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Drug use trends in Mexico City: 2012 student survey

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Original article

SUMMARY

Introduction

Epidemiological studies in Mexico show increases in the consumption of illegal drugs and alcohol. The age of onset has decreased, especially regarding alcohol use. Meanwhile, consumption of inhalants has increased significantly, especially in young women. There are several factors associated with drug use, but the development of resistance strategies, along with underlying social skills and parenting styles, are particularly significant.

Method

Data comes from a probabilistic survey carried out in November 2012 with students from 7th to 12th grades in Mexico City which was representative for each of its districts. The sample was 26 503 students. Information was obtained through a questionnaire which was standardized and validated in previous surveys.

Results

Tobacco consumption decreased significantly (44.3% to 41.0%), 32.9% of adolescents began using it before age 13. Lifetime consumption of alcohol was 68.2%, while the average age of onset of cannabis use remained at 12.6 years. Lifetime prevalence of any drug use increased from 21.5% to 24.4%. Marijuana was the primary drug of choice in students (15.9%). Increases were also found in the sexual abuse rate while suicide attempt decreased.

Discussion

Although inhalant use remained stable and tobacco use decreased significantly, results show the continued growth of drug use. Given this context, concentrating more efforts on prevention with studies and evaluated interventions for pre-school and elementary school students as well as for parents and teachers is an important task.

Key words: School population survey, drug use, adolescence, problematic behavior, prevention.

RESUMEN

Introducción

Los estudios epidemiológicos en nuestro país muestran un incremento en el consumo de drogas ilegales y de alcohol. La edad de inicio también ha disminuido, especialmente en el consumo de alcohol. Por su parte, el consumo de inhalables se ha incrementado en forma importante, especialmente entre las mujeres jóvenes. Son diversos los factores asociados al consumo de drogas, pero de manera importante destacan el desarrollo de estrategias de resistencia, junto con sus habilidades sociales subyacentes, así como los estilos parentales de crianza.

Método

La presente es una encuesta probabilística en población escolar de secundarias y bachilleratos de la Ciudad de México que se levantó en noviembre del 2012, con representación a nivel de cada Delegación. La muestra fue de 26 503 alumnos. La información se obtuvo mediante un cuestionario estandarizado y validado en encuestas anteriores.

Resultados

El consumo de tabaco disminuyó significativamente (de 44.3% a 41.0%), el 32.9% de los adolescentes comenzó a utilizar tabaco antes de los 13 años. El 68.2% consumió alcohol alguna vez; en tanto que la edad de inicio promedio de consumo de esta sustancia se mantuvo en los 12.6 años. La prevalencia de consumo de drogas alguna vez aumentó de 21.5% a 24.4%. La mariguana es la droga de preferencia en la población estudiantil (15.9%). También se encontraron incrementos en la presencia de abuso sexual, mientras que el intento suicida disminuyó.

Discusión

Los resultados muestran el continuo crecimiento que tiene esta problemática, aunque los inhalables se mantuvieron constantes y el tabaco disminuyó de manera importante. Dado estos resultados, es una tarea preponderante dedicar más esfuerzos a la prevención con estudios e intervenciones evaluadas para preescolar y primaria, así como para los padres de familia y los maestros.

Palabras clave: Encuesta en población escolar, uso de drogas, adolescentes, conductas problemáticas, prevención.

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INTRODUCTION

Over the last three years, various epidemiological studies on drug consumption have been carried out in Mexico and internationally. This continues from the epidemiological panorama described in the Mexico City survey carried out in 2009.

In Mexico, surveys have been carried out in homes such as the Global Adult Tobacco Survey (GATS)[1] and the National Addictions Survey (ENA) in 2011. The results of the ENA showed an increase in lifetime consumption of illegal drugs in the population from 12 to 65 years of age; men reported higher percentages, especially men aged between 18 and 34. Marijuana remained the drug of choice for users, and cocaine has also remained stable. Drug dependency increased from 0.6% in 2008 to 0.7% in 2011, which represents almost 553,000 people between 12 and 65 years old.[2]

The north of the country still has the highest prevalence, although important increases in alcohol and drug consumption have also been reported in the western region.

Alcohol dependence reached 6.2% in 2011.[3]

Furthermore, 21.7% of the total population between 12 and 65 years old are active smokers. Male active smokers in the 2011 ENA (31.4%) reduced compared with the 2002 survey (36.2%). In the adolescent population between 12 and 17, the prevalence of active smokers was 12.3% in 2011. In women, prevalence increased from 3.8% in 2002 to 8.1% in 2011. The onset age for smoking was 14.1 years; similar for both sexes.[4]

On the other hand, work with various states has led to various studies in the school-age population. In Jalisco, two surveys have been carried out (2009 and 2012).*,** In 2012, consumption of any drug during a lifetime had a prevalence of 16.4%, and consumption was similar to that found in 2009 (16.5%); however, marijuana consumption increased significantly from 6.2% to 8.4%.

Conversely, tobacco use reduced significantly (from 34.9% to 27.3%). Alcohol consumption also showed a significant reduction (from 65.1% to 58.1%); as did alcohol abuse, which went from 21.0% to 16.9%.

In the survey on Mexico State,[5] consumption of any drug at any time was reported at 20.2%. The data remained consistent by sex, given that drugs consumption in this state was greater in men (22.0%) than in women (18.5%). In terms of alcohol consumption at any time, prevalence in students was 70.8%, and women had a greater consumption of alcohol (71.9%) than men (69.7%). For tobacco consumption, 49.4% consumed tobacco at some time in their lives; 52.1% were men and 46.9% were women.

The measurement taken in Mexico City in 2009[6] showed that consumption of a drug at any time increased from 17.8% to 21.5%. In terms of alcohol consumption at any time, prevalence increased from 68.8% to 71.4%, with similar percentages for both sexes. Regarding tobacco, consumption at some time reduced from 48.3% to 44.3% in 2009; in men, it reduced from 49.4% to 45.9% and in women, from 47.1% to 42.6%. However, the proportion of students who began consumption before the age of 13 was similar between 2006 and 2009, at 37.2% and 37.3% respectively.

Information from patients attending Juvenile Integration Centers (JICs) for the first time, based on 11 941 clinical records[7] shows that in the second half of 2012, the proportion of men attending for treatment was 4.7 men for every woman (82.6% men, 17.4% women). The average age of admission for treatment was 23.4; however, women attended younger (21.9) than men (23.7).

The primary substances leading to demand for treatment were illicit drugs (85.5%), alcohol (43.5%) and tobacco (37.3%).

The average onset age of tobacco consumption was 14.5, for alcohol it was 14.6, and for illicit drugs (including medical drugs) it was 16.3. The illicit starting drugs that were most reported were marijuana (64.3%) followed by inhalants (18%) and cocaine (11.6%). It should be noted that men prefer to consume marijuana and *crack* to a greater extent than women, while women prefer inhalants, tobacco, and alcohol to a greater extent than men. In terms of the impact drug, marijuana (36.1%), alcohol (16.3%), inhalants (15.3%), tobacco (7.5%), *crack* (7%), methamphetamines (6.1%) and cocaine in powder form (4.9%) were primarily indicated.

On the other hand in 2012, the country's Epidemiological Monitoring System for Drugs (SISVEA) had the participation of the Child Protection Councils which provided information on 3 782 juvenile offenders. Of these, 89.9% were between 15 and 18 years old, and 8.5% were female.[8]

Some 65.9% of the minors advised having consumed some drug, alcohol and tobacco being the starting substances with the highest percentages (32.2% and 27.9% respectively). Some 97.2% advised still consuming their starting drug. The consumption of inhalants as a starting drug was greater among subjects aged 10-14 (25.8%).

From the total surveyed, 18.6% committed the crime that led to their admission to Child Protection while under the influence of a substance; 93.5% were between 15 and 18 years of age. Alcohol was the most frequent drug at the time of committing the crime (43.3%), followed by marijuana (23.7%) and inhalants (22.2%).

SISVEA also reports data from Treatment Centers. In 2012, 1 658 centers provided information on 48 378 people.

* Chávez J, Villatoro J, Robles L, Bretón M et al. School survey on addictions in Jalisco State, 2010. Mexico City: National Institute of Psychiatry Ramón de la Fuente Muñiz; 2010.

** Chávez J, Villatoro J, Robles L, Bustos M et al. School survey on addictions in Jalisco State, 2012. Mexico City: National Institute of Psychiatry Ramón de la Fuente Muñiz; 2013.

The majority of the interviewees were 35 or older (32.2%), followed by the group aged 15 to 19 (23.3%). Some 84.5% were men and 15.5% were women. On average, the starting age for drug consumption was 14.5 years. Alcohol was the most reported starting drug (46.5%), followed by tobacco (30.7%) and marijuana (12.7%). The most frequent impact drug at national level was alcohol, mentioned by 39.7% of users; some 16.4% mentioned marijuana, 13.4% methamphetamine (crystal), and 10.1% cocaine.

By age group and impact substance (excluding alcohol, which was the primary drug reported by all groups), minors under 14 years old reported inhalants (27.8%) and marijuana (22.7%) as the primary drugs that led them to treatment. For those aged between 15 and 19, it was marijuana (30.8%) and inhalants (14.9%); in 20-24 year-olds it was marijuana (21.9%) and crystal (20.3%). For groups between 25-29, 30-34, and over 35, primary impact drugs were reported as crystal (22.7%, 19.5%, and 10.0% respectively) and cocaine (16.9%, 15.0%, and 9.6%).

By region, the south and central regions showed a higher demand for treatment due to alcohol consumption (south 60.4%, central 46.5%) and marijuana (south 16.5%, central 18.1%). The northern region had a higher demand for treatment due to consumption of methamphetamines (36.7%) and alcohol (21.6%).[8]

Some 335 Nueva Vida [New Life] Centers operate in 256 municipalities throughout 32 states in Mexico. In 2012, the primary impact drug referred to was alcohol in 44.8% of cases, followed by marijuana at 24%, solvents at 10.4%, tobacco at 9.4%, and cocaine at 5%. Some 68% of the people treated were men and 32% were women.[9]

The 2013 UNODC report showed a slight increase in the total global number of illicit drug users. The use of drugs such as heroin and cocaine seems to have diminished in some parts of the world, while consumption of medical drugs and especially psychoactive drugs is ever higher.

In 2011 it was estimated that 211,000 deaths were caused by drugs, the majority of which were among the youngest population of users. Treatment services for drug dependency are still insufficient; one in six users with drug problems received treatment in the previous year.

In the region of North America (which includes Mexico, the US, and Canada), the annual prevalence of illicit drugs has remained stable, with the exception of opiates which have a higher prevalence than the global average. Both prevalence and seizures of cocaine have reduced considerably since 2006, although together with Europe, it remains the largest market for this substance. Cocaine use in the US reduced by 40% between 2006 and 2011. In terms of use of amphetamine-type stimulants, this region is among the three primary consumers, together with Europe and Oceania. Cannabis use in the region of North America is 10.7% and has remained stable, but it is above the global average, as is consumption of opioids (3.9%). More than half of global seizures of this substance were made in the US and Mexico (69%). The three countries that make up the North American region reported the appearance of new psychoactive drugs. In this region, it is estimated that each year, one in three problem drug users receive intervention.

The report indicates that Mexico is still a primary producer of opium in the Americas. Its heroin production is 30 times that of Colombia, and seizures reached the level of that country in 2011. The US estimates that there are 12 000 hectares of poppy farms in Mexico, with a corresponding increase in heroin production. Mexico overtook the US for the first time in seizures of amphetamine-type stimulants, from 13 to 31 tons. Furthermore, there is a rising trend in the presence of laboratories producing methamphetamines and indications of possible ecstasy manufacture.

Mexico is among the countries with the highest prevalence in medical drug consumption, with increases in amphetamines and opiates. In terms of illegal drugs, cocaine and *cannabis* showed increases in consumption. Furthermore, Mexico is one of the countries with the largest areas for marijuana growth (12 000 hectares), and it is the primary provider of *cannabis* to the US.[10]

On the other hand, when analyzing factors associated with drug consumption, a study on high school and university students[11] identified that the factors related to being an experimental or regular drug user were: not being a full-time student, having a job, having a low socio-economic level, being a degree student, being involved in a serious traffic accident, having been assaulted with a firearm, suicidal intent, sexual abuse, impulsivity, having a low perception of the risk of substance consumption, and having substances around them available to consume. Having friends who took drugs, who tolerated their consumption, or who engaged in antisocial acts, and a lack of friends with pro-social behavior were also significant factors for experimental or regular consumption. In terms of family, a lack of parental involvement, negative care, and drug consumption in the family were associated with experimental or regular drug use.

The sudden death of a loved one, stress, and tobacco or alcohol consumption by a partner were also significant factors for experimental consumption. In terms of regular consumption, the following were added as related factors: having been kidnapped, having been attacked by a stranger, having caused death or serious injury to another person, little contact with the father, tolerance of drug consumption in the family, and adults fighting in the house.

In this context, the primary aim of this study was to gain a knowledge of the prevalence of drug, alcohol, and tobacco use, as well as consumption trends in the population

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of students at middle and upper middle school in Mexico City and its political Delegations.

MATERIAL AND METHODS

The methodology employed in this study maintains the basic aspects of previous measures that have been taken of students at middle and upper middle level in Mexico City and other states.[6]

The project was approved by the Ethics Committee at the National Institute of Psychiatry Ramón de la Fuente Muñiz and it was also approved by the education authorities in Mexico City for application to the school-age population. The instrument's instructions clearly indicated that the subject could choose whether or not to accept the application of the questionnaire. The students' confidentiality and anonymity were assured.

Population and Sample

The unit of analysis on which information was based was made up of middle and upper middle level students enrolled in the 2011-2012 school year in public and private schools in Mexico City.

The following levels of study were considered:

- Middle school students
- High school students

This study covers the middle and upper middle school level in Mexico City. Purely for operative reasons and due to their small number, militarized, artistic, and workers' schools were excluded from the study.

In terms of high school, this included secondary schools, Schools for Science and Humanities at the UNAM, Centers of Scientific and Technological Studies (CCTS), the Colegio de Bachilleres, CETIS, CONALEP, private High School diplomas, and Teaching High School Diplomas.

The sample framework was prepared based on official Secretariat for Public Education (SEP) records of the students at middle and upper middle levels in the 2011-2012 school year. The data was submitted for validation and cleaning with the aim of having the most reliable information possible in order to avoid inconsistencies in the estimations.

To estimate the size of the sample, the distribution of drug use by sex, age group, school level, and time dedicated to studying were all considered.

In accordance with the study carried out in 2009, the Coefficients of Variation (CV) were determined for the use of marijuana, cocaine, and inhalants. The variable with the greatest CV, a two design effect, and a non-response rate of 20% were considered, which is what has been found in previous studies. The level of confidence in the sample was 95%, with an average absolute error of 0.004. The lowest prevalence to consider was 2%. Based on these parameters, and taking into account the non-response rate, an approximate sample of 799 groups was calculated with a median of almost 33 students per group. These parameters allowed for an approximate sample of 900 students for middle school and 900 for high school, in order to be representative by both level of education and Delegation.

The schools were selected randomly from within each of the 16 political Delegations and from each level of education. The sample design was stratified and by cluster; the stratification variable was the level of education – middle and high school – with which there were 32 different strata.

The unit of selection was the school group within the schools. It was planned by groups with the aim of optimizing the researchers' time and reducing field work costs. The sample obtained of groups and students were considered by group, level of education, and Delegation, with the aim of making an estimation and processing the data.

Precision of estimations

In this survey, the calculation of confidence intervals of the true value of the prevalence was made with the STATA program 11.0. The option for complex samples was used, with the group as the primary sample unit, the value of the weighting to consider the probability of selection, and the combination of Delegation and level of education to define the strata.

The data obtained showed that 49.2% were female and 50.8% were male. From the total population, 54.2% were 14 years old or younger. Some 56.0% were at middle school level and 44.0% were at high school.

The majority of the adolescents were full-time students in the year prior to the study, and only 6.3% of the males and 4.8% of the females were not students.

Instrument

The information was obtained using a standardized questionnaire which had been applied in previous surveys, and which had previously been validated.[12-17]

Due to the extension of the instrument, four forms were used which included various sections. Pages 1-14 of the questionnaire were the same for all the subjects, and pages 15-16 corresponded to each form, each one applied only to a quarter of the sample. The sections which were the same for all subjects were:

a) Sociodemographic data: including questions about sex, age, school year, time spent studying, whether they

have had a paid job, whether they speak any indigenous languages, whether they live with their parents, their parents' level of education, and their perceived socio-economic level.

b) Consumption of tobacco, alcohol, and drugs. This section included questions on the most common drugs being studied: amphetamines, tranquilizers, marijuana, cocaine, *crack*, hallucinogens, inhalants, methamphetamines, heroin, and sedatives. For each drug, the primary aspects questions were usage at any time during their life, use in the last 12 months, frequency of use over the past 30 days (prevalence), number of times they have used the drug, and how long ago they tried it for the first time (incidence). Participants were also asked about the circumstances surrounding their onset of consumption, such as their age and how they obtained the medical drugs they consumed. In the case of alcohol, they were asked about the occasions they consumed; the prevalence of some time in their life, the past year, and the past month; the frequency with which they have consumed four or five units or more; the frequency of drunkenness, and indicators of problematic drinking measured with the AUDIT scale.

c) Problems related with drug consumption.

d) Anti-social behavior: this covered the frequency that the student has carried out certain criminal activities such as taking money, physical violence towards others, stealing cars, etc.

e) Social environment: this corresponds to questions on social tolerance, availability, and risk perception of drugs, alcohol, and tobacco consumption; as well as social disorder (crime and violence) perceived by the subject in the area where they live.

f) Interpersonal environment: This section asked about the subject's family makeup and parenting styles (its validity, reliability, and suitability for populations under study had been previously approved). Furthermore, they were asked about drug consumption and alcohol problems in the family. In terms of the pair group, questions were included about drug and alcohol consumption by the interviewee's friends in different contexts.

g) Personal environment: this section had questions about the reasons to attend school, their level of satisfaction, self-esteem, expectations of life, suicidal intent, and sexual abuse.

Each form included the following:

- In form A, depressive symptomatology, suicidal ideation, risky eating habits, alcohol consumption habits, consumption of low-cost alcoholic drinks, problems associated with substance consumption, and anxiety.
- Sections contained in form B were: social support, reasons why they dropped out of school, academic achievement, perception of their teachers and directors, school support, study techniques and difficulties faced at school, whether they have gotten into fights or been subject to violence at school, and exposure to prevention.
- Additional sections included in form C were: use of free time, questions around sexual activity, contraceptive methods, pregnancy, abortion, condom use, and self-control.
- Additional sections in form D were about severe physical, emotional, and negligent abuse of the students by their parents, as well as questions related to their supervision, their health in general, and the care provided by their parents in terms of health.

Procedure

The operational design of the survey included two coordinators, ten supervisors, and 30 trained surveyors. The training course lasted two days, and included conceptual aspects related to addictions, history, aims of the project, using the questionnaire, instructions for its application, and selecting the groups.

Special care was taken that the surveyors knew how to issue instructions that guaranteed students confidentiality and anonymity in their responses.

After the surveyors had issued two surveys, there was further training to clarify any doubts and particular situations, with the aim of improving the quality of the field work.

The coordinators were responsible for the advance control of the field work and the delivery of materials. The supervisors monitored the field work of a group of surveyors, and helped them to solve problems such as localization and permission to access schools. The surveyors carried out a pre-defined selection of groups in the school and applied the questionnaires. They also ensured that they had been applied under the established conditions and to the selected group.

After the application, the critical coding group made an additional verification with the aim of: i) classifying the substances reported by the students, ii) verifying that they were referring to a drug and that it was used for the purposes of intoxication, and iii) detecting, correcting, or eliminating (if applicable) inconsistent questionnaires.

To capture and validate information, the INPRFM's computer program was adjusted to the need of this study and the congruence of the responses was verified. Finally, a new round of data cleaning was carried out through programming for the direct review of the questionnaires that had inconsistencies at the capture stage.

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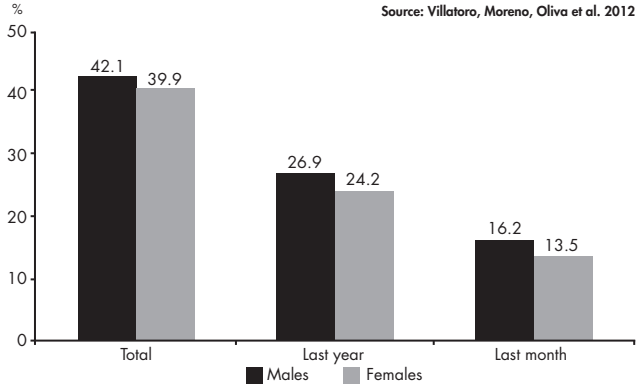


Graph 1. Tobacco consumption by sex in students in Mexico City, 2012.

RESULTS

1. Prevalence of drug consumption

a. Tobacco consumption

Some 41.0% of students had consumed tobacco at some time and males (42.1%) had a higher consumption than females (39.9%) (Graph 1). In terms of current consumption, the percentage of users reduced significantly and again, males (16.2%) had a higher consumption than females (13.5%). Some 32.9% of teenage smokers started before the age of 13 (Graph 2).

Furthermore, the percentage of consumption is lower in students who attend middle school (25.0%) in relation to those in high school (61.3%).

When considering the age of the adolescents, it is noted that the percentage of current consumers 18 years old or older is seven times greater than those who are 14 or younger. The most significant change takes place between ages 14 and 15, given that tobacco consumption increases almost fourfold (from 5.2% to 20.2% respectively).

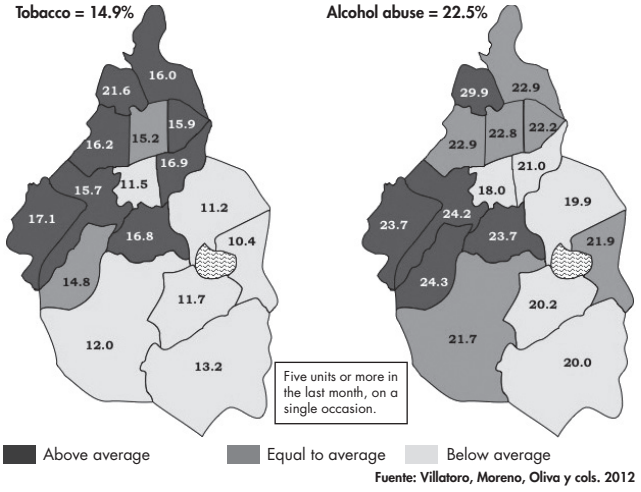
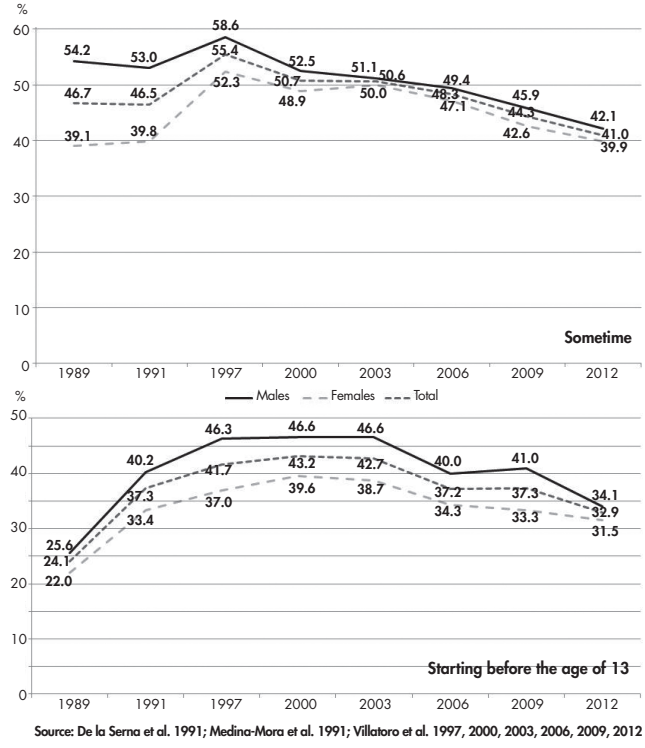
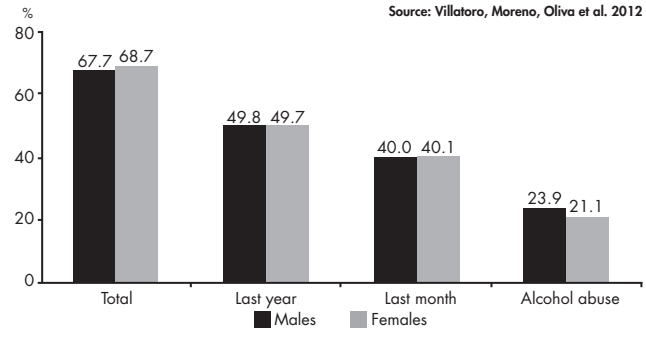


Figure 1. Prevalence of tobacco: past month and alcohol abuse in students of Mexico City, 2012.

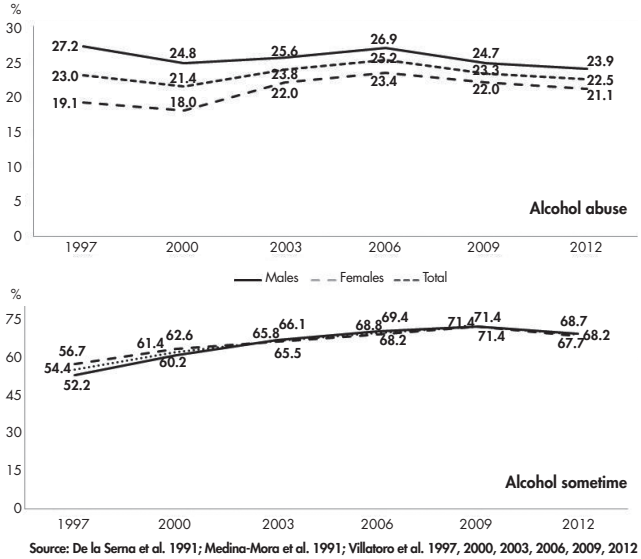


Graph 2. Consumption trends and starting age for tobacco in students in Mexico City, 2012.

The Delegations most affected by current tobacco consumption are: Azcapotzalco (21.6%), Cuajimalpa (17.1%), Iztacalco (16.9%), Coyoacán (16.8%), Miguel Hidalgo (16.2%), Gustavo A. Madero (16.0%), Venustiano Carranza (15.9%), and Álvaro Obregón (15.7%), which present a significantly higher consumption than the Mexico City average (Figure 1).

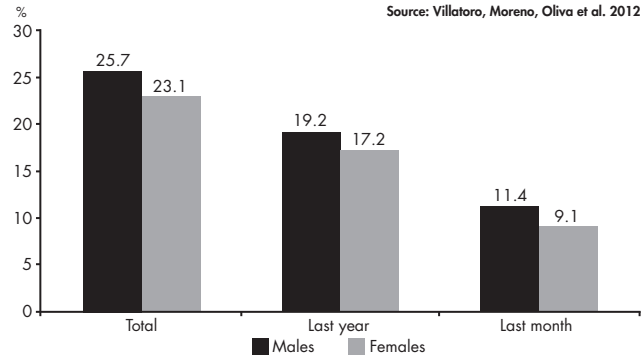


Graph 3. Alcohol consumption by sex in students in Mexico City, 2012.



Source: De la Serna et al. 1991; Medina-Mora et al. 1991; Villatoro et al. 1997, 2000, 2003, 2006, 2009, 2012

Graph 4. Alcohol consumption and abuse trends in students in Mexico City, 2012.



Graph 5. Consumption of any drug according to sex in students in Mexico City, 2012.

b. Consumption of alcoholic beverages

Some 68.2% of adolescents have consumed alcohol at some time in their lives, and 40.1% have consumed it in the past month.

Upon analyzing consumption by sex (Graph 3), it is noted that the prevalence is similar, except in terms of alcohol abuse, where the percentage of males who abuse alcohol is higher than females.

With respect to level of education, percentages of alcohol consumption and abuse are twice as high in high school as in middle school. As such, in middle school, alcohol consumption in the past month was 27.2% and for upper middle it increased to 56.5%.

In terms of alcohol consumption by age, the percentage of adolescents 14 years old or younger who have consumed alcohol at some time is 53.6%, and in those 18 years or older it is more than 92.5%.

As with tobacco consumption, there is an important increase in alcohol consumption between 14 and 15 years of age, which was also found to be an indicator for abuse of this particular substance.

Some 22.5% of the students drank five units or more on one occasion during the month prior to the study; a similar percentage to that reported in 2009, which was 23.3%. In general, few changes were observed over time for this indicator (Graph 4).

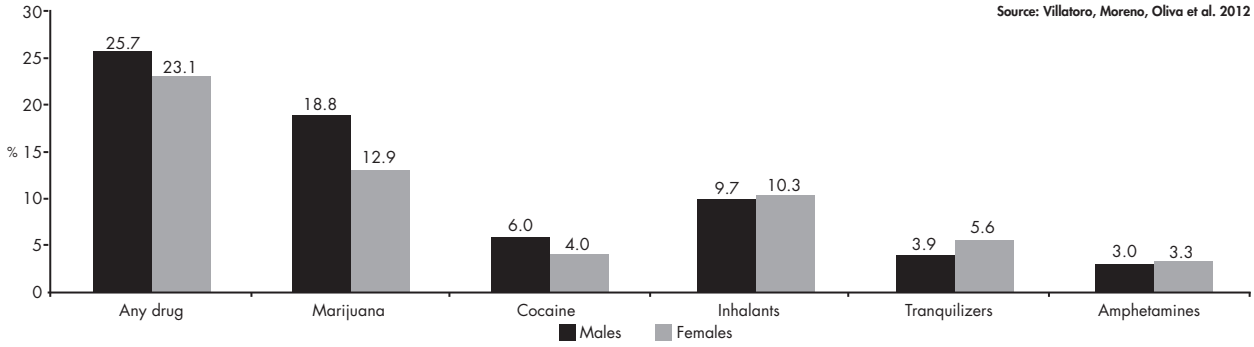
The Delegations most affected by abuse of alcoholic beverages are Azcapotzalco (29.9%), Magdalena Contreras (24.3%), Álvaro Obregón (24.2%), Coyoacán, and Cuajimalpa (23.7% in both) (Figure 1).

c. Consumption of psychoactive substances

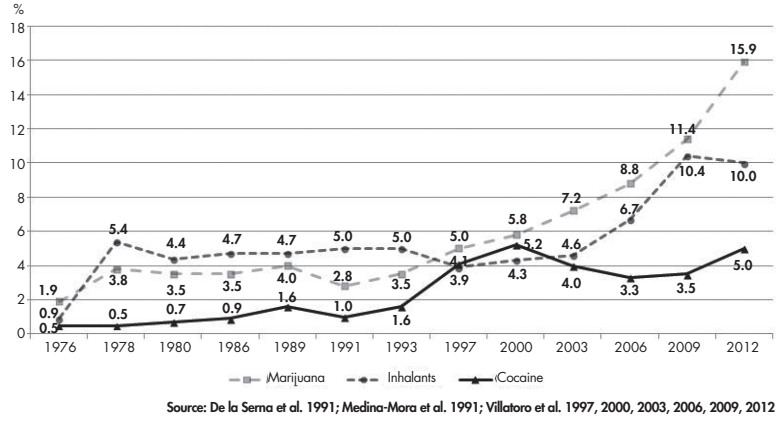
The total prevalence of drug consumption was 24.4%; statistically greater than the 2009 measurement (21.5%). Consumption in the past year and past month was 18.2% and 10.3% respectively.

The consumption of any drug during a lifetime is greater in males (25.7%) than in females (23.1%).

As such, males (11.4%) had a higher percentage in current consumption than females (9.1%) (Graph 5). Of the total population, 15.3% were experimental users, and 9.1% were



Graph 6. Prevalence of consumption of any drug by sex in students in Mexico City, 2012.



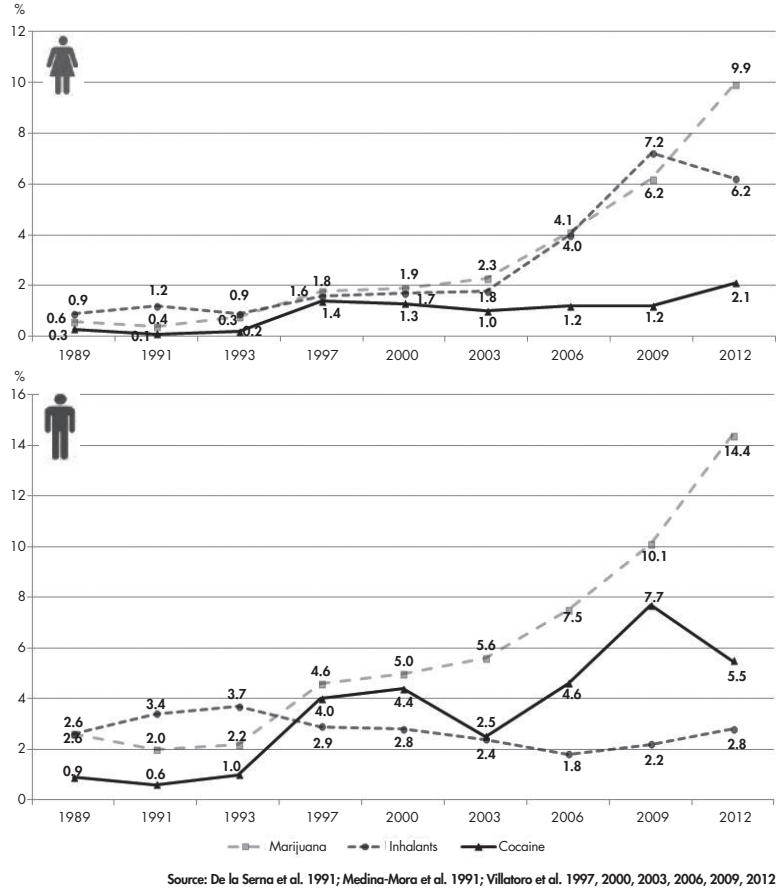
Source: De la Serna et al. 1991; Medina-Mora et al. 1991; Villatoro et al. 1997, 2000, 2003, 2006, 2009, 2012

Graph 7. Drug use trends in students in students in Mexico City, 2012.

regular users (have used drugs on more than five occasions).

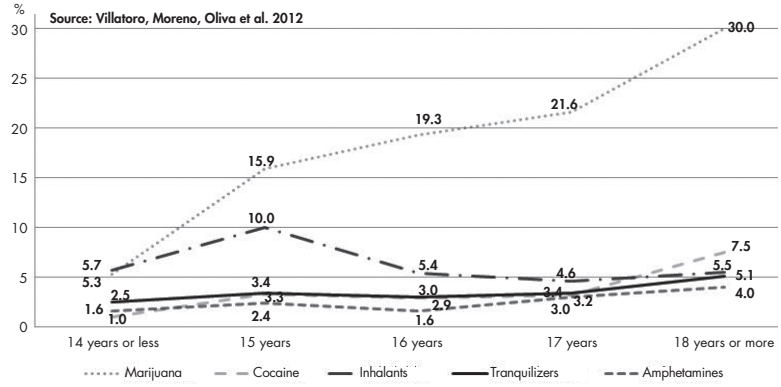
In terms of medical drugs (tranquilizers, amphetamines, and sedatives), as well as inhalants, consumption was greater in females; whereas consumption of illegal drugs (marijuana, cocaine, *crack*, hallucinogens, methamphetamines, and heroin) was greater in males (Graph 6).

In terms of level of education, total substance consumption is greater in high school students (33.6%) than in middle school students (17.2%).



Source: De la Serna et al. 1991; Medina-Mora et al. 1991; Villatoro et al. 1997, 2000, 2003, 2006, 2009, 2012

Graph 8. Drugs consumption trends in the past year in students in Mexico City, 2012.



Graph 9. Drug consumption in the past year by age in students in Mexico City, 2012.

In terms of each substance, marijuana (15.9%) is the first drug of choice for adolescents, followed by inhalants (10.0%) and cocaine (5.0%) (Graph 7); in the case of taking medical drugs at some time, tranquilizers were the preferred drug (4.7%).

When analyzing these trends according to sex and based on consumption in the past year, both in males and females, use of tranquilizers and methamphetamines has been stable with respect to the data obtained in 2009.

In terms of illegal drugs (Graph 8), females reported important increases in the consumption of marijuana (9.9%) and cocaine (2.1%) in the past year. Inhalants had a reduction from 7.2% to 6.2%.

The proportion of men that took these substances during the past year is greater than women. With respect to 2009, men's consumption of marijuana and cocaine presented a similar pattern to women's, with a significant increase in both substances, while inhalant consumption reduced (Graph 8).

For high school students, the order of preference is as follows: marijuana (25.95), inhalants (11.0%), cocaine and tranquilizers (6.9% and 5.8% respectively); in middle school, the order changes, with inhalants being consumed the most (9.3%), followed by marijuana (8.1%) and tranquilizers (3.9%).

In terms of age and drug consumption in the past year (Graph 9), it was noted that inhalants and marijuana are the primary substances consumed at 14 years of age or earlier, and the percentage of marijuana users tripled between ages 14 and 15. The consumption of other substances remained similar in these age ranges, and there were slight increases for cocaine consumption.

For drug consumption in the past year, the prevalence of marijuana, tranquilizers, and cocaine was greater in adolescents whose father had a middle or higher level of education; in those adolescents who consumed inhalants, their father had a primary or lower level of education.

In terms of the mother's level of education, marijuana and amphetamine consumption is greater in adolescents whose mothers had middle or higher level of education, and inhalant consumption was higher in adolescents whose mother had a primary or lower level of education.

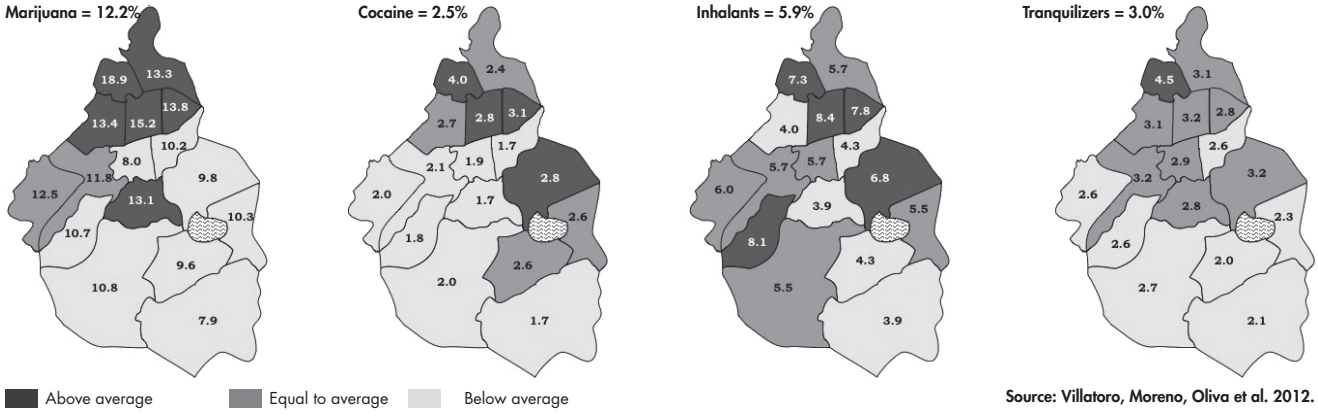
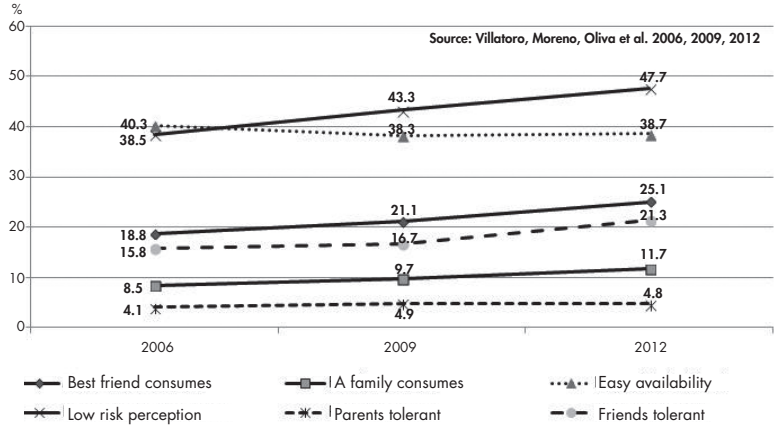


Figure 2. Prevalence of drug consumption in the past year in students in Mexico City, 2012.



Graph 10. Trends of other factors in students in Mexico City, 2012.

The Delegations which were most affected by marijuana use in the past year were Azcapotzalco (18.9%), Cuauhtémoc (15.2%), Venustiano Carranza (13.8%), Miguel Hidalgo (13.4%), Gustavo A. Madero (13.3%), and Coyoacán (13.1%). In terms of cocaine consumption in the past year, the Delegations most affected were Azcapotzalco (4.0%), Venustiano Carranza (3.1%), Cuauhtémoc, and Iztapalapa (both 2.8%). For inhalant consumption in the past year, the Delegations with the highest percentages were Cuauhtémoc (8.4%), Magdalena Contreras (8.1%), Venustiano Carranza (7.8%), Azcapotzalco (7.3%), and Iztapalapa (6.8%). Finally, in terms of tranquilizer consumption in the past year, the Delegation with a prevalence higher than the Mexico City average was Azcapotzalco (4.5%) (Figure 2).

Regarding other substances, 2.5% of adolescents have used ecstasy and 0.9% have used crystal.

Users who have experimented with ecstasy and crystal are primarily males and females between 17 and 18 years old and above, and at a high school level. In terms of parents' level of education for those who report using these drugs, the higher percentages for ecstasy and crystal consumption correspond to students whose parents have a minimal middle school level of education.

Availability of substances, social tolerance, and perceived risk

Of the total population, 41.0% of the males and 36.4% of the females considered that it is easy or very easy to obtain drugs.

On the other hand, it is noted that 55.8% of the adolescents consider marijuana consumption very dangerous, with 70.6% feeling the same about inhalants, 73.7% about cocaine, and 74.1% about heroin. Males consider heroin and cocaine consumption very dangerous (71.7% and 71.4% respectively); as did the females (76.5% for heroin and 76.1% for cocaine).

However, this risk perception reduces in regard to alcohol consumption (49.2% consider frequent consumption very dangerous) or smoking five or more cigarettes a day (58.8%), with similar percentages between men and women.

In terms of risk perception trends since 2006, it is noted that more students perceive a low risk towards drug consumption (38.5% to 47.7% in 2012). Furthermore, a greater percentage of adolescents' friends show tolerance towards drug consumption, while tolerance among parents maintained similar percentages (Graph 10).

Consumption in the adolescent environment

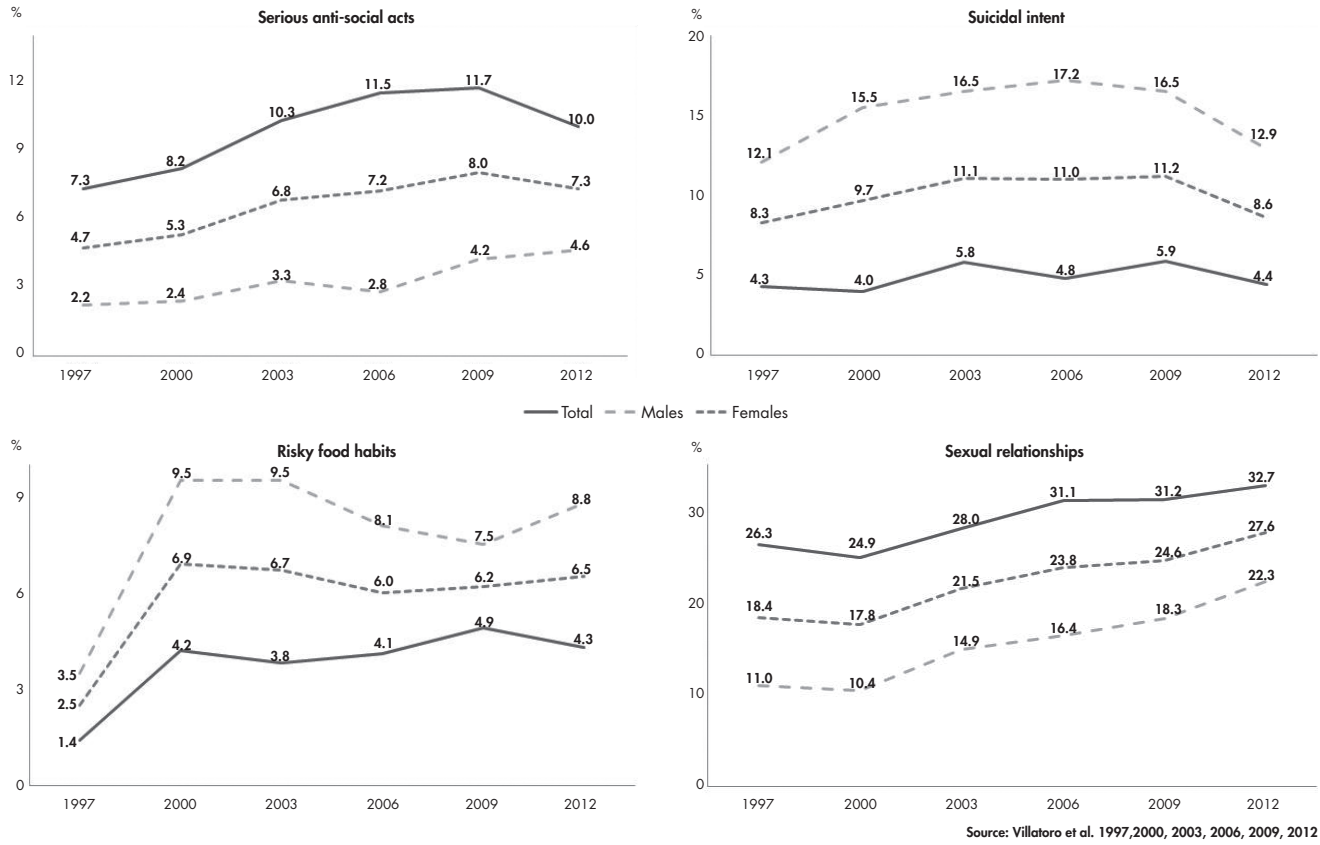
Adolescents reported little drug consumption in their family; 5.3% mentioned their father, 1.3% their mother, and 7.7% their siblings.

Some 25.1% mentioned that their best friend had taken drugs. This was very similar between males (25.3%) and females (24.9%).

In terms of the trends for these indicators, an increase was observed between 2006 and 2012, both in best friends' consumption (from 18.8% to 25.1%) and with consumption by a family member (from 8.5% to 11.7%) (Graph 10).

Other behaviors assessed

This section analyzed the changes that emerged between 2009 and 2012 in the additional behaviors measured by the instrument (Graph 11). Significant reductions were found in terms of anti-social acts; this went from 36.0% to 31.6% in males and from 20.9% to 18.7% in females. Similarly, mildly anti-social acts had important reductions among both sexes. Serious anti-social acts showed a significant reduction in males (from 11.7% to 10.0%) but in females the percentage stayed the same (4.2% in 2009 and 4.6% in 2012.



Source: Villatoro et al. 1997,2000, 2003, 2006, 2009, 2012

Graph 11. Trends of other behaviors assessed in students in Mexico City, 2012.

Risky food habits did not show changes in males between 2009 and 2012 (4.9% and 4.3%), while in women it increased, but not significantly (from 7.5% to 8.8%).

Regarding suicidal intent, this behavior reduced importantly in the students. In males, it reduced from 5.9% in 2009 to 4.4% in 2012. For females, it went from 16.5% in 2009 to 12.9% in 2012.

In terms of prevalence of possible depression, the percentage in males remained similar to 2009 (12.5% to 13.5%) and in females it increased from 21.6% in 2009 to 24.7% in 2012.

Sexual abuse also showed significant increases in both sexes. In males it increased from 8.7% to 9.9%, and in women from 8.6% to 10.7%.

Regarding starting sexual relationships, the percentage of males who had become sexually active was similar in the two surveys (31.2% in 2009 and 32.7% in 2012), and in females this percentage had increased (18.3% in 2009 and 22.3% in 2012). In respect of the average age of becoming sexually active, this remained similar in males (13.9% years in 2009 and 14.2% years in 2012) and in females (14.6% years in 2009 and 14.8% years in 2012). It should be noted that males begin around half a year before, and to a greater proportion than females.

DISCUSSION AND CONCLUSIONS

The data from this study indicates that tobacco consumption reduced significantly from 44.3% to 41.0%, and the average starting age in this population remained around 13 years old.

In terms of alcohol, its consumption showed reductions between 2009 and 2012 (71.4% to 68.2% respectively), with a similar prevalence between men and women. Furthermore, the prevalence of alcohol abuse remained stable and the average age for starting to use this substance remained at 12.6 years.

For consumption of illegal and medical drugs, it was found that 29.0% of the population had been offered a drug, and 11.0% had tried to sell a drug.

Over the past three years, the survey recorded an important increase in the prevalence of drug consumption at some time, which increased from 21.5% to 24.4%; a similar increase to that which occurred between 2006 and 2009.

Drugs which showed increases in prevalence were marijuana, cocaine, and *crack*, both in males and females. Additionally, in males, inhalant consumption reduced significantly and was maintained in females. This is relevant, given that it was expected that inhalant consumption

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would increase and its prevalence would be greater than marijuana.

The Delegation of Azcapotzalco is the area with the biggest drug consumption problem.

In terms of additional behaviors which were assessed, increases were shown in the proportion of students who reported sexual abuse and in those who presented possible depression.

These results are in accordance with the sustained increase in drug consumption that is happening in Mexico, especially of marijuana; however, there were positive results in the case tobacco and alcohol, the former of which had a reduction and the latter did not increase for the first time.

It is important to analyze the factors that bring about an increase in the consumption of various substances. Diverse mental health problems, sexual abuse, and levels of emotional distress which increase significantly, have an important impact on our adolescent population.

Without a doubt, the increase in valid prevention and treatment options in accordance with the needs and characteristics of Mexico's men and women, are elements that will contribute to counteracting the problem. However, these efforts need to be increased in a systematic way for the support options directed at this population to really serve them for referencing and support. Continuity and increased preventative work with parents and teachers should also not be forgotten, as they are also part of the country's foundation for developing generations with better indicators of mental health.

The challenges are many and varied; they imply carrying out transcendental actions to have an established and clearly defined prevention policy which begins with specific programs for boys and girls, as well as for people who support their development.

This work must definitely be accompanied by better opportunities for social and economic development for the population, with the aim of supporting the day-to-day life of the family/children/schools dynamic, which brings with it the greater wellbeing of families and communities.

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