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## Use, Abuse, and Associated Impacts of Alcohol on Health and Crimes in Nepal

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### ABSTRACT

Alcohol is a socially acceptable and widely available drink in most countries. Its excessive consumption is linked to various health issues, increase in crime rate and even loss of life. This puts heavy strain in low-income countries like Nepal where full medical facilities are still out of reach for most of the population. Therefore, in this article, we have provided an overview of (i) the effect of alcohol on public health; (ii) trend data on alcohol seizures; (iii) alcohol (including methanol) positive forensic cases; and (iv) other alcohol associated crimes. Our analysis is drawn from a range of data types and sources, triangulating the collected data with alcohol specific academic and grey literature, a survey with students and insights from stakeholder engagements in Nepal. We have shown that alcohol has been associated with a range of health-related issues and crime types in Nepal. For example, alcohol was the most mentioned compound in the student survey (50.7%; n=418) followed by other drugs in Drugs Facilitated Sexual Assault cases. We have also discussed issues with adulteration, surrogates and sub-standard alcohol, highlighting the need for strict monitoring, regulations and extra vigilance about quality control of alcohol in circulation. This should be supported by public awareness campaigns on the use, abuse and impacts of alcohol.

**Keywords:** Alcohol use and abuse; Alcohol associated crimes, Health impacts; Forensic toxicology.

### INTRODUCTION

Alcohol (ethyl alcohol or ethanol) is a psychoactive (mind-altering) substance which is socially acceptable and widely available in most countries. Alcohol is routinely part of social gatherings for many people in Western countries while its consumption is forbidden in some cultures (e.g. Islamic countries). In traditional settings in Nepal, use of alcohol is common among certain castes and cultures where home-made alcohol is often consumed, whereas in urban areas, growing bar and club culture has enhanced the use and abuse of alcohol (both imported and Nepal made). For example, a study conducted in Dharan found alcohol dependence among 25.8% (n=2,344) participants.<sup>1</sup> The highest alcohol dependence was reported in age group of 45-54 years, common among widowers/divorcees and belonging to certain caste groups. The authors also stated that the extent of dependence was influenced by the socio-cultural issues (ibid).

Alcohol is a toxic compound, and its effect depends

on the dose, frequency and amount consumed on a single occasion, drinking environment, and mood of the user. A study was conducted in the UK to assess harms of twenty drugs using multicriteria decision analysis (MCDA) modelling.<sup>2</sup> The harms were divided into two categories: harms to the individual (nine criteria) and harms to others (seven criteria), and then scored by a multidisciplinary team of experts. Alcohol scored highest (as in the most harmful) in terms of harm to others, followed by heroin and crack. In regard to harm to individual, alcohol was preceded by heroin, crack cocaine and methamphetamine. However, in the overall score, alcohol scored highest (72 out of 100), followed by heroin (55 out of 100) and crack cocaine (54 out of 100).<sup>2</sup> The same modelling method was then used to evaluate drug harms on European<sup>3</sup> and Australian<sup>4</sup> fora. In both studies, alcohol scored highest for the combined assessment: 72 out of 100 in the European study and 77 out of 100 in the Australian study. These similar scores were achieved, despite the criteria

having different weightings attached to them to reflect the needs of the country/society.

Alcohol use and abuse is associated with various issues such as health (behavioural, psychological, and physical), domestic abuse, sexual assault, drug facilitated sexual assault (DFSA), road traffic accidents and other crime types (e.g. robbery, homicide). It is important to note that regular intake of large amounts of alcohol can lead to severe impacts on health, family and society, including alcoholism (alcohol dependence) and even death. According to the World Health Organisation, there are 3 million alcohol-related deaths reported per year.<sup>5</sup>

More recently, during the COVID-19 pandemic, fake news related to alleged benefits of alcohol have been spreading via social media. There were reports of people drinking alcohol or surrogates resulting in death cases.<sup>6,7</sup> In Iran, where alcohol is illegal, mass methanol poisoning occurred (700 deaths and at least 5,000 poisoning cases).<sup>6</sup> Similar news were also published from other countries e.g. India, Azerbaijan and Turkey. There were also reported cases of alcohol poisoning due to ingestion of hand rubbing alcohol or other household disinfectants or accidental exposure of children to these products during the COVID-19 pandemic. In response to the increasing cases of alcohol use and abuse during the pandemic, the WHO has produced a fact sheet on 'Alcohol and COVID-19: what you need to know'.<sup>8</sup> In May 2021, The Organisation for Economic Co-operation and Development (OECD) also published a report which mentions the increase in risk of individuals to engage in harmful drinking behaviour to cope with stress during COVID-19. It adds further that domestic abuse cases have increased and for which alcohol consumption is a risk factor.<sup>9</sup>

Despite these negative impacts, alcohol also has a variety of applications in medicine (antiseptic and disinfectant) and scientific research (as a solvent); domestic (cooking and flavourings) and industrial use (cleaning, fuel, mouthwash, aftershaves etc.). Ancient Ayurvedic medical texts such as the Charaka Samhita and Sushruta Samhita also mention use and effects of alcohol. Ayurvedic preparations such as Asava and Arishta contain self-generated alcohol content.<sup>10</sup>

In the context of potential usefulness and application of alcohol and its negative impacts from its excessive consumption, it is important to understand the patterns of its use and abuse in Nepal. There is also a need for increasing public awareness on safe and appropriate use as well as storage of alcohol-based disinfectants. Therefore, in this paper, we focus our analysis on a range

of alcohol related issues and provide recommendations to increase public awareness about its impact.

## METHODOLOGY

Our analysis is drawn from a range of data types and sources. In order to understand the patterns of alcohol use and abuse, as well its impacts on health and crimes, we first analysed the data available from Nepal Police (e.g. data on alcohol and raw material seizure and reported rape cases) and National Forensic Science Laboratory in Nepal (e.g. analysis of toxicology findings related alcohol cases). The information collected was then triangulated with a range of other sources: literature review (alcohol specific academic literature and those focused on Nepal), review of grey literature (e.g. analysis of available reports and newspaper stories on the topic). Finally, the data from our own survey, held in April 2019 with students of public and private colleges and with mixed socio-economic and cultural backgrounds) and insights from stakeholder engagements on alcohol and drug use in Nepal (held in 2018 and 2019) also helped us corroborate our findings. These data and information are presented as graphs to show trends. While using the qualitative data, we have presented anonymised quotes where appropriate.

## RESULTS AND DISCUSSION

### Alcohol associated health impacts

As highlighted in a number of academic publications, alcohol is a central nervous system depressant and it also acts on mood, emotions, actions and reactions of an individual. Alcohol Advisory Council of New Zealand (ALAC) mentions that alcohol affects all part of the body.<sup>11</sup> Under the influence of alcohol, one may think, feel, act and react differently. The effect of alcohol is dose dependent and with low amounts consumed, one may feel relaxed, more social, happy, talkative and friendly. However, alcohol also increases risk taking behaviour and impairs judgement. Few more drinks may cause slurring of speech, loss of control, increased aggression resulting in violent behaviour. Higher alcohol consumption may lead to blackouts, memory losses, respiratory depression, and even death.<sup>12</sup> Like most drugs, liver plays a major role in alcohol metabolism, therefore it is susceptible to alcohol-induced damage. Consumption of alcohol for a few days may cause a fatty liver in most people which is a reversible condition that gets better after a short period of abstinence (break from drinking). However, the most serious forms of liver diseases in alcoholics are hepatitis, cirrhosis, and cancer<sup>13</sup> Equally, cancer of

mouth, oesophagus and stomach are also likely and long-term alcohol use can also cause pancreatitis.<sup>12</sup> In Nepal, a significant increase in the risk of developing alcoholic liver disease with the consumption of locally brewed alcohol has been reported in the last few years. In a study, 29.8% patients (N = 1,500) showed alcoholic liver disease and 9.6% patients had chronic liver disease. Most patients consumed homemade or locally brewed alcohol such as rakshi and tongba.<sup>14</sup> While alcohol consumption is a prerequisite for the development of alcoholic liver disease, other factors such as type of alcoholic beverage consumed, frequency and amount may also play a role in the development of chronic liver disease. Another retrospective study conducted in Bir Hospital, Liver Unit, Nepal, also reported alcohol to be the leading cause of cirrhosis (28.5%, 37 patients).<sup>15</sup>

### Public health menace: surrogates, illegal production, and adulteration

More serious health issues arise when alcohol-based products (e.g. disinfectants and cleaning products) known as surrogates are sometimes consumed by alcoholics as a source of concentrated alcohol. In addition, illegally produced alcohol can bring an extra health risk from exposure to toxic contaminants leading to death<sup>16</sup> and adulteration of alcohol with methanol resulting in blindness and death.<sup>17</sup> During the COVID-19 pandemic lockdown and restrictions, there have been various newspaper reports and anecdotes in India and Nepal of alcohol dependent people trying to consume surrogates (e.g. sanitisers, disinfectants). This shift has also been reported in other countries (e.g. Iran, Mexico, Azerbaijan)<sup>7</sup> but possibly due to different reasons such as false belief or misinformation<sup>6</sup>, unintended consequences of alcohol ban during COVID-19<sup>18</sup> and alcohol dependency.<sup>6,19</sup> To make people aware and to clarify misinformation that was spread via fake messages such as ‘drinking alcohol kills COVID-19 virus’, WHO and national health agencies have a crucial role to play.<sup>8</sup>

### Forensic toxicology findings – methanol poisoning

Data obtained from the Forensic Toxicology Unit of the National Forensic Science Laboratory, Khumaltar shows an increasing trend of alcohol related cases in Nepal (Figure 1). Both ethanol and methanol have been detected in the years 2066/67, 2073/74 and 2075/76 (in Bikram Sambat). While ethanol is present in alcohol and alcoholic beverages, methanol exposure can be

extremely dangerous, resulting in death if not recognised and left untreated. This can happen due to accidental or intentional ingestions and accidental poisonings because of alcohol production (distilling and fermenting) errors and beverage contamination or adulteration. For example, a locally brewed alcoholic drink called ‘sofi’ was adulterated with methanol leading to death of seven people in Sindhupalchok district and three in Sindhuli.<sup>17</sup> 21 deaths were also reported from Mahottari district.<sup>16,20</sup> This warrants a stricter monitoring and quality control of alcohol sales and usages in Nepal.

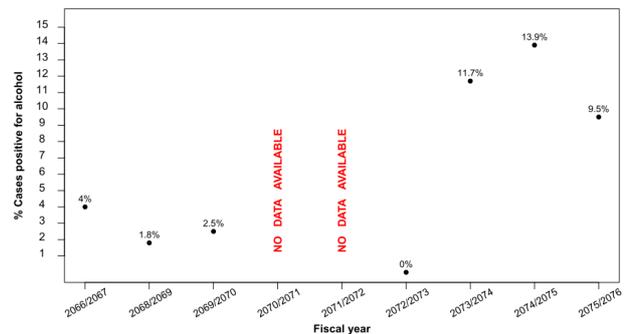


Figure 1: Alcohol positive (including methanol) cases from the National Forensic Science Laboratory data

### Illegal alcohol trade in Nepal

Based on crime records from Nepal Police for the past three years, Figure 2 shows increasing trend of illegal alcohol trade and transportation in Kathmandu valley whereas this is decreasing in all other provinces. In the year 2076/77 BS, 486,877 L of homemade alcohol and 823,083 kg of raw material to make alcohol have been seized by Nepal Police. It is very important for these products to be tested to ensure that general public are not exposed to adulterated, contaminated or sub-standard products. As alcohol is linked to the socio-cultural aspects of some Nepalese (caste and indigenous groups), homemade production of alcohol needs to be regulated and supported by awareness campaigns so that people are mindful of any potential issues encountered

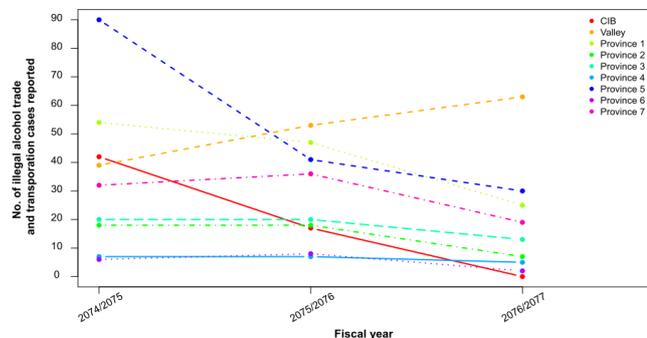


Figure 2: Illegal alcohol trade and transportation related crimes recorded by Nepal Police

\*Data obtained from Police Headquarter, Nepal

(such as potential toxic compounds formed during the fermentation process). Additionally, more research is needed in testing the level of alcohol as well as identifying components that are present in home-brewed alcohol.

### Alcohol associated crimes

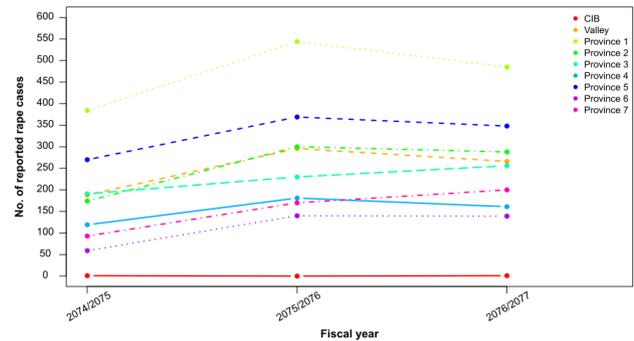
#### Sexual assaults including rape and drug facilitated sexual assault (DFSA) cases

The relationship between alcohol consumption and sexual assault has been established in the Western world. Most commonly, due to the culture of excessive drinking, this relationship is clearly visible in university campuses. A US-wide study showed that alcohol abuse and dependence among college students was a risk factor for sexual assaults, both for female and male students.<sup>21</sup> Another study conducted within Welsh universities, reported that almost 6% of female respondents and 1% of male participants (N = 7,846) were victims of alcohol-related sexual assault.<sup>22</sup> In England and Wales, the Crime Survey in 2018 reported that in 37% of rape cases, the perpetrator was under the influence of alcohol.<sup>23</sup> Similarly, a state-wide survey conducted as part of A Health Survey of Texans revealed that 20% of female participants (N = 1,200: 672 women and 528 men) were sexually assaulted.<sup>24</sup> and almost 40% reported that the perpetrator was under the influence of drugs/alcohol at the time of the assault.

An explanation of the correlation between alcohol intake and sexual violence is that alcohol consumption leads to a phenomenon known as alcohol myopia.<sup>25,26</sup> It can be explained as a change in perception where subtle cues are missed and people might hear or see what they want instead of the whole message.<sup>26</sup> The alcohol-related change of perception affects both men and women, but it impacts genders differently. For example, alcohol myopia might make women vulnerable to poorly assessing and reacting to risk. On the other hand, men might not misinterpret non-verbal cues.<sup>26</sup>

The prevalence of sexual assaults and DFSA in Nepal are becoming more part of the public debate as evident from Nepal Police records of 471% increase in reported rape cases in the last decade (from 391 cases in 2066 BS to 2,233 in 2076 BS). However, most cases still do not come to light because victims are often ignored or not taken seriously by law enforcement agencies, judicial system, society and even their own family. Figure 3 shows reported rape cases by province level for the past three years. While these figures show a slight decrease in number of rape cases

reported in the year 2076/77 (except province 3 and 7 where increase is noticed), it does not provide the details on the nature of these cases i.e. whether or not drugs/alcohol was involved. This means, without appropriate recording of nature of these cases, one cannot infer the involvement of alcohol in such cases. This shows the need to include details about the substance(s) involved in the crime in records held by the police forces. to include details about the substance(s) involved in the crime in records held by the police forces.



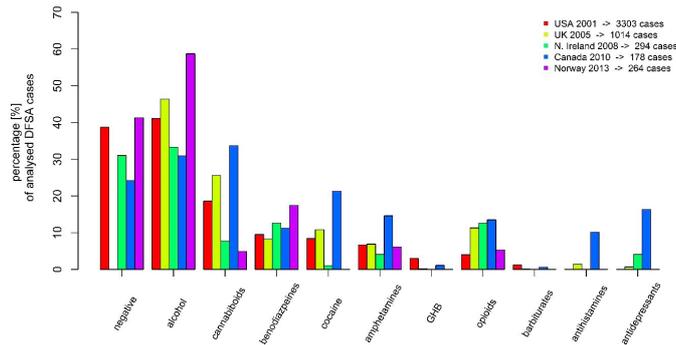
**Figure 3 Rape cases recorded by Nepal Police**

\*Data obtained from Police Headquarter, Nepal.

Drugs Facilitated Sexual Assault (DFSA) is a sexual act in which the victim is unable to give or rescind consent due to intoxication with alcohol and/or drugs.<sup>27,28</sup> In Nepal, research into DFSA has practically been non-existent due to various reasons, such as: (i) social and cultural taboo, (ii) lack of knowledge, preventive awareness and conversation about these issues in community, family and education establishments, and (iii) lack of capacity to investigate such cases. For example, a district court judge during our first stakeholder engagement workshop highlighted how issues of sexual assault and DFSA are seen as a social taboo: “the cases that come to court are only symbolic, there are still many cases that are unreported due to fear or taboo or are made to compromise”. Moreover, rape cases facilitated by drugs and/or alcohol have been reported in media but they are often couched under generic “rape cases” or details are rarely available.

Realising this gap, we conducted a survey among private and public college students of Kathmandu valley and our survey found that 3.4% participants have experienced some form of DFSA (n=418) and 14.9% knew someone who had experienced DFSA.<sup>29</sup> In terms of substances involved in DFSA, alcohol was the most commonly mentioned drug (50.7%), followed by benzodiazepines (20.4%) and cannabis (16.1%). Although DFSA may be as a result of the victim’s food and drinks being spiked with drugs and alcohol (i.e. proactive DFSA) and/or victim’s own use of drugs or alcohol and the perpetrator taking advantage of

the situation (i.e. opportunistic DFSA), our study did not attempt to differentiate these. While other drugs might be involved in DFSA cases, alcohol intoxication is still the greatest culprit (Figure 4).<sup>27</sup> as it is a socially accepted drug and widely accessible. Without changing the record keeping process within police forces, we are unable to understand the veracity of the role of alcohol in sexual assaults and DFSA in the country.



**Figure 4 Prevalence of drugs and alcohol in DFSA cases.<sup>27</sup>**

\*Studies from USA, UK, Northern Ireland, Canada, and Norway are used for comparison. Data from Nepal is not available.

### Alcohol linked to domestic abuse

The Nepal Demographic and Health Survey (NDHS) of 2016 (n = 12,862) reported that experience of spousal violence has increased with the level of the husbands' alcohol consumption.<sup>30</sup> Of women who experienced spousal violence (physical, sexual or emotional), in 74% of the cases, the husband was very often drunk, as compared to 18% of whose husbands did not drink. Out of the crime types recorded by Nepal Police, very few cases of domestic abuse (4 cases in 2075/75 BS and 6 cases in 2075/76 BS) have been recorded. Again, this shows very low reporting of domestic abuse cases, and it is not clear whether or not these cases are linked to the use of alcohol.

As alcohol specific academic literature indicates, alcohol makes men behave more aggressively and be more forceful. It sometimes also serves as an excuse for poor behaviour.<sup>26,31</sup> The correlation of alcohol use by perpetrator and physical harm inflicted during the assault has also been researched. For example, a study found that injuries were more likely to occur when the assailant was under the influence of drugs or alcohol, highlighting that alcohol consumption in men increases their aggressive behaviour.<sup>24</sup> This is linked with the alcohol lowering inhibitions and misinterpreting non-verbal cues<sup>32</sup> reacting aggressively to a situation which in normal circumstances would be ignored.

More recently, there have been reports of increasing trend of domestic violence cases during the COVID-19, linked with alcohol use.<sup>9,33</sup> This could be due to increased frequency of drinking (and low-price alcohol available) or having more free time on hand due to national lockdowns and movement restrictions and/or due to isolation and stress. It is evident from the available reports that some population groups increased alcohol consumption more than others during COVID-19.<sup>9</sup> While more recent data on alcohol intake during the pandemic are not available for Nepal, based on findings from a survey conducted in western Nepal.<sup>34</sup> certain caste and indigenous groups (particularly males of 45-65 years old) need to be targeted for alcohol reduction interventions and public awareness programmes.

### Other issues linked with alcohol

Alcohol is also often linked to accidents such as road traffic accidents, drowning, falling, and suffocation. While Nepal has implemented zero alcohol policy for drunk driving<sup>35</sup>, road traffic accidents associated with alcohol still do occur. Alcohol also plays a significant role in violent crimes and acts of aggression such as anti-social behaviour, fights, unprotected sex and potential drug abuse. Cases of homicide and burglary have also been reported to link with alcohol use and abuse.

Excessive alcohol consumption may also impact negatively on employment opportunities and productivity of an individual; it may also reduce student engagement and attainment for adolescent group. From health angle, it reduces life expectancy, results in serious health problems, causes higher health spending for an individual and government. Therefore, excessive alcohol consumption has damaging effect not only to the individuals, but also to the family, society, and country. This is why it has scored highest in the drug harm assessment models.<sup>2-4</sup> On the other hand, in some cases, alcohol abuse stems from individuals trying to self-medicate with alcohol, e.g. for anxiety, depression, to deal with traumatic memories.<sup>36</sup>

### CONCLUSION

Alcohol is also a commonly available and socially accepted drink; it has also various other uses such as in the form of research chemical, solvent for medicines, cleaning products, fuel and antiseptics. However, excessive consumption of alcohol is linked with serious health issues and even death. The health burden of alcohol related problem is high especially in low-income countries like Nepal where full medical facilities are still inaccessible for the majority of the population. Alcohol has also another

facet, that is crime. It is associated with various crime types as discussed in this paper which can also lead to the loss of life in some cases (e.g. methanol poisoning, road traffic accidents); physical and psychological trauma (e.g. domestic violence, sexual assault and DFSA cases). Due to increasing pattern of use and abuse of alcohol in Nepal and its impacts on health and crimes, there is a need to develop and implement several policy and public awareness interventions in the country. For example, public awareness activities should focus on safe consumption of alcohol, its effects and where and how to get support. These public awareness messages can be offered as extra curricula events in schools or during parental evenings or conveyed via drama, poems, and seminars. To increase effectiveness, these programmes can be offered by the police and public stakeholders as well as via governmental and non-governmental organisations. Combined with awareness programmes and appropriate interventions, there is also a need to develop, implement and monitor strict regulations and extra vigilance (for example to reduce incidences related to poisoning from surrogates). Similarly, as alcohol is also linked to socio-cultural aspects of Nepalese society, there is a need to regulate homemade production, sales and consumption of alcohol, while also strictly enforcing laws against drink-driving offences.

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