

USE OF PSYCHOACTIVE SUBSTANCES BY STUDENTS OF PRIMARY AND SECONDARY EDUCATION: A SYSTEMATIC REVIEW FROM 1999 TO 2009

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This article aims to verify the prevalence of psychoactive substances (PAS) use among students in Primary and Second Educations in Brazil. We have searched Medline, Lilacs and SciELO databases from 1999 to 2009, using as keywords “Disorder related to substances use”; “Alcoholic beverages”; “Tobacco”; “Illicit drugs”; “students, “”Brazil.” In addition, there was a articles research in the references of the selected articles. We have selected 14 articles for analysis. The articles showed high prevalence of lifetime use of licit PAS, alcohol and tobacco, and to a lesser extent, marijuana and inhalants. The analyzed studies show a higher prevalence of licit psychoactive substances use. Therefore, the PAS use by students is worrying, requiring specific approaches for this population.

Descriptors: Students; Education, Primary and Secondary; Substance-Related Disorders.

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O USO DE SUBSTÂNCIAS PSICOATIVAS POR ESTUDANTES DO ENSINO FUNDAMENTAL E MÉDIO: UMA REVISÃO SISTEMÁTICA DE 1999 A 2009

O presente artigo visou verificar a prevalência de uso de substâncias psicoativas entre estudantes do ensino fundamental e médio do Brasil. Pesquisaram-se as bases de dados MEDLINE, LILACS e SciELO, no período de 1999 a 2009, utilizando os descritores transtorno relacionado ao uso de substâncias, bebidas alcoólicas, tabaco, drogas ilícitas, estudantes, Brasil. Além disso, realizou-se busca de artigos nas referências dos artigos selecionados. Foram selecionados 14 artigos para análise. Os artigos mostraram alta prevalência de uso na vida das substâncias psicoativas lícitas, álcool e tabaco, e, em menor proporção, maconha e solventes. Os estudos analisados mostram maior prevalência do uso de substâncias psicoativas lícitas. Portanto, o uso de substâncias psicoativas pelos estudantes é preocupante, sendo necessárias abordagens específicas para essa população.

Descritores: Estudantes; Ensino Fundamental e Médio; Transtornos Relacionados ao Uso de Substâncias.

EL USO DE SUBSTANCIAS PSICOACTIVAS POR ESTUDIANTES DE LA ENSEÑANZA FUNDAMENTAL Y MEDIA: UNA REVISIÓN SISTEMÁTICA DE 1999 A 2009

El presente artículo objetiva verificar la superioridad de uso de sustancias psicoactivas (SPAs) entre estudiantes de la Enseñanza Fundamental y Media de Brasil. Se investigó las bases de datos Medline, Lilacs y Scielo en el período de 1999 a 2009, utilizando los descriptores “Trastorno relacionado al uso de Substancias”, “Bebidas alcohólicas”, “Tabaco”, “Drogas ilícitas”, “estudiantes”, “Brasil”. Además, se realizó busca de artículos en los informes de los artículos seleccionados. Fueron seleccionados 14 artículos para análisis. Los artículos mostraron alta superioridad de uso en la vida de las SPAs lícitas, alcohol y tabaco, y en menor proporción, marihuana y solventes. Los estudios analizados muestran una mayor superioridad del uso de SPAs lícitas. Por tanto, el uso de SPAs por los estudiantes es preocupante, siendo necesario abordajes específicos para esa población.

Descriptores: Estudiantes; Educación Primaria y Secundaria; Trastornos Relacionados con Sustancias.

Introduction

Adolescence is a period of change, a critical period for the beginning of psychoactive substances use. The identity construction is the most important task of this individual, which will define his/her transition to adulthood. And this identity construction is influenced by intrapersonal factors (innate characteristics of the individual), interpersonal factors (identification with others) and cultural factors (social values in which the individual is exposed)⁽¹⁾.

In this context, our culture praises the pleasure, leading the adolescent to an endless search for elimination of pain and suffering, thus, the psychoactive substances use can become an immediate solution⁽²⁾. However, the PAS use as a complex phenomenon is influenced by several factors, such as family and friends relationships which are factors strongly associated with the use⁽³⁾.

Thus, young people are constant targets of studies, especially in schools, which are easily accessible and also because the school constitutes a place of socialization and, consequently, influences the construction of the individual. With this point of view, Brazilian Center for Psychotropic Drug Information (CEBRID) performs periodic surveys with students of primary and secondary education, in order to plan the diagnosis of PAS consumption among students and to compare the use with family factors and personal aspects. The first survey was published in 1989, and soon after other surveys were published in 1990, 1994, 1997 and, finally, in 2005 was published the Fifth National Survey About Psychotropic Drug Use among Students of the Elementary and Secondary Education's Public School in 27 Brazilian capitals, 2004⁽⁴⁾.

These surveys apply the use classification proposed by the World Health Organization (WHO), in which *lifetime use* is the use of any psychotropic drug at least one time; *use in a year* is the use at least once in the last twelve months; *use in the month* is when the use occurs at least once in the past thirty days; *frequent use* is the use of six or more times within few days; and finally, the *heavy use* is the use twenty or more times in the last days. Thus, the 5th Survey showed that 65.2% and 24.9% of students had lifetime use of alcohol and tobacco, respectively. Among the illicit PAS, the inhalants were predominant (15.5%), followed by marijuana (5.9%)⁽⁴⁾. Similar data were found in several studies conducted in Brazil. In a study conducted in Pelotas, RS, with primary students (from 5th grade) and secondary students, it was shown that both alcohol and tobacco have a higher lifetime use and this position is maintained for all types of use⁽⁵⁾. In a study with the same population in Florianópolis, SC, other than alcohol and tobacco, marijuana and inhalants showed high prevalence of lifetime use (19.9% and 18.2%, respectively)⁽⁶⁾. In another study with primary and secondary students in Campinas, SP, it was shown the heavy use of alcohol, 11.9%; tobacco, 11.7%; marijuana, 4.4%; inhalants, 1.8% and cocaine, 1.1%⁽⁷⁾.

Therefore, cross-sectional studies are chosen to surveys on the use of PAS by students, both for its practicality, as for its great coverage. In such a manner, the systematic review provides an overview of the studies, but also suggests ways to be followed. Thus, this systematic review aims to verify the prevalence of PAS use among Primary and Secondary students in Brazil from 1999 to 2009.

Method

We reviewed articles published from 1999 to 2009 that verified the prevalence of PAS use among Primary and Secondary students in Brazil. We researched Medline, Lilacs and SciELO databases, using the following descriptors combinations: (*Disorder related to Substances use AND students AND Brazil*) OR (*Alcohol beverages AND students AND Brazil*) OR (*Tobacco AND students AND Brazil*) OR (*Illicit drugs AND students AND Brazil*).

Analysis and Selection

Criteria for Inclusion/Exclusion and Selected Studies

Fourteen articles were *included* in this study. To be included in the analysis the articles should be adequate to the following criteria: being published in Portuguese, English and Spanish, practiced in schools, in only one Brazilian state and they should be cross-sectional studies. There were *excluded* repeated articles, those without abstract, that did not fit in the "original articles" category, that did not have prevalence of PAS, only associated factors. Therefore, in Lilacs 15 articles were found, in Medline there were 21, and, finally, 26 articles in Scielo. Furthermore, we also sought in their references other articles that met the research criteria, where 1 article was found, as shown in Figure 1.

For the analysis, the 14 *selected studies* were grouped according to the local of research, publication year, journal selected for publication, the institutional origin and level of training of the first author, the study funding, the characteristics of the population studied, the instrument used and the results found.

To clarify the results, we decided to show them in tables in two categories: "tobacco and alcohol use" and "psychoactive substances". The first categorization represents the articles that address only the use of alcohol and tobacco, while the second represents the articles that refer to all types of PAS (including alcohol and tobacco).

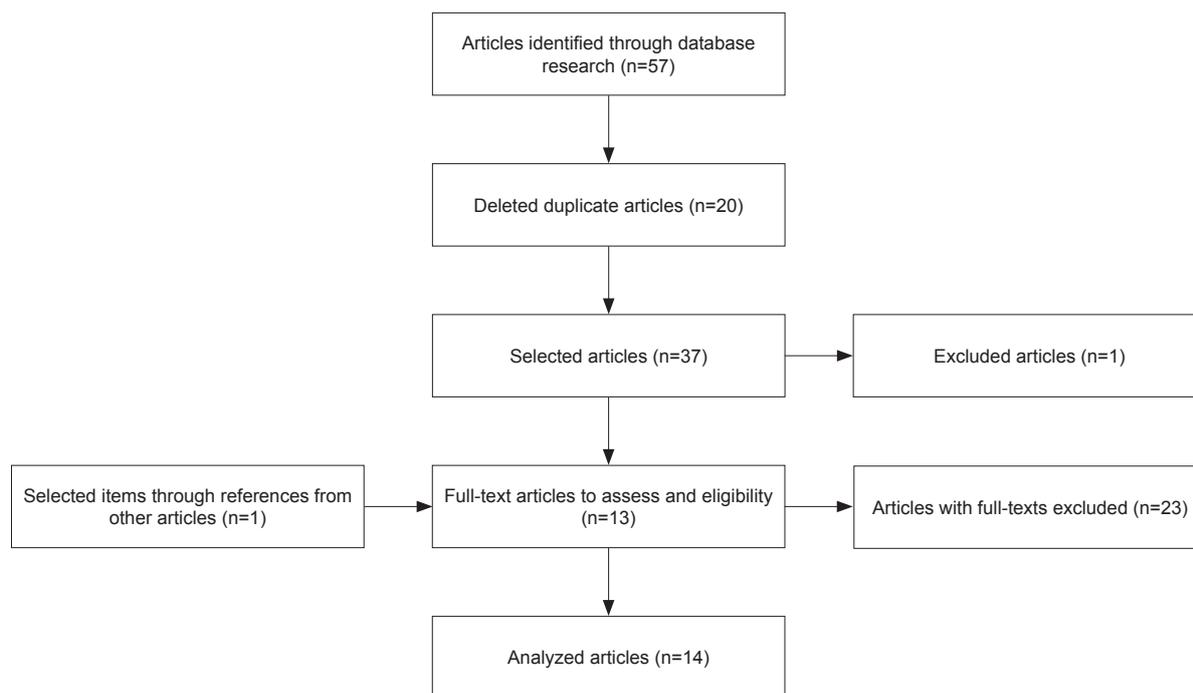


Figure 1 - Identification process and articles selection

Results

In total, 57 articles were found and 14 of them met the inclusion criteria. Table 1 shows the relationship of the

studies selected for analysis according to journal, year of publication, the research local and the study funding.

Table 1 - Articles with primary and secondary students published from 1999 to 2009

| n. | Journal | Year of publication | Local of research | Study funding |
|--------------------|-------------------------------------|---------------------|-------------------|--|
| 1 ⁽⁸⁾ | Revista Brasileira de Psiquiatria | 1999 | São Paulo | FAPESP |
| 2 ⁽⁶⁾ | Revista de Saúde Pública | 2002 | Santa Catarina | - |
| 3 ⁽⁵⁾ | Revista de Saúde Pública | 2004 | Rio Grande do Sul | - |
| 4 ⁽⁷⁾ | Revista de Saúde Pública | 2004 | São Paulo | FAPESP |
| 5 ⁽⁹⁾ | Addiction | 2004 | São Paulo | AFIP e FAPESP |
| 6 ⁽¹⁰⁾ | Ciência e Saúde Coletiva | 2004 | Santa Catarina | - |
| 7 ⁽¹¹⁾ | Cadernos de Saúde Pública | 2006 | Rio Grande do Sul | - |
| 8 ⁽¹²⁾ | Cadernos de Saúde Pública | 2006 | São Paulo | - |
| 9 ⁽¹³⁾ | Revista de Saúde Pública | 2007 | São Paulo | CAPES/FAPESP/Prefeitura de Paulínia-SP |
| 10 ⁽¹⁴⁾ | Ciência e Saúde Coletiva | 2007 | Bahia | CNPq |
| 11 ⁽¹⁵⁾ | Revista Brasileira Psiquiatria | 2007 | São Paulo | FAPESP |
| 12 ⁽¹⁶⁾ | Revista Brasileira de Epidemiologia | 2007 | Mato Grosso | FAPEMAT |
| 13 ⁽¹⁷⁾ | Cadernos de Saúde Pública | 2008 | Rio Grande do Sul | - |
| 14 ⁽¹⁸⁾ | Jornal Brasileiro de Pneumologia | 2009 | Distrito Federal | - |

The *Revista de Saúde Pública* and *Cadernos de Saúde Pública* journals were those in which there were many published articles (4 and 3, respectively), followed by *Ciência e Saúde Coletiva* (2), *Revista Brasileira de Psiquiatria* (2), *Revista Brasileira de Epidemiologia* (1), *Jornal Brasileiro de Pneumologia* (1) and *Addiction* (1).

The Southeast region had the highest number of research related to the subject (6), followed by the South (5) Midwest (2) Northeast (1). It is noteworthy that all

articles relating to the Southeast were performed in the state of São Paulo.

From the selected articles, only 7 reported financial support (Coordination of Improvement of Higher Education Personnel – CAPES, São Paulo Research Foundation – FAPESP, Psychopharmacology Incentive Fund Association – AFIP, Government of Paulínia – São Paulo, The National Council for Scientific and Technological – CNPq and the Mato Grosso Research Foundation – FAPEMAT).

Table 2 presents the articles on the use of alcohol and tobacco, according to studied population characteristics, used tools and results found. In a research⁽¹⁰⁾ with 889 primary and secondary students from the city of Palhoça, SP, six were public schools and four were private schools. A questionnaire adapted to the Brazilian reality was used⁽⁴⁾ and questions regarding health services use during emergency situations involving PAS use or look for treatments in order to stop the use. This study only showed the lifetime use of alcohol and tobacco isolated, but for other PAS it was made association with other variables. Thus, 91.9% of the students had lifetime use of alcohol and 42.5% of tobacco; moreover, among the students there was no difference between genders in alcohol consumption, however marijuana, cocaine and inhalants showed higher use among men and tranquilizer among women. A peculiarity of this study was to verify the demand for health services. According to the authors 1% of the students sought some type of service, and 0.7% discontinued the treatment. On the other hand, 0.9% sought an emergency service and 0.2% reported hospitalization.

In another study in Paulínea-SP⁽¹⁵⁾ 1990 students from 11 to 21 years old from 5th grade of primary education and 3rd grade of secondary education from public and private schools were investigated. We used a questionnaire based on *Prevention Research Center - Pacific Institute for Research and Evaluation (PRC/PIRE)*, *Global School-based Student Health Survey (GSHS)*, the questionnaire proposed by the Brazilian Psychotropic Drug Information Center (CEBRID)⁽⁴⁾, but also included questions concerning the local population's behavior. The authors found lifetime use of alcohol in 62.2% of students, use in a year in 54.5%, as well as 24% of the students have

reported having already been drunk and 19.5% reported being drunk in the past year. The survey also showed that the most consumed beverage was beer (40%), wine (36.2%) and ice drinks (10.2%).

In a search⁽¹³⁾ with 1990 students from 11 to 21 years old from 5th grade of primary education to the 3rd grade of secondary education of public and private schools in Paulínia, SP, it was observed early alcohol use by students, and its association with current use episodes. They used PRC/PIRE-GSHS, the questionnaire proposed by CEBRID⁽⁴⁾, and also included questions concerning the behavior of the local population. Thus, 62.2% of the students had lifetime use of alcohol, the mean age was 12.35 years of experimentation. This study showed that those who experienced alcohol earlier were those who drank at least once a week during the last year, they had the highest rates of drunkenness and there was also the association between use of tobacco and other PAS with premature experimentation.

In a specifically study⁽¹⁸⁾ about the use of tobacco with 2661 students from 9 to 19 years old from the 5th grade of primary education to the 3rd grade of secondary education of public and private schools of the Brazilian Federal District. According to the authors, it was used validated tools proposed by the World Health Organization (WHO) about tobacco use. Smoking was detected in 10.5% of the students, with a higher prevalence in males (11%) than in females (9%). There was also found an association between alcohol use and smoking, 76.5% of smokers consumed alcohol, and the chance of smoking students to consume alcohol was 12 times higher than those who did not smoke (*OR*: 12.4). Another important point was that smoking students also were more likely to use illicit psychoactive drugs (*OR*: 16.96).

Table 2 - Articles about alcohol and tobacco use among students of primary and secondary education published from 1999 to 2009, according to the studied population characteristics, used tool and results found

| n. | Studied population characteristics | Used tool | Results found |
|--------------------|---|--|--|
| 6 ⁽¹⁰⁾ | 889 students from 14 to 50 years old of secondary education from public and private schools | Questionnaire proposed by WHO adapted to the local reality + assistance service use, health emergencies due to use of PAS and look for treatments regarding psychoactive drugs use | Lifetime use: alcohol (91.9%), tobacco (42.5%) |
| 9 ⁽¹³⁾ | 1990 students from 11 to 21 years old from 5th grade of primary education to 3rd grade of secondary education of public and private schools | PRC/PIRE, GSHS, CEBRID and questions on behavior | Alcohol: Lifetime use: 62.2%, Use in a year: 54.5% - Age of first use: 12.35) |
| 11 ⁽¹⁵⁾ | 1990 students from 11 to 21 years old from 5th grade of primary education to 3rd grade of secondary education of public and private schools | PRC/PIRE, GSHS and CEBRID and questions on behavior | Lifetime use of alcohol: 62.2% - Average age of experimentation: 12.35 years - Students who have been drunk, used tobacco and other PAS |
| 14 ⁽¹⁸⁾ | 2.661 students from 9 to 19 years old from 5th grade of primary education to 3rd grade of secondary education of public and private schools | WHO questionnaire for tobacco use | smoking prevalence: 10.5% (Male: 9.9% and female: 11.5% / Public school: 10.3% and private: 11.5%) - 76% of students who smoked and used alcohol |

On the use of all the PAS, it can be seen in Table 3 the articles published from 1999 to 2004. One of them⁽⁸⁾ involved 689 students from 13 to 21 years old of a college of secondary education in the city of São Paulo, SP. It was used a questionnaire based on the categorization: *lifetime use, use in the year and use in the last 30 days,*

and questions about sexuality. According to the authors, 85.3% and 50% of the students used alcohol and tobacco, respectively, and that 53.1% of them have used any PAS at least once; marijuana (46%) organic inhalants (28.2%), hallucinogens (17.4%) and cocaine (14.2%) were the most commonly used substances. Given the purpose of the

article, among the illicit PAS users, there are more students who had complete sexual intercourse, and also students who had started earlier sexual intercourse (15.2 years) than nonusers (15.7 years).

In Florianópolis - Santa Catarina (SC)⁽⁶⁾ 478 students were interviewed, from primary and secondary education of public school. As in the already mentioned studies, it was used a questionnaire adapted by CEBRID⁽⁴⁾. The authors found lifetime use of alcohol 86.6%, tobacco 41.8%, marijuana 19.9%, inhalants 18.3%, anxiolytics 18.3%, cocaine 2.9% and hallucinogens 2.1%. A study⁽⁵⁾ with 2619 students from 10 to 19 years old of primary and secondary education of public and private schools of Pelotas - Rio Grande do Sul (RS). This study aimed to observe the factors associated with PAS use among students. Thus, there was only use in a year of any PAS, except alcohol and tobacco, 17.1%.

In a study⁽⁷⁾ with 2287 students from 11 to 26 years old of primary and secondary education of four public and 3 private schools in Campinas - SP, it was used in addition to the questionnaire adapted by CEBRID⁽⁴⁾, the *General Health Questionnaire 12* (GHQ12). The substances with higher prevalence of heavy use were: alcohol (11.9%), tobacco (11.7%), marijuana (4.4%), inhalants (1.8%), cocaine (1.4%), psychotropic medications (1.1%) and ecstasy (0.7%). In a research⁽⁹⁾ with 6417 students from 10 to 20 years of 5th grade from primary education to 3rd grade of secondary education in the public school in Barueri - SP. They used the *Drug Use Screening Inventory* (DUSI), which measures the frequency of 13 PAS in the last month. The authors found that alcohol (9%), tobacco (14.5%), marijuana (3%), inhalants (0.5%), cocaine (1%), ecstasy (0, 104%) were more frequently used (10 times or more per month).

Table 3 - Articles about the use of psychoactive substances among students of primary and secondary education published from 1999 to 2004, according to the studied population characteristics, used tool and results found

| n. | Studied population characteristics | Used tool | Results found |
|------------------|---|--|---|
| 1 ⁽⁸⁾ | 689 secondary students from 13 to 21 years old | Questionnaire on the PAS use + questions about sexuality | Users of alcohol - 85.3% and tobacco - 50%; Lifetime use - marijuana (46%), organic inhalants (28.2%), hallucinogens (17.4%) and cocaine (14.2%) |
| 2 ⁽⁶⁾ | 478 students of primary and secondary education from public school | Proposed questionnaire by WHO and adapted to local realities | Lifetime use - alcohol: 86.8%, Tobacco: 41.8%, Marijuana: 19.9%, Inhalants: 18.3%, Anxiolytics: 5.6%, Amphetamines: 8.4%, Cocaine: 2.9%, Hallucinogens: 2.1%. |
| 3 ⁽⁵⁾ | 2619 students from 10 to 19 years old from primary and secondary education of public and private schools | Proposed questionnaire by WHO adapted to local realities | PAS use in a year but alcohol and tobacco: 17.1%. |
| 4 ⁽⁷⁾ | 2.287 students from 11 to 26 years old of primary and secondary education of public and private schools | Proposed questionnaire by WHO adapted to local realities and GHQ12 | Heavy use - Alcohol: 11.9%, Tobacco: 11.7%, Marijuana: 4.4%, Inhalants: 1.8%, Cocaine: 1.4%, Psychotropic medication: 1.1% and ecstasy: 0.7% |
| 5 ⁽⁹⁾ | 6417 students from 10 to 20 years old from 5th grade of primary education to 3rd grade of secondary education of public schools | DUSI | Frequent use (10 or more times per month): alcohol (9%), tobacco (14.5%), marijuana (3%), inhalants (0.5%), cocaine (1%), ecstasy (0.104%) |

In Table 4, we can see the articles published from 2005 to 2009 about PAS use among students of primary and secondary. The use of psychoactive drugs without prescription was researched⁽¹¹⁾ in 4955 students from 5th grade of primary education to students of 3rd year of secondary education of public and private schools Passo Fundo - RS. It was found that 7.7% of the students had lifetime use of anxiolytics, 6.4% for amphetamines, 1.1% for barbiturates and 1% for anticholinergics, the amphetamines and barbiturates had a higher prevalence of heavy use (1.1% and 0.8% respectively). It was found that alcohol, tobacco, inhalants and marijuana were the PAS with higher lifetime use, 77.7%; 28.7%; 18.1% and 12.1%, respectively, in a study with 1035 secondary students of public school of São José do Rio Preto - SP⁽¹²⁾.

In a study⁽¹⁴⁾ with 1372 students of the secondary education from urban area of Feira de Santana - Bahia -

between 14 and 19 years, it was observed that these students reported lifetime use of alcohol 57% of other PAS, except alcohol 5.2%, and there was also the use of cigarettes reported by 23.3%. Among 2291 students of primary and secondary education of public school of Cuiabá - Mato Grosso⁽¹⁶⁾ there was recent use of alcohol 37.4%, tobacco 9.5% and other PAS 8.4%. In research conducted⁽¹⁹⁾ with 1170 students from 12 to 18 years of 7th grade of primary education of municipal schools, 34 students from the rural area of Gravataí - RS; they used the questionnaire adapted to Brazilian reality⁽⁴⁾, anthropometric data and *Body Shape Questionnaire* (BSQ). The interviewed students reported lifetime use of alcohol 60.7%, tobacco 16.9%, other PAS 2.4% and use of alcohol in the month 33%, tobacco 4.4% and other PAS 0.6%.

Table 4 - Articles about psychoactive substances use among students of Primary and Secondary Education published from 2005 to 2009, according to studied population characteristics, used tool and results found

| Article | Studied population characteristics | Used tool | Results found |
|--------------------|--|--|--|
| 7 ⁽¹¹⁾ | 4955 students from 5th grade of primary education to 3rd grade of secondary education in public and private schools | Proposed questionnaire by WHO adapted to local realities | Lifetime use: anxiolytics (7.7%), amphetamines (6.4%), barbiturates (1.1%) and anticholinergics (1.0%) |
| 8 ⁽¹²⁾ | 1035 secondary education students from public school | Anonymous self-administered questionnaire | Lifetime use: alcohol (77.7%), tobacco (28.7%), inhalants (18.1%), marijuana (12.1%), amphetamines (3.7%), cocaine (3.3%), hallucinogens (3.1%) and crack (1.4%) |
| 10 ⁽¹⁴⁾ | 1372 secondary education students from the urban area from 14 to 19 years old | Proposed questionnaire by WHO and adapted to local realities | Lifetime use of alcohol: 57.1% - Lifetime use PAS, but alcohol: 5.2% - Age group of alcohol experimentation: 10 to 14 years old (47.0%) - most consumed beverage: beer (72.5%) - Place of use: regular parties (65.0%) |
| 12 ⁽¹⁶⁾ | 2291 students of primary and secondary education from public school | Proposed questionnaire by WHO adapted to local realities + questions about work | Recent alcohol use: 37.4%, Tobacco: 9.5% and Other PAS: 8.4%. |
| 13 ⁽¹⁷⁾ | 1170 students from 12 to 18 years old of 7th grade of primary education in municipal schools, 34 students from rural areas | Proposed questionnaire by WHO adapted to local realities + anthropometric data + BSQ | Lifetime use: alcohol (60.7%), tobacco (16.9%), other PAS (2.4%) - Use in a month: alcohol (33%), tobacco (4.4%), other PAS (0.6%) |

Discussion

The PAS use is one of the health service greatest concerns, especially for its increasing and earlier use. This fact shows the importance of researching the use among students, objective of this study, since the school is a space of socialization that influences their social development.

Thus, alcohol is the most consumed PAS by the world population, about 2 billion people worldwide consume alcoholic beverages and 76.3% have a diagnosis of alcohol use disorder⁽¹⁹⁾. Thus, when analyzing the articles we observed that alcohol was the most commonly used substance by the students, varying its lifetime use from 91.9%⁽¹⁰⁾ to 57%⁽¹⁴⁾. Despite the variability, the data point to an alarming rate of alcohol use, it is licit and widely accepted by society, in all age groups there are higher usage rates, varying both from lifetime to heavy use.

In addition, the age of experimentation is too premature, which may be associated with episodes of drunkenness and experimenting other substances⁽¹⁵⁾. On the other hand, studies show family influence as well as friends^(14 - 15). Thus, although they do not often have a diagnosis of alcohol abuse or dependence, the teenager, in which case the student, may be impaired by his/her consumption, since he/she is used to undergo several situations under the influence of alcohol, as example, to take affective and sexual initiative but when he/she is not under the effect of the substance, he/she feels unable to carry on with these situations⁽²⁰⁾.

Both alcohol and tobacco are also major public health problems. About one billion people smoke worldwide⁽²¹⁾ and in Brazil, tobacco dependence is estimated in 10.1%⁽²²⁾. Among the analyzed studies, tobacco was the second PAS with the higher use^(6-10, 12, 16 - 17). In a study with publications related to smoking among adolescents in Latin America, the variation in the prevalence of smoking was great, which was attributed to the different age groups and the definition adopted about smoking⁽²³⁾. However, in this study, there were no major changes, since most research

have addressed similar age group and had the WHO definitions on the use.

The illicit PAS use is more difficult to measure because of the derogatory connotation associated with its use. However, it is estimated that, in 2008, from 155 million to 250 million people worldwide have used at least once in the year any illicit PAS, and from 16 to 38 million people were considered "problem users" in the same year⁽²⁴⁾. Marijuana and inhalants were the most prevalent illicit PAS in the analyzed studies. Marijuana use is associated with many variables, including socioeconomic status and culture of each location⁽²⁵⁾, which is often considered as a PAS without major consequences to the individual⁽²⁶⁾. The high prevalence of inhalants use is usually associated with young people with poor socioeconomic situation, in which there is easier this access to this substance⁽¹⁴⁾.

Health research has skyrocketed in recent years, an event attributed to the expansion and consolidation of academic graduation. This fact reflects a scientific publications increasing, and thus, with the SciELO database as reference, the two journals with more access to full articles are *Cadernos de Saúde Pública* and *Revista de Saúde Pública*⁽²⁷⁾. This may explain the increased number of publications found in the present study in the cited journals, and besides they have the largest number of full articles access, they also have excellent rating in the CAPES Qualis, stimulating researchers to publish their papers.

Despite the increased field of health research, there are still obstacles to overcome. In 2008, 48.8% and 23.2% of the Brazilian research groups were located in the Southeast and Northeast, respectively, while the Northeast was responsible for 16.9%, Midwest 6.4% and North 4.7% of the productions. As for the researchers, in 2008, the South-East had about 70% of all researchers registered at CNPq⁽²⁸⁾. Our results corroborate these findings, because we observed a predominance of research in the Southeast and South, which reveals the need to encourage research in other Brazilian regions, considering that Brazil is a country of continental dimensions, then, it presents many

regional differences, which must be detected and shown to society through research with high scientific rigor.

Given the high use demonstrated by the studies analyzed, it is important to highlight their limitations. All analyzed articles were cross-section, which facilitates research in this matter, since it presents low cost and speed of execution, however, their main deficiency is the impossibility to determine causality, requiring, therefore, longitudinal epidemiological research. Another point to note is that, although most people use the questionnaire proposed and adapted by CEBRID to Brazilian reality⁽⁴⁾ which facilitates the studies comparison, the fact that it is an anonymous self-administered questionnaire, it does not exempt the student's ability to hide their real use, a fact not only observable in this type of questionnaire, but in any other type involving PAS use.

Conclusion

The present study has showed that the PAS use is concerning among secondary and primary education students. As in general population, alcohol and tobacco use have a higher prevalence, however, it can be observed that some illegal psychoactive substances, such as marijuana and inhalants, are also often used by the students.

The National Surveys made by CEBRID were of great importance in this area, since they have encouraged and initiated methodologies use that facilitate the comparison among studies. On the other hand, it is emphasized the importance of incentives for conducting research in the Brazilian North and Northeast in order to make visible the realities and the to make possible specific interventions proposals for each population.

Finally, these studies demonstrate the need of a better approach to this population, since the psychoactive substances use generates consequences both within the health and the social and economic development. Thus, the students become primary targets of interventions because there is use among them. Therefore, specific approaches are required regarding primary and secondary education students, however, it is important to highlight that such approaches should also include means for information such as campaigns, but also creation of means to allow the student to change his/her own reality.

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