

# Alcohol use among adolescents: concepts, epidemiological characteristics and etiopatogenic factors

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## Abstract

*Alcohol is the most consumed substance among young people, and the onset of its use is starting at an earlier age, raising the risks of future dependence. The use of alcohol in adolescence is associated with a series of risk behaviors, besides raising the risk of involvement in accidents, sexual violence, and participating in gangs. Alcohol use by adolescents is strongly associated with violent death, poor academic performance, learning difficulties and damage in the development and structuring of cognitive-behavioral and emotional abilities. Alcohol consumption causes neurochemical modifications, with damage in memory, learning and impulse control. Professionals who deal with adolescents must be prepared for a thorough evaluation regarding the possible abusive use or dependence of alcohol in this age group. However, it is important to emphasize that the criteria utilized by some diagnostic tools for abuse and dependence were developed for adults, and must be applied with caution in adolescents. Thus, it is fundamental that these professionals be aware of the characteristics and peculiarities of adolescence and chemical dependence in this age-group.*

**Keywords:** *Alcoholic beverages. Teen health. Substance-related disorders. Substance abuse.*

## Introduction

Alcohol use among adolescents is obviously a controversial issue in the Brazilian social and academic milieu. At the same time in which Brazilian law defines as forbidden the sale of alcoholic beverages for minors (Act nº 9.294, July 15, 1996), the consumption of alcohol by youngsters is a common practice ñ be it in the family environment, in parties or even in public places. Society as a whole adopts paradoxical attitudes regarding the issue: on one hand it condemns alcohol abuse by youngsters, but it is typically permissive regarding the stimulation of the consumption through advertisement.

Pinsky and Silva,<sup>1</sup> studying ads of alcoholic beverages, have demonstrated that their frequency was in average higher than that of other products, such as non-alcoholic beverages, medications or cigarettes. Moreover, of the five themes most frequently found in ads of alcohol beverages, three of them (themes such as relaxing, fellowship and humor) were directly related to the youngsters' expectations. Besides, at that moment there was no consistent message regarding the mo-

derate consumption of the beverages advertised.

There is currently a movement towards the responsible consumption of alcohol, as for instance is indicated in the website of the Companhia Brasileira de Bebidas (Brazilian Beverages Company) - AMBEV, and by media campaign associating alcohol consumption with moderation or prevention of accidents or even by initiatives of the Conselho Nacional de Auto-Regulamentação Publicitária National Council of Self-regulation on Advertisement - CONAR regulating ads for youngsters.

In a resolution divulged in October 2003, CONAR defined a series of restrictive rules and parameters for the advertisement of alcoholic beverages aiming at the exclusion of images for minors, vetoing the use of people under 25 years of age on ads, among others. Even though, of the messages which the CONAR decides that will be an obligatory part of warning clauses on clauses, only one is explicitly meant to inform that the consumption is not destined for children or adolescents ("THIS PRODUCT IS DESTINED FOR ADULTS"). The remaining ones mention restricting abuse, not drinking and driving, and drinking with

moderation. However, it is known the disproportion between this effort and the huge impact of advertisement on the consumption of alcoholic beverages among youngsters. And, in a way, this disproportion is visible when comparing the beautiful images produced in the media, which occupy most part of an ad, versus the sober and compulsory governmental label, informing about the harm caused by the abusive use of that substance. Regarding consumption control, recent studies performed in the US confirm the lay impression that the majority of commercial stores sell alcoholic beverages for individuals under 21 years, without verifying their age.<sup>2</sup> Other worrying finding mentioned by the authors is that even if there is a stricter control over the consumption of alcohol in environments with great concentration of youngsters (e.g., schools and colleges), more than half of the American states allow the home delivery of alcoholic beverages sold by phone, what does not differ from the Brazilian reality, favoring the lower control over the consumption of alcohol by minors.

In a recent article, Saffer,<sup>3</sup> when discussing the cultural myths and symbols used in the advertisement of alcohol, concludes that the media effectively influences alcohol consumption. For a developing mind, typically suggestionable and plastic as an adolescent's, the paradoxical position of society and the lack of law enforcement are an ideal culture broth for the experimentation both of drugs and alcohol, contributing for the early exposure of youngsters to abusive consumption.

This article aims to describe the epidemiological, etiopathogenic and diagnostic aspects associated with the consumption of alcoholic beverages by adolescents, in order to guide non-specialized professionals to deal with these difficult issues.

#### **Problems related to diagnosis and classification**

One of the first obstacles related to the problematic use of alcohol among adolescents regards the definition of what is normal use. There are a lot of comments in the literature about the discordances in the classificatory systems and their need of enhancement.

According to the American Academy of Pediatrics<sup>4</sup>, there would be six stages in the involvement of adolescents with Psychoactive Substances (PAS): abstinence, experimental/recreational use (generally limited to alcohol), initial abuse, abuse, dependence and recovery. This classification is interesting as it contemplates adolescent characteristics: the experimentation of PAS, within certain patterns, may be deemed a normal conduct in this developing period, in which the youngster passes through other experimentations, such as sexuality. It is known, for example, that most adolescents who try an abusive substance will not become regular users.<sup>5</sup> Furthermore, this classification allows the diagnosis of initial abuse when mild damage start to emerge, such as worse school performance due to the posterior effects of alcohol abuse.

However, most of the instruments to assess the use of PAS derive from the DSM-IV.<sup>6</sup> According to this system the main diagnoses would be abuse and dependence. For the diagnosis of abuse, adolescents would present, for a one-year period, one of four symptoms mainly anchored in the recurrent substance use despite some social, personal or legal harm damage. For the diagnosis of dependence, they should present, along one year, three of seven symptoms which are not overlapped with the symptoms of abuse. The DSM-IV has a series of advantages, such as a list of clear operational criteria. Nevertheless, caution should be used for several reasons. There are no different criteria for children and adolescents and for adults, as already occurs, for example, in the distinction between conduct and anti-social personality disorders. There is also a series of other remarks, both regarding abuse and dependence.<sup>7</sup> At least two of the seven symptoms of dependence have a predominantly biological basis (tolerance and abstinence), but the physical response to alcohol differs according to the stage of deve-

lopment, what amounts to say that, for a slowly-developing disease such as alcoholism, it would be improbable that these elements particularly abstinence symptoms would be already evident with few years of use in adolescence.

Besides, there are clinical data suggesting that the evolution of alcohol dependence among adolescents does not follow the transition from abuse to dependence according to the DSM-IV, but rather a sequence composed by symptoms of both diagnoses since early stages, perhaps resembling more to what is proposed by the American Academy of Pediatrics. Firstly, there would be three symptoms of dependence (tolerance, drinking for more time or a greater amount than what is desired and much time spent around alcohol) and two for abuse (personal and social harm); in a second stage, there would be three symptoms of dependence (frustrated attempts of diminishing or interrupting the consumption, scarcity of repertoire and continued use despite physical or emotional problems) and two for abuse (use in situations with physical risk and legal problems) and, lastly a third stage characterized by the physical symptoms of abstinence.<sup>2</sup> Based on these data we deem fundamental that, in order to assess the use of alcohol among adolescents especially aiming to diagnose any pathology the professional should have knowledge about adolescence and the particularities of chemical dependence at this phase of life. There is no support for a simple transposition of the adult model for this age range. Situating the issue: prevalence of experimentation, regular consumption, abuse and dependence of alcohol among adolescents

The epidemiological studies suggest that 19% of American adolescents present alcohol abuse.<sup>2</sup> Brazilian data are scarcer and indicate that there are regional characteristics regarding the use of alcohol and other PAS. Considering use in lifetime, according to the I Household Survey on the Use of Psychotropic Drugs in Brazil<sup>10</sup> there is 48.3% prevalence among youngsters aged 12 to 17 years in 107 large Brazilian cities. In this study, still in the analysis of this set of 107 cities and for this same age range, the prevalence of alcohol dependence was 5.2%. Analyzing data of the Brazilian regions, we found a higher prevalence of lifetime use of alcohol in the Southern Region (54.5%) and a higher prevalence of alcohol dependence on regions North and Northeast (9.2% and 9.3%, respectively). However, according to UNESCO (2002), the city of Porto Alegre, state of Rio Grande do Sul, leads the ranking of regular use of licit and illicit PAS, with 14.4% being alcohol users. Despite the relative scarcity of national data, they are in accordance with the international literature in the sense that chemical dependence is the most prevalent mental health problem among adolescents, with alcohol standing first. These data are more alarming as we consider the strong negative impact of regular alcohol use in adolescence, as it will be detailed below.

#### **Risk factors for alcohol use among adolescents**

Alcohol is one of the psychoactive substances which are earliest consumed by youngsters. Different national and international studies systematically confirm the generic impression that, if alcohol is easily obtainable and intensely advertised, this is reflected in its early and disseminated consumption.

In one survey performed with a sample of adolescents representative of the population of Porto Alegre, Pechansky and Barros<sup>11</sup> have collected data from 950 youngsters aged 10 to 18 years. The findings indicated that the experimentation of the most common alcoholic beverages in the age range studied was frequent (71%), reaching almost 100% at the age of 18 years. One of the important findings of the study was that there were changes in the form, place of consumption and volume of ethanol ingested according to the interviewees' age, as well as regarding gender: boys started earlier drinking out of home and with peers, whereas girls were more conservative, keeping the habit of familial and domestic consumption for a longer time.

Generically, there is consistent information about elements which influence the beginning or maintain the use of substances by adolescents. Some of them are below:

The initial experimentation occurs as adolescents have friends who use drugs, generating a group pressure towards its use. At the same time, Brook and Brook<sup>12</sup> highlight that moral values, human warmth and school performance of peers may be also an important factor to prevent the use of drugs. The authors also describe the loop effect, i.e., the potentiality that feedbacks may occur between the use of drugs by peers and the personal use of drugs: adolescents who are using drugs have higher chance of being associated with peers who use drugs and this association, in turn, increases the chance that they maintain or increase their involvement with drugs.

Elements related to the life structure of adolescents have a fundamental role in the genesis of drug dependence. De Micheli and Formigoni,<sup>13</sup> studying one sample with 213 Brazilian adolescents classified in three groups of increasing intensity of abuse/dependence, have identified that pertaining to the lower-middle class increased 3.5 times the probability of these individuals becoming drug-dependent subjects, and that school delay of at least one year increased 4.4 times their chance of developing a severe dependence. Regarding the family situation, the presence of only the mother in the household was associated with an increase of 22 times in the chance of these adolescents being drug-dependent, when compared to adolescents who lived with both parents. Corroborating these findings, all the corollary of family trauma, separation, quarrels and aggressions was frankly associated with the group of adolescents with the highest intensity of dependence. The role of parents and family environment is remarkable in the development of adolescents and, consequently, in their relationship with alcohol and other drugs. Lack of parental support, use of drugs by the parents, permissive parental attitudes with regard to drug use, parental incapability of controlling the children and indiscipline and use of drugs by siblings are all factors predisposing to higher initiation or continuation of drug use by adolescents.<sup>12</sup>

Other point of study in the etiopathogenesis of substance abuse is the impact of a psychiatric comorbid predisposition in the development of drug use by adolescents. Among drug-dependent subjects, it is estimated that 30 to 80% have any other comorbidity, being the most frequent conduct disorder, depression, attention deficit with hyperactivity, and anxiety.<sup>14</sup> According to Brook, Whiteman, Gordon and Cohen,<sup>15</sup> the most potent predictors of frequent use of drugs are the variables related to a non-conventional life style, among them the search for sensations, defiance, tolerance to deviant behaviors and low schooling.

### Impact of alcohol use among adolescents

The problematic use of alcohol by adolescents is associated with much harm in the development of their own adolescence and with further results, which will be detailed ahead. The harm stemming from alcohol use by adolescents is different from those evidenced in adults, be they for existential specificities of this stage of life or for the neurochemical issues of this moment of brain development. Some risks are more frequent at this stage of development as they express characteristics proper of this period, such as defiance to rules and omnipotence. For example, adolescents believe being magically protected from accidents, and also feel more autonomous in transgression, being involved, therefore, in risk situations, many times with more severe consequences. Below, there are examples of the harm associated with intoxication and regularly drinking in this phase:

1) The use of alcohol by minors is more associated with the death than with the whole set of illicit psychoactive substances. It is known, for example, that traffic accidents are the main cause of death among youngsters aged 16 to 20 years.<sup>16</sup> It is estimated that 18% of American adolescents aged 16 to 20 years drive inebriated, an extremely impor-

tant information knowing that risk behaviors, such as those who result in traffic accidents, account for 29% of deaths of adolescents. This behavior is more characteristic of adolescents than adults, as the prevalence of fatal traffic accidents associated with alcohol, among youngsters aged 16 to 20 years, is more than twice the prevalence found on people above 21 years of age.<sup>17</sup> In a recent study performed at the border of the US with Mexico, the consumption of alcoholic beverages among adolescents was associated with driving inebriated (OR=5.39) and with hitchhiking with an inebriated driver (OR=3.12).<sup>18</sup> 2) Being inebriated increases the chance of sexual violence, both for the aggressor and the victim.<sup>19</sup> Being intoxicated, adolescents are also involved in unprotected sexual activities, with higher exposure to sexually transmissible diseases, such as HIV, and higher exposure to pregnancy.<sup>20</sup> The link between unprotected sex and alcohol use seems to be affected by the amount of alcohol consumed, interfering in the elaboration of a critical judgment (Sen, 2002). National data point to an association of alcohol and cannabis use with risk sexual behaviors, such as early beginning of sexual activity, no use of condoms, paying for sex and prostitution.<sup>21</sup>

Alcohol consumption in adolescence is also associated with a series of academic impairment,<sup>18</sup> which may stem from memory deficits: adolescents with alcohol dependence have more difficulty to remember words and simple geometric drawings after a 10-minute interval, compared to adolescents without alcohol dependence.<sup>22</sup> Knowing that the memory is a fundamental function of the learning process, being altered with alcohol consumption, it is natural that this consumption also impairs the learning process. The decrease in school performance, in turn, may decrease the youngster's self-esteem, what represents a known risk factor for experimentation, consumption and abuse of psychoactive substances. Therefore, the consequence of abusive use of alcohol by adolescents could lead them to increase the consumption in a feedback chain, rather than motivating them to decrease or interrupt the consumption.

The perception that adolescents have about problems caused by alcohol use does not follow, necessarily, the hierarchy of impairment considered as the severest. It is known, for example, that 50% of youngsters who drink regularly point to the fact of behaving improperly during or after the consumption as its main negative consequence. Moreover, 33% of these adolescents complain about impaired thought. Only 20% of them describe the act of driving inebriated as one of the consequent problems, contrasting with the fact that traffic accidents are the main cause of deaths in this age range.<sup>23</sup> Besides, other "social moderators" present among adults (family problems, loss of job, financial damage), and which many times are seen as signals to decrease the consumption of alcohol are absent among adolescents. This would be a possible explanation for youngsters evolving more rapidly from abuse to dependence, when compared to adults.

The harm associated with alcohol use extends along life. Its effects are reflected on the brain neurochemistry, worse social adjustment and delayed development of their capabilities, as adolescents are undergoing structuration in biological, social, personal and emotional terms. Below there are some effects of alcohol use in adolescence along life: The use of alcohol in adolescence exposes the subject to a higher risk of chemical dependence in adulthood, being one of the main predictors of alcohol use in this stage of life.<sup>24</sup> The maintenance of consumption in adulthood may occur for several factors. The use of alcohol in adolescence may be only a marker of alcohol use on adulthood or may interfere in the still-developing brain neurochemistry in adolescence. The use of alcohol among adolescents is associated with a series of neuropsychological damages, such as on memory.<sup>22</sup> Other brain impairment includes modifications in the dopaminergic system, such as in pre-frontal lobe and limbic system pathways. Alterations in these systems provoke significant effects in behavioral and emotional terms

among adolescents.<sup>23</sup> It is important to highlight that during adolescence the pre-frontal lobe is still developing. As it may be affected by the use of alcohol, a series of capabilities which adolescents still have to develop and that are mediated by this circuit, such as the learning of rules and focalized tasks, will be impaired. The hippocampus, associated with memory and learning, is affected by the use of alcohol in adolescence, having alcohol users a smaller volume than controls, and having its functional characteristics affected by the age of beginning of alcohol use and by the duration of the disorder. These are important data, as they show the existence of effects on the brain consequent to alcohol use among adolescents; the effects occur on still-developing brain areas which are associated with cognitive-behavioral capabilities that should begin or stabilize in adolescence.

Adolescents are still building their identity. Even without a diagnosis of alcohol abuse or dependence, they may be impaired by its consumption, as they become used to undergo several situations only under the effect of alcohol. For example, several adolescents use to associate leisure with alcohol consumption, or only may take initiatives in affective and sexual experiences when under the effect of alcohol. Therefore, they learn to develop capabilities with the use of alcohol and when it is not available they feel unable to perform these activities, evidencing another form of dependence.

### Conclusion

As we tried to demonstrate throughout this article, alcohol consumption by adolescents has still controversial elements for its understanding. Despite having clear organic, behavioral and structural consequences on the youngster's personality, the use of alcohol in this age range is still paradoxically opposed and valued, depending on the angle of observation: for the media and peers, the consumption of alcohol is favored. The law and public health programs oppose it. In this confrontation between frequently unequal forces, there is an individual with a developing personality, as if sailing against the stream. However, regardless the forces in question, one point is unquestionable regarding the consumption of alcohol among adolescents: the earlier begins the use, the higher the risk of arising severe consequences, and the professionals who deal with this subject should be aware to this issue. For that, they must know the particularities of adolescence and chemical dependence on this age range.

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