

# Age at Onset of Alcohol Consumption and Risk of Problematic Alcohol and Psychoactive Substance Use in Adulthood in the General Population in Colombia

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A secondary analysis of data from a national Colombian survey on drugs and alcohol use collected in a 2008 population aged 12 to 65 was carried out to evaluate whether the early use of alcohol can predict higher probabilities of problematic use and dependency to alcohol and other substances. In this study, those who began drinking alcohol at age 14 or younger had 10 times more probability to use some illegal substance than those who began after 21 and 4 times more than those who began at age 18. The results showed unequivocally a relationship between early use of alcohol and the probability of becoming involved in adulthood with alcohol and some illicit drugs.

*Keywords:* Early alcohol use, adolescents, risk factors, illegal drugs

## Introduction

Colombia has traditionally been a country where alcohol consumption begins early. Until recently, cultural practices have influenced this phenomenon; for example, young people, especially men, were encouraged by their parents to drink alcohol. In general, Colombian population saw this situation as a normal practice, and only a few people thought there might be something wrong with this behavior.

Since 1994, different laws and regulations were introduced in the country. One of them was the law of children and adolescents, which had an article designed to curb alcohol consumption among children younger than 18 years of age (Government of Colombia, 2006). Nevertheless, these policies have not produced substantial changes in drinking behavior among this population.

Several studies have shown that early use of alcohol is a risk factor for accidents, unwanted pregnancies, violence, and illicit drug use and for a greater likelihood of problematic use of alcohol and dependence. The early use of alcohol has been found as an important predictor of future drug and alcohol abuse problems in later life (Crews, He & Hodge, 2007; Hawkins et al., 1997; Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). Grant and Dawson (1997) and the National Institutes of Health (2005) claim that nearly 40% of those who reported having started drinking before age 15 reported alcohol dependence at some point in their lives; at the same time, they found that this percentage was four times higher than that reported by those who started drinking at 21; a similar pattern was found by Gruber, DiClemente, Anderson, and Lodico (1996). According to the U.S. Department of Health and Human Services (2007), approximately 10% of children between 9 and 10 have begun to drink alcohol, about 30% began before age 13, and about 30% reported consumption in the previous year. The same report stated that about 5,000 children die annually from accidents or events related to alcohol intake. Therefore, the earlier young

people drink alcohol, the more severe the damage will be, especially at a physiological level, generating a large number of adverse implications that a minor cannot control.

One of the most serious consequences of alcohol consumption is its effect on several brain areas and functions and leading to impaired intellectual performance, especially during adolescence when the brain is still in a developmental stage. The early-age consumption of drugs or alcohol makes the adolescent vulnerable for developing or acquiring harmful effects in the brain (Guerra & Pascual, 2010).

Some studies show that certain brain regions, such as the prefrontal cortex (responsible for making decisions, planning, reasoning, problem solving, and impulse control) and the hippocampus (responsible for learning, memory, and processes of abstraction), are strongly affected by frequent alcohol consumption among adolescents (Guerra & Pascual, 2010; Society for Neuroscience, 2002), who are particularly vulnerable when alcohol consumption is accompanied by use of substances such as marijuana (Medina, Schweinsburg, Cohen-Zion, Nagel, & Tapert, 2007). In addition, young adults who are frequent users of alcohol as teenagers have poor performance on tests of verbal and nonverbal memory and have difficulty focusing attention and managing spatial abstractions such as map reading (White & Swartzwelder, 2005; Brown & Tapert, 2004).

The explanation for this phenomenon is that, since the brain only reaches its peak at age 21, drinking alcohol before then affects the maturation process, resulting in cognitive difficulties (Crews, He, & Hodge, 2007; Society for Neuroscience, 2002).

On the other hand, gender differences in alcohol use and other psychoactive substances (PAS) have been constantly reported. Men have been found to present more abuse and alcohol-related problems than women (Schulte, Ramo, & Brown, 2009; Substance Abuse and Mental Health Administration [SAMHSA], 2008). Nonetheless, SAMHSA (2008) revealed that, lately, similar rates have been found in males and females for heavy drinkers; however, males are more likely to

meet the criteria for past-year alcohol dependence than females. Similarly, Schulte, Ramo, and Brown (2009) reported that gender differences in the prevalence of consumption are particularly important during adulthood; they revealed that male and female adolescents present the same pattern of alcohol consumption, but males appear to be exposed to greater risk and to manifest abuse and dependence than females.

### Previous studies in Colombia

According to a study by the Colombian Presidential Program “Rumbos” (Pérez-Gómez, 2002) and the Ministerio de Protección Social (MPS) [National Ministry of Welfare] and the Comisión Interamericana para el Control del Abuso de Drogas (CICAD) [Inter-American Drug Abuse Control Commission] (2004), the age at onset regarding consumption of alcohol and other psychoactive substances has changed, and currently, it happens at an earlier age. It has been estimated that Colombian youth tend to start drinking alcohol at age 12.

Eighty-four percent of adolescents younger than 17 years old have consumed alcohol at some point in their lives, and 65% have consumed alcohol in the last year (MPS & CICAD, 2004). Nonetheless, perhaps the most worrying fact is the positioning of Colombia as the Latin American country in which consumption starts at the earliest age and with the greatest number of children under 14 who reported using alcohol in the last month.

In 2008, a study by MPS, the Ministerio del Interior y de Justicia (MIJ) [National Ministry of Justice and Interior], and the Dirección Nacional de Estupeficientes (DNE) [National Directorate of Drugs], found that, in Colombia, around 6% of the population between the ages of 12 and 17 present risky and harmful alcohol and psychoactive drug consumption. In the same line, Pérez-Gómez and Scoppetta-Díaz-Granados (2009) carried out a study with a sample of 9,276 young Colombian people aged 10 to 17 and found an 87% of lifetime prevalence of alcohol consumption in the Colombian young population. Furthermore, 68% of the youngsters reported consumption in the last year, 27% in the last month, and 13% in the last week; the average age of smoking initiation was found to be 10 years for males and 11 years for women. In addition, the study revealed that 74% of young people consider it to be “easy or very easy” to buy alcohol and cigarettes in shops, supermarkets, or liquor stores.

Despite the alarming figures about the evident risk conditions of youth population in Colombia, little is known about the real effect of early consumption of drugs and alcohol in this population. It is known by current research based especially on European or North American populations that the age of onset of alcohol and drugs consumption is a powerful predictor of presenting risky consumption behaviors later in life (i.e., Crews, He & Hodge, 2007; Hawkins et al., 1997). However, this evidence cannot be generalized to Colombian populations because of the obvious and multiple sociocultural differences between developed and developing countries.

The present research was designed to study the associations between age at onset of alcohol consumption and current risky

alcohol consumption behavior and the use of other substances (especially tobacco and marijuana) in Colombia. Considering the lack of data and the alarming figures, the present research attempts to contribute to the study of the risks of early-age consumption of alcohol and other psychoactive substances. Because of the availability of recently collected data (MPS, MIJ, & DNE, 2008a), it will be possible to verify whether the international projections are met.

### Methods

The present descriptive study is a secondary analysis of data collected by three official institutions (MPS, MIJ, & DNE, 2008a), which estimated the magnitude of the use of psychoactive substances in Colombia within a population aged between 12 and 65 years. The information was collected by a household survey of 64 items divided into 12 sections: general information; risk perception of drug and alcohol abuse; use of cigarettes and tobacco; use of alcohol; use of pain killers, stimulants, and inhalers; accessibility, offer, and availability of illegal substances; motivation for consumption; use of each substance in a lifetime period, last year, and last month; quantity and frequency of consumption; dependence, abuse, and problems associated with the consumption of each substance; alcohol and other PAS use at work; and use of substances during pregnancy.

The Alcohol Use Disorder Identification Test (AUDIT), which is a screening test for alcohol abuse developed by the World Health Organization (Babor, Higgins-Biddle, & Monteiro, 2001), was completed by participants that reported consumption of any substance during the last 30 days.

The study was based in a probabilistic cluster sample, with an effective size of 29,164, representing the 19,764,799 Colombians within the aforementioned ages. The present study its analysis is based on those people in the sample over 20 years old.

### Participants

The total sample was composed of 14,928,688 adults between the ages of 20 and 65 years (54% women and 46% men).

### Procedure and data analysis

First, an agreement was established with MPS, MIJ, and DNE, and permission to undertake the study was granted.

The sample was divided on the basis of on AUDIT scores to assess alcohol consumption. This test uses a scale between 0 and 40, with scores distributed as outlined in Table 1.

The study by MPS, MIJ and DNE (2008a) used a cutoff score of 7 for females and 8 for males on the AUDIT scores for establishing a risk condition or harmful use of alcohol. Nonetheless, this approach causes a great loss of information and lack of differentiation between categories of hazardous alcohol use, dependence symptoms, and harmful alcohol use. Initially, it was attempted to perform an analysis of the risk levels corresponding to the ‘zones’ of the AUDIT; however,

Table 1  
*AUDIT Score Interpretation*

Risk level	AUDIT score
Zone I	0–7 Harmless alcohol use (recommendation: alcohol education)
Zone II	8–15 Harmful alcohol use (recommendation: simple advice)
Zone III	16–19 Hazardous alcohol use (recommendation: simple advice and continuous monitoring)
Zone IV	20–40 Dependence symptoms (recommendation: referral to specialist for diagnostic evaluation and treatment)

Note: From Babor, T., Higgins-Biddle, J., & Monteiro, M. (2001). *AUDIT: Cuestionario de identificación de los trastornos debidos al consumo de alcohol*. Comunidad Valenciana: Organización Mundial de la Salud.

this possibility was ruled out because only a small fraction of subjects had scores higher than 29. Therefore, it was considered analyzing the scores in three separate bands defined by the instrument as follows: hazardous alcohol use (items 1, 2, and 3), dependence symptoms (items 4, 5, and 6), and harmful alcohol use (items 7, 8, 9, and 10).

The calculations over the database were carried out applying the correspondent expansion factors. In order to accomplish the objectives in a parsimonious manner, the analysis was limited to the calculation of the proportions and averages, accompanied by the confidence intervals at a 95%, with the purpose of establishing the statistical significance of the calculated differences.

## Results

There are important differences in age at onset of use of PAS in the general population. Table 2 shows that the earlier onset occurs with smoking, and consumption of sedatives is the latest. Seventeen is the age at onset of use of a wide array of substances.

Table 2  
*Descriptive Statistics for Age at Onset of Psychoactive Substances Use in 2008*

Substance	Mean	Median	25th Percentile	75th Percentile
Cigarette	16.9	16	14	18
Alcohol	17.1	16	15	18
Inhalants	17.4	16	14	20
Marijuana	17.8	17	15	19
Ecstasy	18.8	17	16	20
Heroin	19.1	18	17	20
Basuco	19.9	18	16	21
Cocaine	19.9	18	16	21
Stimulants	20.0	18	15	22
Tranquilizers	26.6	22	18	32

Figure 1 shows the percentage of hazardous and harmful alcohol use according to the AUDIT in people older than 20 years, stratified by age at onset of alcohol use. The risk of those who begin use before age 15 is 4 times higher than those who start after 21, 2-and-a-half-times higher than those starting at age 18, and 2/3 higher than those starting between 15 and 17 years.

Gender differences regarding the percentage of hazardous and harmful alcohol use are important: the number of men is about four times higher than that of women. This ratio remains virtually identical in the different age groups (Table 3).

Figure 2 shows the relationship between age at onset of alcohol consumption and the raw score on the AUDIT. Results show consistently higher scores on the AUDIT among those who started earlier alcohol consumption, which means that individuals who started alcohol consumption at an early age are more prone to problems.

Gender has a significant weight on the AUDIT score (Table 4). While the average score for men was 7.6, for women it was 4.4, with non-overlapping confidence intervals. This implies a difference of about 60% in the scores.

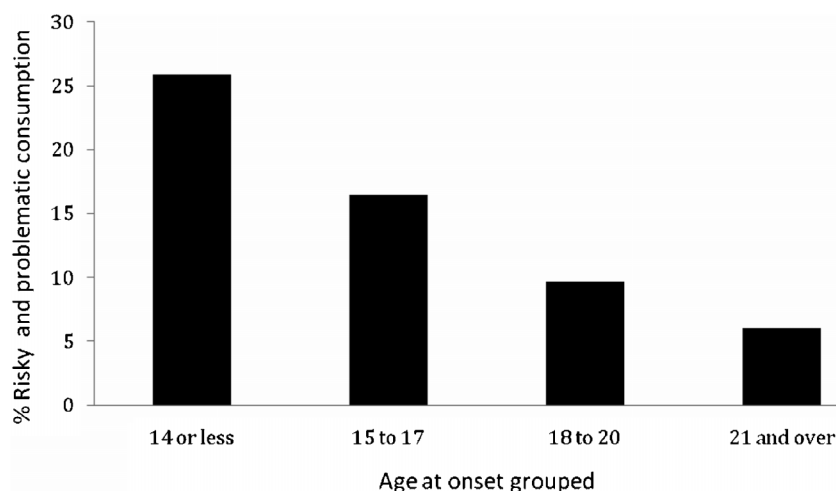


Figure 1. Percentage of risky and problematic alcohol consumption related to age of onset.

Table 3  
Percentage of Hazardous and Harmful Alcohol Use by Sex

Sex	Percentage	95% interval
Men	21.8	20.2 to 23.3
Women	5.2	4.7 to 5.8

Table 4  
Men and Women AUDIT Score Means

Sex	Mean	95% intervals
Men	7.61	7.60 to 7.61
Women	4.36	4.36 to 4.37

Another way to interpret this data is through bands of consumption within the AUDIT range: hazardous alcohol use (items 1, 2, and 3), dependence symptoms (items 4, 5, and 6), and harmful alcohol use (Items 7, 8, 9, and 10). Figure 3 presents the results of hazardous alcohol use. Due to space constraints and given that they follow the same patterns, the other two are not shown. Figure 3 confirms the relationship between AUDIT scores and age at onset of alcohol consumption. Regarding the relationship between age of onset of alcohol and other drug use, the consumption of other drugs was assessed only in two categories, cigarette and any illegal substance.

Figure 4 shows that those who consumed alcohol earlier in the past year are twice as likely to smoke as those who began after 18 (use in the past year, or current smokers). These data are consistent with all previous graphs. The relationship between early drinking, having smoked at some time in early life, and use in the last year was close to 2:1.

The relationship between early drinking and the likelihood of illegal substances is even stronger (Figure 5): those who began their consumption of alcohol at 14 or younger are 10 times more likely to ingest any illegal PAS than those who began after 21, 4 times more than those who started at 18, and more than double than those who began drinking between 15

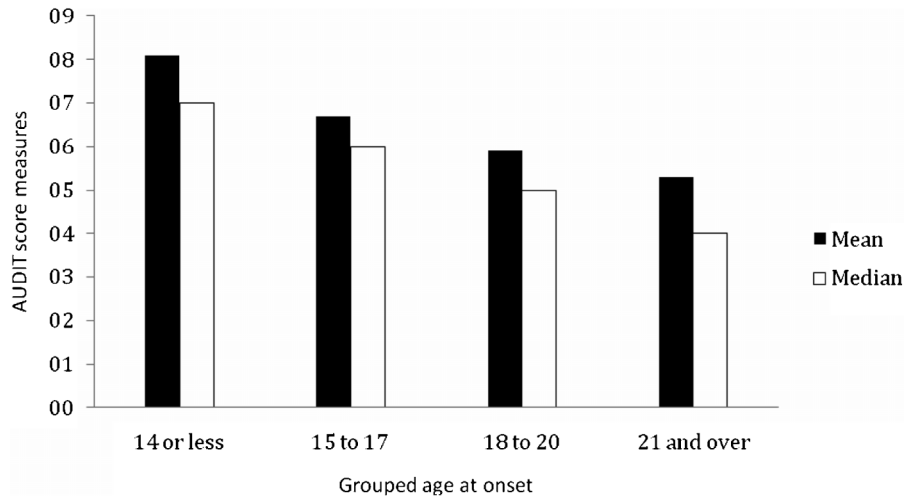


Figure 2. AUDIT score measures according to age at onset of alcohol use.

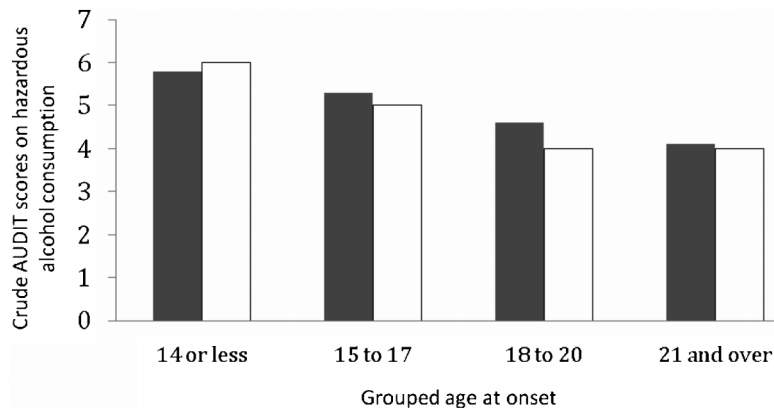


Figure 3. AUDIT scores on hazardous alcohol use according to age at onset.

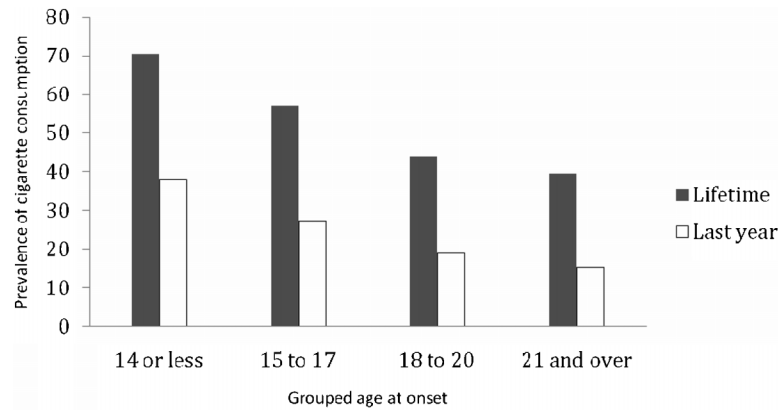


Figure 4. Prevalence of cigarette use according to age at onset of alcohol consumption.

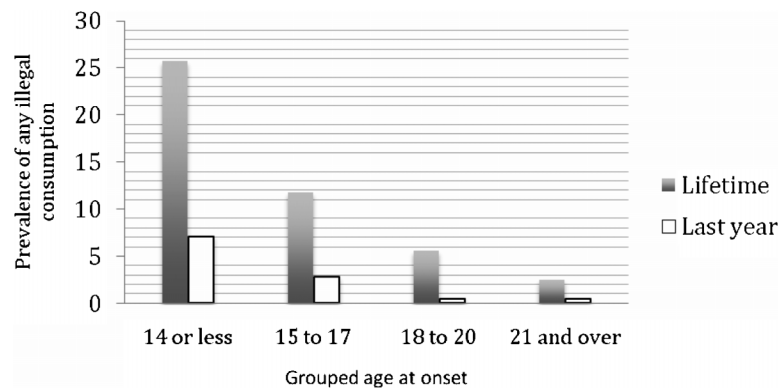


Figure 5. Prevalence of any illegal consumption according to age at onset of alcohol use.

and 17. When examining the current users, the youngest are 18 times more likely to use illegal PAS over 21 years of age, 14 times more than those between 18 and 20 years, and 2-and-a-half times more than those 15 to 17 years.

### Discussion

The purpose of the present study was to explore the associations between age at onset of alcohol consumption and current risky alcohol consumption behavior and the use of other substances. Specifically, the research tested that the onset of alcohol consumption at an early age is related with problematic alcohol and psychoactive substance use during adulthood.

As predicted, the results suggested an alarming relationship between early age at onset of alcohol consumption and odds of use of the same substance or illegal substances in adulthood. Furthermore, they revealed a significant higher risk for children under 17 as compared with those 18 and older, for the abuse of PAS. These main results are similar to those presented in previous studies (i.e., Crews, He, & Hodge, 2007; Hawkins et al., 1997; Schulenberg et al., 1996) and provide support to the literature suggesting that the early use of alcohol is an important predictor of future drug and alcohol abuse problems in later life.

In contrast to the information reported by SAMHSA (2008) and Schulte, Ramo, and Brown (2009) about the similar rates of consumption between females and males, in the present study the contrary was found. In Colombia the gender differences are still remarkable: males are definitely more likely to present hazardous and harmful alcohol use than females.

These results should help authorities enforce rules concerning the prohibition of alcohol consumption by minors. It would also be positive to make a wide dissemination of the findings of this study to contribute to increase levels of awareness in the general population regarding the negative impact of alcohol consumption among adolescents.

Given that several Latin American countries have similar data to those of Colombia, future research could carry out similar analysis to compare results and to propose strong and effective policies.

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