GENERAL ASPECTS

The consumption of alcoholic beverages is a common practice in contemporary society. According to the latest research on the use of narcotic drugs in Brazil, coordinated by the Brazilian Center on Information on Narcotic Drugs of the Department of Psychobiology of the Federal University of São Paulo (Cebrido/Unifesp), 74.6% of Brazilians have consumed alcohol during their lifetimes, 50% have consumed it in the last year, and 38.3% have consumed alcohol 1 month prior to the interview.

People consume alcoholic beverages for several reasons: to reduce anxiety and to feel less inhibited, which consequently facilitates social relationships. There is also the belief that consuming alcohol before or during a sexual relationships increases pleasure, improves performance and facilitates performances thought of being too as difficult to do without the influence of alcohol. However, it is known that people who consume alcohol have twice the chance of contracting the human immune deficiency virus (HIV) than people that never consume that substance. Research shows that the consumption of alcohol is common among individuals that change sexual partners, trade sex for money, engage in promiscuous behavior,
practice group sex, and have unprotected oral, anal, and vaginal sex with either a single partner or multiple partners.\textsuperscript{2,4,5,6}

**HIV/AIDS**

Nowadays contamination by HIV happens predominantly through unprotected sex.\textsuperscript{7,8} According to a recent epidemiological study\textsuperscript{8}, approximately 33.2 million people have contracted the virus.

The continent of Africa has the highest rate of new infections per year, and in Latin America close to 1.6 million people are infected.\textsuperscript{8} In Brazil approximately 630,000 people are infected which represents, since the year 2000, 0.5\% of the population.\textsuperscript{7} The prevalence of people living with HIV, by continent, is found in Figure 1.


**Figure 1**  Prevalence of people living with HIV in 2007, according to a UNAIDS\textsuperscript{8} report.

The aspects related to abusive consumption of alcohol and HIV infection are due to two variables: the increase in the risk of transmission of the virus by sexual contact and the use of alcohol, which, in infected individuals, can decrease adherence to the antiretroviral treatment. This relationship can be seen in Figure 2.

Figure 2  Association between harmful alcohol consumption and HIV/Aids (see colored figure in Coloured Book).
THE CONSUMPTION OF ALCOHOL AND RISKY SEXUAL BEHAVIOR

Research carried out in several countries show that the consumption of alcoholic beverages before or during sexual acts tends to decrease the capacity to discern the risks associated with HIV infection. It also hinders the acquisition and use of condoms, which consequently increases the dissemination of HIV and other sexually transmitted diseases (STD).\textsuperscript{2,5,9,10,11}

In Sub-Saharan Africa, which has the highest rate of HIV infection in the world, studies show that alcohol is the most common risk factor in contamination.\textsuperscript{12} This is due to unprotected sex being practiced frequently with different partners, and practiced for money – a fact that is more frequent among men and women who consume alcohol before sex.\textsuperscript{13}

In Russia, sexual behavior associated with alcoholic consumption has shown to be the main factor of HIV dissemination. The new contamination rates are one of the highest in Europe, and are still increasing.\textsuperscript{8,14}

In India the transmission of HIV through heterosexual contact reaches 80% and the consumption of alcohol principally by men has been associated with the contamination of this virus.\textsuperscript{15}

In Brazil 89% of contaminations by HIV are through sexual contact.\textsuperscript{16} Close to 95% of Brazilians who are over 18 years old are sexually active. Among them 29% of the women and 36.6% of the men use condoms during every sexual encounter. However, among the sexually active population, 33.9% of the women and 54% of the men regularly consume alcohol.\textsuperscript{17}

The variables of quantity and consumption habits associated with place, age, gender, psychiatric behavior, family structure, and socio-economic status are some of the factors discussed in the literature and present the consumption of alcohol as a risk factor in contracting an STD like HIV/AIDS. The pattern of consumption is still under discussion in reference to the relationship of alcohol and risky sexual behavior. Some studies show that people who drink heavily, frequently or not, have higher chances of getting involved in risky sexual behavior than those who
show a different pattern of consumption. However, other studies show even non-frequent, moderate drinking has been associated with unprotected sex.

Regardless of the drinking patterns, all studies show that there is an association between the consumption of alcoholic beverages and an increase in unprotected sex with multiple partners, with professional sex workers, sex practiced for money, and higher rates of STDs.

Place is another important factor associated with sex under the influence of alcohol. Places that were pointed out in the study as those that facilitate the consumption of alcohol, and are related to sexual activities. The include night clubs, bars, dance clubs, and hangouts frequented by teenagers and young adults.

Research shows that the consumption of alcohol is associated with early initiation into sexual activities among adolescents. The earlier the teenagers begin to drink alcoholic beverages, the earlier they get involved with risky sexual behavior. The consumption of alcohol before or during sexual activities is shown as a preponderant factor in the practice of unprotected sex for adolescents between the ages of 13 and 19.

Another factor related to unprotected sex among adolescents is the use/abuse or dependence on alcohol of family members. According to Locke and Newcamb, the increase in the number of sexual partners and the practice of unprotected sex among female adolescents who had an alcoholic parent was higher than among those that did not have an alcoholic parent.

In regards to gender, research shows that the use/abuse and/or chemical dependency on alcohol is more frequent among men than in women. The rates of sexual acts performed while under the influence of alcohol as well as unprotected sex with one or more partners, including sex practiced with professional sex workers, and the occurrence of STDs like HIV/AIDS is higher among men than among women.

However, even though women drink less frequently than men do, women tend to exhibit riskier sexual behavior when under the influence of alcohol. A study done with female university students showed that when women were under
the influence of alcohol, they practiced unprotected sex more frequently and had more sexual partners than women who did not drink.\textsuperscript{38,39} Similar results were found among professional sex workers who tended to not use condoms when practicing sex with their customers.\textsuperscript{40}

Fischer et al.\textsuperscript{41} ran a cohort study among African women and observed that the prevalence of HIV was greater among women who drank than among those who abstained from drinking. The authors point out that among the women who had drunk alcoholic beverages a month prior to the interview, the frequency of STDs was also greater among women who drank than those that abstained from drinking.

Besides gender, the association between alcoholic consumption and risky sexual behavior did not vary much between heterosexual and homosexual populations. Both population participated in risky sexual behavior even with HIV-positive sexual partners.\textsuperscript{24,42}

Another factor related to drinking and risky sexual behavior is the presence of psychological disturbances. Recent studies suggest that psychiatric patients are more likely to have higher rates of HIV infection than the general population.\textsuperscript{43,44} According to Tolou-Shoms et al.\textsuperscript{45}, people who suffer from depression often drink more frequently, in the social context and during sexual relations, and tended more frequently to not to use condoms while having sex than people that did not suffer from depression.

In addition to abrupt changes in mood, unruly sexual behavior has been frequently associated with alcoholic consumption. In addition, undesirable behavior such as exhibitionism, humiliation, and even sex crimes are sometimes committed by individuals while they are under the influence of alcohol.\textsuperscript{46,47,48} According to Abbey et al.\textsuperscript{49}, in almost half of the sexual crimes committed, the transgressor or the victim had been drinking before or at the time the crime was committed. In Brazil, according to Baltieri and Andrade,\textsuperscript{46,47} 89.6\% of the males who committed sexual crimes against male minors and 46\% who committed sexual crimes against female minors, were heavy drinkers and/or alcoholics.
ALCOHOLIC CONSUMPTION AMONG INDIVIDUALS INFECTED WITH HIV

The consumption of alcoholic beverages among people infected with HIV is very frequent. According to the World Health Organization (WHO), 53% of the individuals infected with HIV consumed alcoholic beverages one month prior to the investigation and 8% were considered heavy drinkers.49

Another factor associated with alcoholic consumption and people with HIV is the lack of adherence to or discontinuance of medical treatment programs.50,51,52,53

The treatment of AIDS combined with psychiatric therapy brought about a significant change in disease model. In the past few years, AIDS has become a chronically evolving illness. It can be controlled with adequate medical attention and the use of medication that suppresses viral replication. In this new model the non-enrollment to treatment programs is a menacing barrier to the effectiveness of treatment, particularly when the therapeutic regime is of a longer duration.54

Non-enrollment in treatment programs one of the principal factors of treatment failure, because non-enrolled patients present higher death rates that are attributed to complications occurring from the viral infection.54

The successful treatment of HIV/AIDS requires an adherence rate of 95% to antiretroviral treatment therapy. Strict adherence to the treatment prevents the emergence of HIV variants resistant to antiretrovirals and also prevents the future treatment therapies.55

The lowest rates of adherence to treatment and medication programs are found among people who are frequent, moderate and/or heavy drinkers. There is data that associates the lowest indices of enrollment to the quantities of alcoholic beverages consumed.56-59

According to Chander et al.3, the adherence of individuals that do not consume alcohol varies from 56% to 76%. But among those that consume alcohol, the adherence rate varies from 22% to 57%.

In Canada, according to Cheever,60 the use of alcohol has been one of the main factors of non-adherence among patients that receive highly active antiretroviral therapy (HAART) for treatment of infections by HIV. In Brazil, Malbergier61
observed that 35% of the individuals researched that used or abused alcohol, and 42% of the alcoholics were not in any treatment or medication programs.

Howard et al. stressed that problem drinking is considered a predictor of non-enrollment in antiretroviral treatment (ARVT) and Braithwaite et al. observe that among heavy drinkers (11%), the rates of non-adherence was greater among those who were moderate drinkers (3%). Other research reveals that problem drinkers are more prone to forget to take their medication or stop altogether, than non drinkers who take HIV medication.

When compared with people who do not drink, moderate drinkers are still associated with low rates of enrollment. The use of alcohol interferes in different ways in an effective antiretroviral treatment, this is due to alcohol users tending to have more unstable lifestyles, having less community support, not follow schedules and frequently depending on emergency services which is not tolerated by health professionals. These individuals are more frequently subjected to clinical and psychiatric co-morbidities.

Henrich et al., as well as Malbergier, observed that the number of CD4 cells is smaller, and the viral load is greater in individuals who drink than those who do not. The patients that receive HAART treatment and consume alcohol have a CD4 cell count significantly lower than those that do not drink. There is also data that shows that alcohol can increase the serum levels of abacavir (ABC) and amprenavir (agenerase), medications used in the treatment of HIV. The increase in serum levels is associated with a greater risk of contracting collateral effects from the use of antiretroviral medication.

The concomitant use of alcohol and didanozin enhances the toxicity of this substance and increases the risk of developing pancreatitis. It is important to emphasize that when HIV-positive patients use their medications with alcohol, the consequences can be dire. For example in combination with an anxielytic, users will feel the enhanced sensation of drunkenness and when alcohol is mixed with metronidazol it can cause acute toxic psychosis.
THE INTERVENTION AND TREATMENT OF HIV-POSITIVE INDIVIDUALS AND ALCOHOLIC CONSUMPTION

Various studies have observed that treatment for alcohol abuse and/or substance dependence reduces the risky behavior in patients infected with HIV, and increases the adherence to antiretroviral treatment programs.\textsuperscript{68,69,70}

Treatment programs based on motivational interviews, brief intervention, prevention of relapse, behavior therapy and/or cognitive-behavior therapy, demonstrate a reduction in the consumption of alcohol and an increase in the rates of adherence to ARTV programs.\textsuperscript{71} Adherence rates are also increased when programs discuss the advantages of adhering to an ARTV program and the consequences of increased alcohol use.\textsuperscript{68,69,70}

HIV PREVENTION AND ALCOHOLIC CONSUMPTION

There are several manners of intervening with the objective of reducing risky sexual behavior and the risk of contracting HIV. Among those interventions that show the highest rates of success are those that discuss the use of toxic substances and risky sexual behavior in regard to the risk of contracting HIV. Even so, some researchers focus on interventions in the use of toxic substances as a way to prevent risky sexual behavior associated with alcohol consumption, while others have an inverse approach and discuss risky sexual behavior as a manner to reduce risks associated with the unprotected sex.

Kalichman et al.\textsuperscript{5} ran tests on patients that drank alcohol before and/or during a sexual act. The objective was to train the patients in safer social practices. The results showed that among the patients subjected to the tests the use of condoms rose from 25\% to 65\%, and reduced other risky sexual behavior within 6 months after the tests were run. Other revealing data was the decrease in the belief that drinking before or while having sex increased sexual performance.

Inversely, other authors focused on intervention as a way to prevent risky sexual behavior in drinkers. The results showed that after the treatment, the patients
had fewer sexual partners, used condoms more frequently, and reduced the sexual encounters under the influence of alcohol.27

In general, efficient intervention programs were based on models that incorporated behavior or cognitive behavior sessions, counselling, motivational interviews, and brief intervention practices. Efficiency was evaluated in terms of a reduction in the use of toxic substances during or before having sex, and the increase of safe sex practices when these two are associated with each other.72,73

FINAL CONSIDERATIONS

In view of the evidence discussed in this chapter, it can be concluded that:

• the use of alcohol associated with sex is a risk factor for the disseminations of STDs such as HIV/AIDS. When sex is practiced under the influence of alcohol, both HIV-positive and HIV-negative people tend to have more sexual partners and do not use condoms;
• unprotected sex with multiple partners, casual partners, or in exchange for money, the use of other narcotic drugs and the incidence of sexual crimes are more frequent among drinkers than non-drinkers;
• the prevalence of STDs such as HIV/AIDS is greater among individuals that drink than among non-drinkers;
• even though the practice of sex under the influence of alcohol is more frequent among males, adolescents, young adults, and professional sex workers, this tendency has also been observed among females;
• heavy drinkers, casual drinkers, and moderate frequent drinkers are all associated with risky sexual behavior;
• the use of alcohol among HIV-positive individuals has been associated with high rates of non-enrollment to antiretroviral treatment programs;
• to measure and/or analyze the risk existing from the practice of sex under the influence of alcohol, the environment where alcohol is consumed should be taken into consideration;
• brief intervention, motivational interviews, and behavioral therapy and/or cognitive behavior therapy are more efficient in the reduction of alcohol consumption, and increase enrollment in antiretroviral treatment programs in HIV-positive and HIV-negative patients.

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