisa é definir a relação entre o consumo de drogas ilegais pelos estudantes do ensino médio e o entorno familiar, amigos e vulnerabilidade social. Os dados são provenientes do III Estudio Nacional Prevención y consumo de drogas en estudantes de secundária, realizado em instituições educacionais localizadas na região metropolitana de Lima, no Peru, contendo informações de 6233 estudantes. A análise evidencia que ter um familiar com problemas de álcool aumenta o risco de consumo de drogas ilegais em 47%, e um familiar com problemas de drogas em 2,5 vezes. Sobre o consumo de drogas e envolvimento em atividades delitivas do grupo de pares, estes incrementam no primeiro caso até 2,2 vezes o risco para o consumo de drogas ilegais e, no segundo caso, até 39%. Esse trabalho contribui com evidências científicas para o desenvolvimento de estratégias com relação à prevenção do consumo de drogas ilegais no Peru.

Descritores: Drogas Ilícitas; Adolescentes; Fatores de Risco; Família; Amigos.

Consumo de drogas ilegales en escolares y la relación con el entorno

El objetivo de la investigación es conocer la relación entre el consumo de drogas ilegales en estudiantes de educación secundaria y el entorno familiar, amical y vulnerabilidad social. Los datos provienen del III Estudio Nacional Prevención y consumo de drogas en estudiantes de secundaria, realizado en instituciones educativas ubicadas en Lima Metropolitana, Perú, que tiene información de 6233 estudiantes. El análisis evidencia que tener un familiar con problemas de alcohol incrementa el riesgo de consumo de drogas ilegales en 47%, y un familiar con problemas de drogas en 2,5 veces. Sobre el consumo de drogas e involucramiento en actividades delictivas del grupo de pares, estos incrementan en el primer caso hasta 2,2 veces el riesgo para el consumo de drogas ilegales y, en el segundo caso, hasta 39%. El presente trabajo aporta evidencia científica para el desarrollo de estrategias en materia de prevención del consumo de sustancias en el Estado Peruano.

Descriptores: Drogas Ilícitas; Adolescentes; Factores de Riesgo; Familia; Amigos.

Introduction

Studies that have been developed in different population groups aim to discover the magnitude of the drug consumption problem in this particularly vulnerable group and also determine associated factors, with a view to getting to know the problem situation and possible solutions in further depth.

Studies involving secondary students reports that 50% has consumed alcoholic beverages at some point, while about 40% has consumed tobacco. About illegal drugs, marihuana and inhalants show the highest consumption levels at least once in the lifetime[1-2].

On the other hand, different studies have explored the risk factors that could explain the onset of drug consumption in students.

Navarro Botella investigated 1600 adolescents between 15 and 24 years of age living in the city of Madrid with a view to measuring the relation between social factors and drug consumption, concluding that the community environment is strongly associated with drug consumption (OR 3.16) in an adult and youth population[3].

Silva intended to identify and analyze the protection and risk factors linked to alcohol consumption in adolescents between 12 and 18 years of age, children of an alcoholic father. Among the results, it is highlighted that adolescents with an alcoholic father present experimental alcohol use, in some cases even drunkenness, but without habitual consumption. The risk and protection factors for alcohol use among young people are associated to a greater or lesser extent with the behaviors of family members, groups of friends, relatives and the social context they are inserted in[4].

In a survey of 2178 adolescents between 12 and 16 years of age, Paniagua et al.[5] found that the characteristics significantly associated with legal and illegal drug consumption were: living in a consumption environment (presence of tobacco and alcohol and illegal drug consumption in father, mother or friends) and with idle time patterns (higher frequency of visits to clubs, but lower frequency of sports or reading).

This situation is confirmed in the results shown by Medina-Mora et al., where it is evidenced that drug consumption by the family and friends is highly associated with illegal drug consumption in adolescent populations[6]. In addition, to determine the predictive weight of some risk and protection factors for drug use in the family and peers, Rodríguez, Pérez and Córdova evidenced the weight of these elements in drug consumption[7].

Therefore, for the sake of a better understanding of already complex processes in the conducts of the school population and the consumption of different illegal substances, further understanding is needed about the different factors associated with consumption, also considering that this analysis is related to the family, friend and community environment. These factors reveal a panorama of the surrounding environment and the circumstances of drug consumption, not only to delay the onset of consumption, but also to avoid the consequences and effects of its use.

This context is evidenced in the city of Lima Metropolitana, which concentrates one fourth of secondary students in the country*.

In addition, through this study, the intention is to provide tools that grant scientific support to the strategies applied in the educational system, which can be used selectively and indicated to the most vulnerable groups, thus focusing the interventions in function of the school population's characteristics.

The objective in this research is to identify the relation and the risk level between illegal drug consumption in secondary school students and its link with the environment, which is determined by their family, friends and community, departing from the premise that all of these intervene in the student's personal development, as evidenced in the antecedents.

Method

In this study, the database of the III National Study for the Prevention of Drug Consumption in secondary students used, developed by the National Commission for the Development and Life without Drugs – DEVIDA. A descriptive, quantitative and cross-sectional study was undertaken in 2009.

An applied research was undertaken, as the results are expected to contribute to the understanding of drug consumption in students. The research design is non-experimental, as the results reflected the behavior of the study variables; and analytic, as the intent is to explain the conditions in which illegal drug consumption takes place among the students.

For the analysis, the database corresponding to the city of Lima Metropolitana was used, which contains information from 6233 secondary students from public and private schools. A probabilistic and two-phased sample was used. In the first, the schools were systematically selected with probability proportional to the size of the primary sampling unit (PSU). In the secondary sampling unit (SSU), the classes were selected in a simple systematic manner with the same probabilities. Finally, after selecting the class, all students in it were interviewed.

Stratification was undertaken based on the type of management of the college (public and private), implemented to homogenize the schools.

The sample sizes were calculated for three prevalence types of drug consumption (legal, illegal

* Lima Metropolitana joins 661,938 students, equivalent to 25.4% of the national average of students enrolled in secondary education in 2009. Cuanto, Perú en Número 2010

and medical), estimated through the 2007 II National Study for the Prevention of Drug Consumption in secondary students.

The sample dimensions were calculated with a 95% confidence level and 2% absolute error margins in the case of Lima Metropolitana. The relative sampling error of this calculation was 2.3%, indicating a very good expected quality of inference. The response rate was 94% of the programmed rate.

A self-applied questionnaire was used, which asked questions about the sociodemographic characteristics, consumption characteristics and, among the factors studied, the use of drugs and crime antecedents in the family and its corresponding peers and the community environment, through the application of a social vulnerability scale. The social vulnerability scale consists of nine items, for which the realiability analysis of the scale was applied. The Cronbach's alpha coefficient corresponds to 0.666, which means that the reliability of the scale is moderate. On the other hand, the structural validity of the scale was proven through exploratory factorial analysis. For that purpose, the scale was empirically applied with a view to identifying significant underlying constructs or dimensions, through the study of the coviarance between observed traits, answers, signs and symptoms, given that the construct variables consist of dichotomous items[8].

The coefficient of the KMO test was 0.77, suggesting good adequacy for the execution of factor analysis. Bartlett's sphericity test reveals that the R matrix is not an identity matrix and that, therefore, there are relations that can be analyzed ($x2$ =8444.918; p<0.001). The main components analysis extracted two components that explain 47.859% of the total explained variance. The first component refers to the situations of violence and consumption in the community and, in the second, the relations are evaluated in function of the family and people in the community.

To determine the associations between the prevalence in one year and the research factors logistic regression will be used, which permits estimating the probability of incurring illegal drug use based on the exposure to the presumed factors raised in the present, controlling the confounding effect of the interaction among them, assessing the models that include the product of two variables involved.

For the calculations, the statistical software SPSS v. 20 was used. Results will be considered significant with p-values < 0.05.

Results

Concerning the characteristics of the secondary students investigated, 52.3% are male, 58.1% are between 14 and 16 years of age, 63.4% come from public schools. What the school year is concerned, this amounts to approximately 20% for each year (Table 1).

Table 1 – Sample distribution according to student characteristics

	Frequency	Percentage
Sex		
Woman	3,232	52.3
Man	2,942	47.7
Age group		
11 to 13	1,977	32.1
14 to 16	3,577	58.1
17 to 19	604	9.8
School year		
First	1,285	20.6
Second	1,293	20.7
Third	1,208	19.4
Fourth	1,248	20.0
Fifth	1,200	19.2
Type of school		
Public	3,950	63.4
Private	2,284	36.6

Concerning the characteristics of the family environment, 21% of the students have at least one relative living at their home who has alcohol problems, 5.5% manifested living with a family member with drug consumption problems and 5.3% have at least on relative who has committed some crime (theft, assault, drug sale, among others).

On the other hand, concerning the environment of peers, 42.9% of the students indicated having at least one friend from school, the neighborhood or another place with alcohol problems, 36.3% have friends with drug consumption problems and 33.5% have friend who have committed some crime (theft, assault, drug sale, among others).

Concerning the levels of social vulnerability, 41.1% of the students present low vulnerability. On the other hand, approximately seven out of ten students demonstrate high vulnerability, that is, they live in unsafe neighborhoods with drug sale, absence of police authority or some institution that permits community development (Table 2).

Table 2 – Sample distribution according to the variables of the students' environment

Variables	Frequency	Percentage
Drug consumption indicators		
Prevalence in life	9.1	570
Prevalence in one year	5.2	325
Prevalence in one month	2.8	172
Social vulnerability level		
No social vulnerability	927	16.4
Low social vulnerability	2,331	41.1
Median social vulnerability	2,030	35.8
High social vulnerability	378	6.7
Relative living at home with alcohol consumption problems		
None	4,923	79.0
At least one relative	1,311	21.0
Relative living at home with drug consumption problems		
None	5,891	94.5
At least one relative	343	5.5
Relative living at home who has committed a crime		
None	5,904	94.7
At least one relative	330	5.3
Friend from school, neighborhood or elsewhere with alcohol consumption problems		
None	3,560	57.1
At least one friend	2,674	42.9
Friend from school, neighborhood or elsewhere with drug consumption problems		
None	3,969	63.7
At least one friend	2,265	36.3
Friend from college, the neighborhood or elsewhere who has committed a crime		
None	4.148	66.5
At least one friend	2.086	33.5

Concerning the prevalence of illegal drug consumption, nine out of every 100 students have consumed some drug, marihuana, CBP, cocaine, inhalants, XTC, at least once in life. Five out of every 100 students did so in the last 12 months and about three out of every 100 students in the last 30 days.

In Table 3, annual illegal drug consumption is higher among men (7.3%) when compared to women (3.4%). In addition, the older the students, the higher the consumption, corresponding to 3% in the age group from 11 to 13 years and to 7.6% in the group from 17 to 19 years. In addition, students from the initial and final years show higher prevalence rates than students from the other years. As regards the type of school, students from private schools reveal a prevalence rate of 5.6%, against 4.5% for students from public schools. This entire group of variables is strongly associated with illegal drug consumption in the last 12 months (p<0.01).

Table 3 – Student characteristics associated with annual illegal drug consumption

	Consumption in the last year		Chi squared	P value
	Yes	No		
Sex			47,969	0.000
Woman	96.6	3.4		
Man	92.7	7.3		
Age group			30,646	0.000
11 to 13	97.0	3.0		
14 to 16	94.0	6.0		
17 to 19	92.4	7.6		
School year			21,267	0.000
First	91.8	8.2		
Second	95.1	4.9		
Third	95.4	4.6		
Fourth	93.9	6.1		
Fifth	92.8	7.2		
Type of school			3,612	0.057
Public	95.5	4.5		
Private	94.4	5.6		

Table 4 displays the variables related to the students' environment and their consumption in the last year. It is revealed that this percentage is higher in students with high social vulnerability (7.1%), while illegal drug consumption is lower in students with low vulnerability levels (4.6%).

On the other hand, in the same table, the influence the family and friends can exert on drug consumption is shown. Students having at least one relative living

at home with alcohol consumption problems reveal a prevalence rate of 9.2%, against 4.1% for students without a relative in this situation.

A similar situation occurs when having a relative with consumption problems, showing a rate of 18.1%. If the relative has committed a crime, the prevalence rate amounts to 14.5%, against 4.7% for students without relatives with this kind of problems.

A similar effect is found when the results are analyzed according to drug consumption in the peer group. Students having at least one friend with alcohol consumption problems present an annual prevalence of 8.2%, against 2.9% among students who do not have friends with these problems. If friends have drug consumption problems, the prevalence among the students corresponded to 9.6%. This entire group of variables is closely linked with illegal drug consumption in the last 12 months ($p<0.01$).

Table 4 - Variables in students' environment associated with annual illegal drug consumption

	Consumption in last year		Chi squared	P value
	No	Ye		
Social vulnerability level				
No social vulnerability	96.5	3,5	17,158	0.001
Low social vulnerability	95.4	4,6		
Median social vulnerability	93.5	6,5		
High social vulnerability	92.9	7,1		
Relative living at home with alcohol consumption problems			54,190	0.000
None	95.9	4,1		
At least one relative	90.8	9,2		
Relative living at home with drug consumption problems			121,522	0.000
None	95.5	4,5		
At least one relative	81.9	18,1		
Relative living at home who has committed a crime			61,409	0.000
None	95.3	4,7		
At least one relative	85.5	14,5		
Friend from school, neighborhood or elsewhere with alcohol consumption problems			86,081	0.000
None	97.1	2.9		
At least one friend	91.8	8.2		
Friend from school, neighborhood or elsewhere with drug consumption problems			140,100	0.000
None	97.3	2.7		
At least one friend	90.4	9.6		
Friend from school, neighborhood or elsewhere who has committed a crime			113,547	0.000
None	96.9	3.1		
At least one friend	90.6	9.4		

Factors associated with consumption

The regression analysis showed that being a boy increases the risk of illegal drug use by 2.15 times.

Concerning those students living with relatives who present some alcohol or illegal drug consumption problem, having a relative with alcohol problems increases the risk of consumption by 47%, and relatives with drug problems increase that risk by 2.53 times when compared to students without relatives with alcohol or drug consumption problems.

What the relation with the peer group is concerned, with regard to drug consumption and involvement in criminal activities, this increase the risk of illegal drug consumption by up to 2.21 times in the first case and up to 39% in the second.

It should be mentioned that variables like problematic alcohol consumption in the peer group, having a relative with criminal antecedents, social vulnerability, school year and type of school were not significant concerning the risk for illegal drug consumption (Table 5).

Table 5 – Logistic regression analysis for annual illegal drug consumption

Prevalence in the last 12 months: yes/no	B	S.E.	Wald	df	P value.	Exp (B)	95% C.I. for EXP(B)	
							Inferior	Superior
Relative living at home with alcohol consumption problems	0.389	0.145	7.189	1	0.007	1.476	1.11	1.961
Friend from school, neighborhood or elsewhere with alcohol consumption problems	0.198	0.16	1.531	1	0.216	1.219	0.891	1.67
Relative living at home with drug consumption problems	0.927	0.212	19.166	1	0.000	2.526	1.668	3.825
Friend from school, neighborhood or elsewhere with drug consumption problems	0.793	0.169	21.991	1	0.000	2.21	1.586	3.078
Relative living at home who has committed a crime	0.173	0.23	0.567	1	0.452	1.189	0.758	1.866
Friend from school, neighborhood or elsewhere who has committed a crime	0.33	0.159	4.31	1	0.038	1.391	1.019	1.9
Social vulnerability	0.016	0.029	0.321	1	0.571	1.017	0.96	1.076
Sex	0.765	0.131	34.216	1	0.000	2.148	1.663	2.776
Age	0.158	0.074	4.593	1	0.032	1.171	1.014	1.354
School year	-0.049	0.084	0.336	1	0.562	0.952	0.808	1.123
Type of school	0.111	0.136	0.665	1	0.415	1.117	0.856	1.458
Constant	-6.507	0.864	56.781	1	0.000	0.001		

Discussion

Among the most noteworthy results, illegal drug consumption among secondary students increased by 19% in relation to the 2007 survey by DEVIDA, rising from three to almost five out of every 100 students who have consumed illegal drugs in the past year.

On the other hand, concerning the sociodemographic characteristics, these follow the pattern highlighted in different studies, showing higher consumption in boys than girls and a consumption percentage that increases with age.

This analysis goes beyond the individual perspective and tries to address the environment, focusing on the family, friends and community.

In addition, the social vulnerability variable is analyzed, considered from the perspective of social risk and in the local sphere, more specifically in the neighborhood or community context. This is related, on the one side, to the exposure to situations of violence,

delinquency and sale and consumption of drugs in the neighborhood or place of residence and, on the other, with the feeling of insecurity and loss of confidence in the authority to guarantee order and people's safety, in addition to bad contacts with the neighbors and the lack of a social support network. From that perspective, it would be expected that the adolescents or students who experience a higher level of social vulnerability in their neighborhood or community context have a greater probability of engaging in the world of drugs.

An initial analysis reveals that this indicator is strongly associated with annual drug consumption, supporting the emphasis on its full identification and acknowledgement as a relevant risk, in view of the adaptation skill component, which comprises the notion of the students' vulnerability to the environment they live in.

On the other hand, the analysis of the family influence based on alcohol or drug consumption or criminal antecedents by a family member living at the home, and considering the same aspects for the peer group, showed strong associations, confirming the social influence of each of these actors on the student.

The joint analysis of each of these indicators provides a broader picture, revealing the way in which each of them interacts. In that sense, the risk of illegal drug consumption is twice and almost thrice as high in students living at home with a relative experiencing problems or having a close friend who consumes. In that sense, having a relative with alcohol problems increases the consumption by 47% and having a friend who has committed a crime by 39%. This confirms the strong influence of family and friends on the onset of illegal drug consumption, suggesting that the factors associated with the parents' conduct can represent an important potentially protective or risky influence on drug consumption in the adolescents [9]. This could be related to disintegrated families or families experiencing problems at the family core.

The relevance of friends who have committed crimes should be highlighted. This could be due to the fact that criminal activities are strongly linked to the environment of drug consumption and, hence, to the supply.

Concerning social vulnerability, this factor did not reveal a stronger influence on consumption, going against other authors' findings. This could be due to the family and friends' strong predominance in terms of drug and alcohol consumption and criminal activities, leaving what happens in the community context to the background.

These results reveal the major and important role of the family and friend environment in drug consumption, despite where the student lives and the social environment. In that sense, when the father, mother or siblings use drugs, it is highly probable that the student will try them, repeating the model from the surrounding family environment. Therefore, it is of interest to give feedback to the parents in that sense (Medina Mora) when considering that the models of consuming fathers and mothers represent a substantial risk marker for substance consumption [10]. In this context, prevention should focus not only on adolescents and young people, but also on families, considering that, like the communities, the families are important elements against consumption. Incorporating actions and strategies in the preventive framework, at educational institutions as well as other types of programs directed at young people, families and parents, is relevant in the light of the information obtained in this study, as well as expanding early consumption detection programs not only in adolescents, but also in adults, whose parents or future parents are responsible for raising the children.

What the influence of friends who have committed crimes is concerned, their importance should be reconsidered as, according to the statistics, the number of crimes committed by children and adolescents has increased by 32%, the percentage of crimes related to illegal drug traffic in the same group has risen by 48% and the presence of youth gangs has grown by up to 500% between 2005 and 2010.

This research is intended to support the development of programs undertaken by the State of Peru and the civil society to establish family programs intended to prevent the emergence of risk conducts in adolescents, or to work in community coalitions, also influencing the factors found.

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