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Priyanka Shukla
Ph. D. Scholar, Department of
Home Science, Human,
Development, Banasthali,
University, Distt-Tonk- Rajasthan,
India

Dr. Indu Bansal
Head of the Department, Home
Science, Human Development,
Banasthali University, Distt-
Tonk- Rajasthan, India

Alcohol use: An exhaustive review

Priyanka Shukla and Dr. Indu Bansal

Abstract

Alcohol is a common and avoidable cause of morbidities and mortalities among students and the general population globally. The use of alcohol is on the increase, both in quantity and prevalence, in developing countries. The use and abuse of alcohol is widespread among students. The goal of the current review is to focus on primary consequences of alcohol consumption and policies for their prevention. Alcohol is a psychoactive substance which has an effect on people in many ways. Alcohol consumption is linked to many harmful consequences such as traffic accidents, workplace-related problems, family and domestic problems, and interpersonal violence etc. for the individual drinker, the drinker's immediate environment and society as a whole which have been receiving more public or research attention in recent years. Adolescents should be warned against getting into the grip of social evils like alcoholism. So, it is important to have culturally specific and contextualized interventions and health education methods against alcoholics. Therefore, its consumption is a public health problem which not only harms the person who consumes it but also harms the family and the society too in general. Therefore, this review paper can help and shape the efforts of communities to reduce the negative consequences of alcohol consumption. It also assists health practitioners in advising consumers, and help individuals make informed decisions about drinking.

Keywords: Alcohol, Consequences/Effects of alcohol consumption and Alcohol Education.

1. Introduction

Alcohol has been defined in the Webster's dictionary as any of a series of volatile hydroxyl compounds that are made from hydrocarbons by distillation. Alcoholic beverages contain ethyl alcohol (ethanol), produced as a result of the fermentation of starch which includes grains (beer), vegetables (vodka) and fruits (wine) (Webster's Online Dictionary, 2009) ^[1]. Ethyl alcohol has no taste and is a colorless liquid. Each alcoholic beverage is different in taste and the way it looks, due to the presence of other substances which are added deliberately or accidentally. The manufacturing process also gives a distinct flavor and color to the alcoholic beverage. Alcohol is absorbed directly into the bloodstream through the walls of the stomach and the small intestine, and is then quickly distributed all over the body. All alcohol that is consumed enters the bloodstream and then goes to the brain. It takes only a few minutes for alcohol to reach the brain and begin to act. Liver is the main organs which metabolize alcohol, and on an average it takes about one hour for the liver to completely digest a standard alcoholic drink.

2. Alcohol use on the rise in India

Alcohol has been a part of various cultural traditions in different societies and its relationship to ill health has been recognized as an important public health challenge in the present day. In 2012, about 3.3 million net deaths, or 5.9% of all global deaths, were attributable to alcohol consumption. There are significant sex differences in the proportion of global deaths attributable to alcohol, for example, in 2012 7.6% of deaths among males and 4% of deaths among females were attributable to alcohol WHO, (2014) ^[2]. These figures translate into 3.3 million alcohol-attributable deaths, after taking into account the beneficial effects of low-risk patterns of alcohol consumption on some diseases. In an alarming revelation, the Global Status report on alcohol and health 2014, released by the World Health Organization (WHO) states that the amount of alcohol consumption has raised in India between the periods of 2008 to 2012. According to the report, around 30% of the total population of India consumed alcohol in the year 2010.

Correspondence
Priyanka Shukla
Ph. D. Scholar, Department of
Home Science, Human,
Development, Banasthali,
University, Distt-Tonk- Rajasthan,
India

93% of alcohol was consumed in the form of spirits, followed by beer with 7% and less than 1% of the population consumed wine. The per capita consumption of alcohol in the country increased from 1.6 liters from the period of 2003-2005, to 2.2 liters from the period of 2010-2012. It was also revealed that over 11% of the population in India indulged in heavy or binge-drinking. The global figure stood at 16%. Alcohol consumption also contributes to about 10 percent of the disease burden due to tuberculosis, epilepsy, hemorrhagic stroke and hypertensive heart disease in the world, the report added.

3. Consequences/Effects of alcohol consumption

Drinking is a widespread offense that can have serious physical, neurological, and legal consequences. The human brain continues to develop until a person is around age 25. Excessive alcohol intake among college students is associated with a variety of adverse outcomes: impair neurological development, causing youth to make irresponsible decisions, encounter memory lapses, or process and send neural impulses more slowly, fatal and nonfatal injuries, alcohol poisoning, blackouts, academic failure, violence, including rape and assault, accidental pregnancy, sexually transmitted diseases, including HIV/AIDS, property damage and vocational and criminal consequences that could make vulnerable future job prospects.

3.1 Damage to self

Risky drinking behavior may be the cause or important contributing factor in many different academic, emotional, physical, social and legal problems experienced by undergraduates. Indeed, the picture of extensive harm to at least a significant minority of students on most campuses is clearly supported by the research.

3.2 Blackouts

The phenomenon of alcohol-induced “blackouts” or memory loss during periods of heavy drinking is a common consequence found among alcoholics but has also been found in other populations of drinkers as well. It is not always clear whether such reports include partial forgetting, or perhaps mistaking blackout if undefined as passing out Lee *et al.*, (2009) [3]. However, in the nationwide College Alcohol Survey Wechsler *et al.*, (1998) [4] 22% of students (27% of drinkers) reported at least one incident of having forgotten where they were or what they did due to drinking in the past year. Similarly, 26% of respondents (31% of respondents who drank) in the Core Survey indicated that they had “had a memory loss” due to drinking or other drug use in the past year Presley *et al.*, (1996) [5].

3.3 Death

Death is the most dramatic potential outcome of excessive alcohol consumption by adolescents. Alcohol increases the probability of death in adolescence mainly from the greater risk of intentional (e.g., homicides and suicides) and unintentional (car crashes) injury, rather than through heart disease and other chronic health conditions, which dominate in adults. For example, they have shown that heavy drinking is a major risk factor for suicidal behavior among adolescents Teperiket *et al.*, 2006) [6]

3.4 Performance in academic level

Performance of adolescents in their academic sector can be affected by in several ways, including the impact of alcohol consumption on brain development (including memory and

cognitive functions), as well as malingering. Heffernan, (2008) [7] reported that concluded young adults who drink excessively are more likely to report lapses in their short and long term memory than their none or low drinking counterparts, with a dose-response relationship observed. Lovel and Cherry, (2005) [8] cited in Newbury-Birch *et al.*, (2009) [9] give similar study that concluded academic success in schools. (including receiving good grades), as well as absenteeism can be related to adolescent alcohol consumption, as well as to early initiation of drinking More specifically, it was found that drinking more than 5 units by male students, and more than 4 by female students, during a 2 week period, was associated with more than three times greater likelihood of falling behind in school, compared to moderate drinkers Perkins, (2002) [10]. Based on a review of epidemiological and experimental studies, Courtney and Polich, (2009) [11] concluded that binge drinking and acute alcohol consumption may impair executive-type cognitive functions among young adults.

3.5 Injury and Social Consequences

Underage alcohol use is more likely to kill young people than all illegal drugs combined. Some of the most serious and widespread alcohol-related problems among adolescents are discussed below. For a more detailed discussion of alcohol problems in the college-age population, see Alcohol Alert No. 58 Leserman *et al.*, (2000) [12].

3.6 Drinking and Driving

Motor vehicle crashes are the leading cause of death among youth ages 15 to 20. Adolescents already are at increased risk through their relative lack of driving experience, and drivers younger than 21 are more susceptible than older drivers to the alcohol-induced impairment of driving skills. The rate of fatal crashes among alcohol-involved drivers between 16 and 20 years old is more than twice the rate for alcohol-involved drivers 21 and older O'Brien *et al.*, (2008) [13]

3.7 Suicide

Alcohol use interacts with conditions such as depression and stress to contribute to suicide, the third leading cause of death among people between the ages of 14 and 25. In one study, 37 percent of eighth grade females who drank heavily reported attempting suicide, compared with 11 percent who did not drink.

3.8 Sexual Assault

Sexual assault, including rape, occurs most commonly among women in late adolescence and early adulthood, usually within the context of a date. In one survey, approximately 10 percent of female high school students reported having been raped. Research suggests that alcohol use by the offender, the victim, or both, increases the likelihood of sexual assault by a male acquaintance.

3.9 High-Risk Sex

Research has associated adolescent alcohol use with high-risk sex (for example, having multiple sexual partners and failing to use condoms). The consequences of high-risk sex also are common in this age group, particularly unwanted pregnancy and sexually transmitted diseases, including HIV/AIDS. According to a recent study, the link between high-risk sex and drinking is affected by the quantity of alcohol consumed. The probability of sexual intercourse is increased by drinking amounts of alcohol sufficient to impair judgment, but decreased by drinking inerrable future job prospects.

3.10 Social impact of alcohol

Alcohol consumption is linked to many harmful consequences for the individual drinker, the drinker's immediate environment and society as a whole. Such social consequences as traffic accidents, workplace-related problems, family and domestic problems, and interpersonal violence have been receiving more public or research attention in recent years. Social consequences affect individuals other than the drinker, for example, passengers involved in traffic casualties, or family members affected by failure to fulfill social role obligations, or incidences of violence in the family.

3.11 Alcohol consumption and the workplace

Heavy drinking at the workplace may potentially lower productivity. Sickness absence associated with harmful use of alcohol and alcohol dependence entails a substantial cost to employees and social security systems. There is sufficient evidence that people with alcohol dependence and problem drinkers have higher rates of sickness absence than other employees Klingemann *et al.*, (2002) ^[14]. A number of studies have demonstrated an association between heavy drinking or alcohol abuse and unemployment. Here, a causal association may go in either direction, heavy drinking may lead to unemployment but loss of work may also result in increased drinking, which may become heavy drinking.

3.12 Economic impact of alcohol

It is a well-established fact that the use of alcohol entails a large number of adverse economic consequences World Health Organization, (2004a) ^[15]. This could be in differing areas such as physical and mental health, traffic safety, violence, and labor productivity. But these are difficult to measure. Therefore, social costs are considered as the negative economic impact of alcohol consumption. Relatively few countries have attempted to estimate the costs of alcohol use.

3.13 Alcohol and poverty

The economic consequences of expenditures on alcohol are significant especially in areas with high poverty. Besides money spent on alcohol, a heavy drinker also suffers other adverse economic effects. These include lowered wages (because of missed work and decreased efficiency on the job), lost employment opportunities, increased medical expenses for illness and accidents, legal cost of drink-related offences, and decreased eligibility for loans World Health Organization, (2004b) ^[16].

3.14 Alcohol and domestic violence

Research has found that alcohol is present in a substantial number of domestic violence accidents. The most common pattern is drinking by both offender and victim. Alcohol has been shown to be a significant risk factor for husband-to-wife violence. Drinking frequently has been associated with intra-family violence. Studies based on interviews with abused wives tend to report higher proportions of alcohol involvement than do general population studies or police samples. Regarding partner violence, research evidence indicates that it is more strongly associated with heavy drinking World Health Organization, (2004c) ^[17].

3.15 Alcohol use, sexual risk behavior and HIV vulnerability

There is generally an increase in alcohol use by teenagers and women. Men, however, generally have more social liberties than women, with respect to alcohol use as well as sexual

activities. Furthermore, the literature shows that the age for initiating alcohol use and experimenting with sex is on the decline, but the age for marriage is on the rise (e.g. the Russian Federation, India). Teenage pregnancies are also on the rise. Sexual experimentation outside marriage is increasing. Risky sexual behaviors continue despite a confirmed STI/HIV status, as reported in Belarus, Zambia and India. Denial of the problem and social stigma prevent people with STIs to seek treatment. Severity of symptoms is another factor that influences the decision of persons with STIs to seek treatment. Despite knowledge about preventive measures, condom use is limited. The spread of the HIV epidemic from high-risk groups to the general population is a concern in a populous country like India. Male dominance also limits the ability of women to adopt preventive measures such as the use of condoms. Alcohol use is associated with certain types of sexual activity. Crime often plays a role in unprotected casual sex, group sex and anal sex when participants in these activities are under the influence of alcohol. Alcohol use has also been linked to early sexual experiences (e.g. Belarus, the Russian Federation, Kenya and South Africa). Alcohol use and sexual risk behaviors are particularly prevalent in settings such as nightclubs, bars, dark houses, highway eating joints and motels, and brothels. Furthermore, alcohol is commonly used as disinhibit or, a sex facilitator, a symbol of masculinity, and a means of relaxation, recreation, socializing and improving communication skills (e.g. in Mexico and Romania). Alcoholic beverages are also used as a facilitator in approaching the opposite sex. "Masculinity" is often linked to the ability to have multiple partners, imbibe alcohol and engage in promiscuous behavior. Among women, alcohol use increases involvement in risky sexual encounters and sexual victimization, exposing them to the risk of unwanted pregnancies and STIs (e.g. in the Russian Federation and South Africa). It has also been shown that alcohol use and sexual risk behaviors increase during certain festivities and celebrations across countries (e.g. in South Africa, Kenya and Romania). Alcohol use and promiscuity are customary during funerals among certain population groups in Kenya. In contrast, certain religions and religious sects prohibit the use of alcohol and indulgence in risky sexual practices. Dry sex (a preference among certain rural tribes in Zambia and South Africa), sexual cleansing and levirate marriage (Zambia) increase the risk of STIs in Africa. The media (electronic and print) play an important role in shaping and influencing sexual behavior and alcohol use patterns. Certain advertisements, pornographic movies, thrillers and romantic programs glamorize and promote engagement in these activities.

4. Impact on health

It has been estimated by WHO that worldwide there are about 2 billion people who consume alcoholic beverages World Health Organization, (2002a) ^[18]. Of these 76.3 million have diagnosable alcohol use disorders. Globally, alcohol causes 3.2 percent of all deaths (1.8 million deaths) and 4 percent of Disability-Adjusted Life Years (58.3 million DALYs). This proportion is much higher in males (5.6 percent deaths and 6.5 percent of DALYs) than females (0.6 percent deaths and 1.3 percent DALYs). Besides the direct effects of intoxication and addiction, alcohol is estimated to cause about 20-30 percent of each of the following worldwide: esophageal cancer, liver cancer, and cirrhosis of the liver, homicide, epilepsy, and motor vehicle accidents. For males in European region, 50-75 percent of drownings, esophagus cancer, epilepsy, unintentional injuries, homicide, motor vehicle crashes and

cirrhosis of the liver are attributed to alcohol World Health Organization, (2002b) ^[19]. And Harrison's, (2005) ^[20]. In a study conducted in Bangalore, India, alcohol users reported more health problems than the non-users. The alcohol-users were found to be at roughly three times at higher risk of suffering from a health problem as compared to non-users Gururaj *et al.*, (2006a) ^[21].

Alcohol affects almost every organ of the body. It can cause an endless list of negative health outcomes. Few of them are given here. Heartburn, nausea and gastritis, malabsorption syndromes, worsens complications of diabetes, anemia, reduced sexual capacity, increased risk of seizures, addiction and alcohol dependence, depression, anxiety, suicide and other psychiatric symptoms, abuse of other substances including tobacco, fatty liver, alcoholic hepatitis and cirrhosis, alcoholic pancreatitis, cardio-vascular effects include: poor blood pressure control, increased cerebral hemorrhage and strokes, cardiomegaly, cardiac failure, and arrhythmias, reduced immunity and increased susceptibility to infections, damages to the muscular-skeletal system, impaired sleep and memory, polyneuropathy, delirium tremens, Wernicke's encephalopathy and Korsakoff's syndrome and hallucinations Gururaj *et al.*, (2006b) ^[22] And especially for female users of alcoholic beverages, it has been proved that alcohol negatively affects the fetus leading to Fetal Alcohol Syndrome Bagheri *et al.*, (1998) ^[23], Abel *et al.*, (1995) ^[24]. One study has even reported that alcohol use can be considered a risk factor for periodontitis Amaral *et al.*, (2009) ^[25]. It has been reported time and again that alcohol leads to high-risk sexual behaviors. Alcohol consumption acts as a disinhibitor to high-risk sexual behavior. This might include wrong choice of partners non-use of condoms and also having multiple partners Randolph *et al.*, (2009) ^[26] and Abbey, (2002) ^[27]. Alcohol is so harmful to the body that there is a list of diseases named solely upon alcohol. These are: Alcohol abuse, Alcoholic gastritis, Alcoholic psychoses, Alcoholic liver cirrhosis, Alcoholic polyneuropathy, Alcoholic cardiomyopathy, Alcohol-dependence syndrome, excess blood alcohol and Ethanol and methanol toxicity Rehm *et al.*, (2003) ^[28].

5. Positive effects of alcohol

Though there is much harm caused by consumption of alcoholic beverages, there are some documented positive effects too. The well-known case is that of the protective effect of alcohol on Coronary Heart disease and cerebrovascular diseases. Alcohol reduces the risk of Coronary and Cerebrovascular diseases by inhibiting formation of atheroma and decreasing rate of blood coagulation Kannel *et al.*, (1996) ^[29]. A study even showed that alcohol has a protective effect on hearing loss Popelka *et al.*, (2000) ^[30].

6. Implications for Policy and Prevention for Alcohol Consumption

Alcohol education efforts are a necessary and integral part of any balanced and comprehensive approach to policy. While the effectiveness of individual alcohol education programs has been questioned, there is evidence that, as part of a combined and multi-pronged strategy, it is a useful and important tool. As a policy and prevention measure, alcohol education consists of providing information whether for the general public or for particular groups or individuals and of efforts to change behaviors around drinking. Both of these aspects merit attention within alcohol policy. The provision of accurate information about alcohol can include balanced information on drinking patterns and outcomes, including health and social implications. Creating awareness about drinking guidelines

and recommendations is an important part of alcohol education. Other goals also include creating awareness among the broad public about the regulations that exist around alcohol within a given country or jurisdiction. age of legal consumption and purchase.

- Alcohol availability, hours of operation.
- Alcohol in the workplace.
- Drinking and driving regulations.
- Alcohol education can be tailored to address specific policy needs in relation to prevention and the reduction of harm.
- Information about alcohol for all ages from young people to older adults.
- Specific advice targeting at-risk populations.
- Education for particular groups and circumstances, for example, alcohol and sporting events (e.g., avoiding football hooligans)
- Appropriate training for alcohol educators, health providers, bar staff, and licensees.
- Drinking and driving education.
- Alcohol education for the workplace.
- Alcohol education for offenders (e.g., drunk drivers).

To have its intended impact, alcohol education, like any other policy measure, must be culturally sensitive and appropriate: It should reflect a community's culture, attitudes, and needs and be pragmatic and realistic both in its goals and approaches. It would seem unachievable (and unwarranted), for example, to develop policies to promote prohibition where alcohol is deeply embedded into a society's culture. At the same time, it is important to educate people about making personal choices, whether these involve drinking or abstinence.

7. Providing Alcohol Education

Most people who consume beverage alcohol experience few problems as a result of their drinking. However, for some individuals, alcohol consumption is associated with harmful health and social consequences, largely as a result of their drinking patterns. Education around alcohol consumption is therefore an important tool in prevention and an essential component of health education in general.

Structured approaches to alcohol education have been developed to help share specific information and change behavior. However, much of what we know about alcohol, how we view drinking, and whether we make the decision to drink are the result of an informal process that involves learning through personal experience and is largely shaped by culture.

- For policy and prevention, it is important to view alcohol education as one of several elements needed to reduce the risk for harm within a comprehensive approach to alcohol. While it may not offer all the solutions, alcohol education is an integral component of wide-ranging and balanced policies and prevention measures to raise awareness and share knowledge and skills that will enable consumers to make healthy and informed choices about their drinking;
- To help those who choose to drink avoid patterns that are associated with health and social harm to themselves and others.
- Special efforts in alcohol education focus on individuals deemed at increased risk for harm. However, raising awareness among the general population and ensuring that those who choose to consume alcohol do so as safely as possible is another important outcome of education efforts Bakke and Endal, (2010) ^[31].

8. Éduc'alcool has The Following Recommendations for Parents

- Keep the lines of communication open and easy with your teens and pre-teens.
- Listen to your teens and pre-teens and talk about drinking with them.
- Delay their first drink as long as possible.
- Arrange it so that they have their first drink under your control and watchful eye, ideally at a family meal where alcohol enhances the pleasure of being together.
- Watch to see if and how your teens and pre-teens are drinking, and take action to monitor them more carefully if they are engaging in risky behavior.
- Don't be afraid to ask for help if your adolescent child is in trouble, if you are unable to communicate, or if you lose control of the situation.

9. Conclusion

Alcohol uses are a major community health problem. This review paper highlights the need for the awareness about its consequences, specific prevention strategies regarding alcohol use among adolescents and general populace. Knowledge based interventions targeting alcohol related beliefs, attitudes and expectancies may be helpful in reducing harmful drinking behavior. This review also suggested that parents should maintain strong positive influence on alcohol and other addictive substance use. The schools and colleges should give emphasis on students who are staying away from home. People should be given proper guidance on money management skills. Such skills should be given especially to those youngsters who are staying away from family. There is an utmost need to educate and counsel young students regarding harmful effects of substance use. Health education may be imparted in the school curriculum. Parents should also be educated on discouragement of substance use and on taking proper care of their children. Some psychological strategies should also be attempted, for reducing the risk and potential loss of productive lives of young students and the society in general. Female students should also be investigated, as substance abuse may be prevalent among them also, due to the rapidly changing life styles and adoption of western culture. This review paper may be helpful in understanding a rapidly increasing public health problem which is of national importance and for suggesting probable solutions for reducing this problem. Understanding social and behavioral aspects of substance users will be helpful in reducing the risk which is caused due to substance use in the potential loss of lives of youths and their careers and also to their families and society in general. This information will also benefit the professionals, for undertaking primary preventive measures.

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