

Alcohol Impaired Driving: Its Consequences and Potential for Reduction in South Africa

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ABSTRACT Motor vehicle crashes related to drunk driving constitute a major problem for public and environmental health in South Africa. Alcohol-impaired driving became problematic apparently soon after the introduction of motor vehicles. This paper banked on various trends and measures of the problem, which were tracked through review of the relevant literature conducted. From the year 2014 to 2015, the Road Traffic Management Corporation (RTMC) opined that more than 4,500 people died on South African roads as a result of alcohol impaired driving. However, road fatality is the cause of deaths of about eighty percent on the country's roads, which comprise of adults and males between the ages of 19 and 34 year. The main contributing factor to these road crashes remains drunk driving with strong evidence from the department of transport. This paper forms the basis of the recommendations as a guide for decision-makers and public health practitioners to ascertain and implement proactive intervention strategically in preventing alcohol impaired driving in South Africa.

INTRODUCTION

The problem related to alcohol impaired driving became obvious after the introduction of motor vehicles. The use of alcohol is deeply rooted in the South African society. The intake of alcoholic beverages is embraced by the majority of people with drinking taking place in public and private places. Alcohol impaired driving is a product of social institutions related to recreation and transportation on daily basis. Drinking and driving activities can be disjointed but it is not surprising that they are joined due to the link between social activities, which form a part of recreation and transportation from places of social gathering to another destination (Greenwood and Wattal 2017; Morrison et al. 2017).

The distribution of road accident deaths and fatal injuries due to drunkenness should be understood to improve road safety, basically in low and middle-income countries that showcase out of proportion higher problems, but they lack a research that is analytical on their outcomes, compared to countries with a high source of income. Based on the global encumbrance of road traffic injuries, low and middle-income countries witness eighty-five percent (85%) of all fatalities and ninety percent (90%) of all disability

adjusted life years lost are accounted for according to (Ernst 2014).

In 2002, road traffic injury was ranked as the 11th leading cause of death worldwide (Mathers and Loncar 2006). The South African National Burden of Disease Study in 2000 reviewed these traffic injuries to be the 7th leading single death caused in the country, and it has accounted for twelve percent (12%) of deaths from all causes (Bradshaw et al. 2003). From the year 2014 to 2015, it was released by the Road Traffic Management Corporation (RTMC) in its annual report that more than 4,500 people died on South African roads. The Transport minister in Johannesburg opined that road fatality is the cause of deaths of about eighty percent on the country's roads, which comprise of adults and males between the ages of 19 and 34 years.

The main contributing factor to these crashes remains drunk driving, which was said by the department. The risk of fatal injuries has not only increased by alcohol intake but also cause violence and traffic collisions. Also, the central nervous system is depressed by alcohol abuse, disordered thought patterns can occur to users, motor control will generally decrease as well, coupled with the increase of a wide range of fatality.

Recently, a South African study showed that alcohol intake increases injury in the transport system. Moreover, recent media articles highlighted the consumption of alcohol in association with drowning, research reveals that incidents of drowning recorded by the National Injury Mortality Surveillance System (NIMSS) were at about forty percent, which have positive blood alcohol concentrations (BACs). It is a huge task for the law enforcement organizations trying to keep roads safe and managing drunk driving. In the world generally today, numerous accidents are caused by drunk drivers, which result in injury, fatality or even death of many drivers, passengers, cyclists and pedestrians.

Results of injuries caused by accidents place a huge problem on the monetary income of the state's health services and the valuable time of the law enforcement and emergency service organization are wasted (Venter 2009). Drinking and driving in South Africa rates very high in the world according to the World Health Organization (WHO 2007). Therefore, this study is of critical eminence.

This paper seeks to champion a course to put a stop to alcohol intake before driving and bring a drastic reduction in fatal injuries and road accidents in South Africa. The overall conclusion coined out from this study serves as a guide for public health practitioners to create community education campaign to stop drunk driving, a plan of action for national road safety and the implementation of actions, which will prevent road traffic crashes and minimize injuries caused as result of drunk driving.

Problem Statement

In South Africa, alcohol impaired driving resulting in road crashes remain high. The roads are still plied by drunk drivers with many of the drivers committing the same illegal offence of drinking and driving over and over again. The failure to ameliorate this menace can be traced to the laxity of the Department of Health and the SAPS. Previous studies highlighted that a number of drunk-driving cases face less prosecution because the more severe the injury of the driver the less he is likely to face judgement (Gershowitz 2011; Rabiee et al. 2017).

However, there are still tragedies that involve drunk driving that transpire into controversial stories just to catch the attention of the populace, which already knows the problem associated with alcohol impaired driving. The public is aroused by these tragedies, which makes guilty

drunk drivers to scale through punishments that is due to them. In other words, drunk driving and casualties caused as a result of this menace comes with emotional sentiments.

Furthermore, only few literature was found with regards to alcohol impaired driving in South Africa. Therefore, this study is important because it seeks to bring to the fore intricacies embedded in alcohol impaired driving, the consequences and a forward looking approach to bring reduction to the problem.

Objectives of the Study

1. To highlight the link between alcohol intake and possibility of accidents.
2. To bring to the fore alcohol intoxication level perception and legislation on drunk driving.
3. To highlight potential reduction for alcohol impaired driving in South Africa.

Research Questions

1. Can alcohol intake before driving lead to accidents?
2. What is the link between drinking and driving?
3. How safe are South African roads with regards to drunk drivers?
4. What are the legislative measures guiding alcohol impaired driving in South Africa?

METHODOLOGY

This paper used a systematic review of literature from journals, books, conference reports, dissertations and internet sources. The researchers used their intuitive experience and knowledge in Geography and Environmental Science and Public Administration, and government and United Nations' Development Programme publications to raise debates and discourses on issues pertaining to alcohol impaired driving, and its consequences and potentials for reduction in South Africa were also used.

OBSERVATIONS AND DISCUSSION

Consumption of Alcohol and the Possibility of Accidents

The ingestion of alcohol, even in minute quantity can cause driving impairment with a

risk of being a victim of an accident. According to the World Health Organization (WHO) (2007), research conducted worldwide shows that drivers, motorists, cyclists and commuters who have high alcohol intake level are liable to a higher risk of being a casualty of a road accident other than people in this category who have not ingested alcohol. The outcome of injuries resulting from accidents are strongly influenced by the use of alcohol, which affects vision, memory loss, and also slows down the function of the brain thereby causing impairment in the sensory organs of the body (WHO 2007). Considered to be at the highest risk of drunk driving are male drivers and drivers between the ages of 18-24 years. Also, more accidents are experienced by inexperienced young adults driving a vehicle with a Blood Alcohol Concentration (BAC) of 0.05g/100ml compared to drivers with more experience. The end outcome of drinking and driving is the danger of having an accident, which is the effect of alcohol impairment in drivers (Bullers and Ennis 2006).

Can You Take A Risk of Drinking and Driving?

Referring to the provisions made by the Road Traffic Act of 1989, while under the influence of intoxicating alcohol or a drug having a tipsy effect, or with a blood concentration of 0.05g or more per 100ml of blood, it a punishable offence to drive a vehicle. From all practicable indications, it is discovered that a blood alcohol concentration of less than 0.05g per 100ml guarantees that no one can drive a vehicle with the necessary skills required, it does not provide immunity from prosecution as well. "Drunk driving" can be charged against such person with the possibility of being guilty with adequate proof (Nicol et al. 2014).

The effects of alcohol on driving are all negative and disastrous without any bit of it being positive. The intake of alcohol affects strongly visual functions, which may cause longer eye fixation time detective attention switching and double sight. It will also cause a significant reduction in seeing the headlights of oncoming vehicles and the response time of both eye movement and accommodation may be lengthened.

Moreover, the rate at which information is processed by the brain is impaired, the intake of alcohol impairs conduction and transmission in the central and peripheral nervous systems,

which causes delays in prompt decision-making. The balance between restraint and impulse are being disturbed by alcohol, impulsive behavior can occur as a result of this. The concentration of high alcohol in the blood increases the period of time required to apply the brakes, and hence, there will also be a reduction in the degree of controlling the actual use of brakes (Nicol et al. 2014).

According to a friend's experience, "when you are under the influence of alcohol and you are drunk to stupor, the brake will turn to your accelerator and your accelerator is turned to your brake", that is to say, drinking and driving changes your sense of operating a vehicle, matching the accelerator at a point you had to match the brake will definitely lead to a disaster. Personal interventions may not be suitable for all alcohol consumers, it was discovered that alcohol consumers who have the belief that can withstand the outcome of alcohol effect on their system have the confidence in their ability to still drive even though they know they are drunk. It was also found by these authors that while a perceived intoxication may be a way to stop drunk driving, risk ahead should be a more proximal predictor. Another issue is that, if drivers are in the knowledge of their intoxication state, they may drink and drive anyway if they do not see themselves to be at risk (Gustin and Simons 2008).

Drunk Driving and Road Safety in South Africa

According to the statistics of Arrive Alive (2011), there is an increase in the likelihood of having an accident from drinking and driving in South Africa, which is a serious concern for the road traffic authorities, because intoxication through alcohol has been discovered in at least two percent of all drivers at a particular time. Moreover, one of the biggest threats to road safety in South Africa is drunk driving, and of people who die on roads, about fifty percent (50%) of them have a blood alcohol concentration above 0.05 gram per 100 milliliters.

However, the provinces of Gauteng, the Western Cape and Kwa-Zulu Natal witnessed the highest number of crashes between 2014 and 2015, and the minister for transport, (Minister

Dipuo Peter) submitted that speed and alcohol abuse are the two top major causing factors that led to these crashes. The estimated factor of alcohol in a non-fatal accident is considered to be thirty-three percent in South Africa. These accidents place a financial burden on the health-care service of South Africa to the tune of about R114 million (WHO 2007). Considering the World Health Organization statistics to be very high because it was on record that in the Western Cape Province alone, the cost of road traffic accident caused by alcohol in 2010 is about R3.067 billion. South Africa has been highlighted as the worst country in the world for drunk driving, alcohol consumption has attributed to fifty-eight percent of deaths on South Africa roads. The rate of drunk driving related deaths in South Africa is higher than anywhere in the world, this is based on the recent Global Status Report on Road Safety (WHO 2015). Over 180 countries across the world were reported by WHO, noting that a total of road traffic deaths amounted to 1.25 million per year as of 2013.

With reference to the Road Traffic Management Corporation (RTMC) (data from 2010-2011 cited in Staff Writer, 2015), it identified the following categories of Rate of Deaths by Road User: South Africa's road death among passengers of 4-wheeled vehicles accounted for thirty-eight percent, the drivers of vehicles are twenty-nine percent and pedestrians are thirty-three percent.

Enforcement of Legislation Driving and Penalties Imposed for Drunk Driving in South Africa

The Republic of South Africa National Road Traffic Act of 1996, Act 1993 as amended made provisions for the legislative framework for the legal blood concentration, and also there is a provision for legislative action for breath alcohol concentration for driving a motor vehicle in the country. With reference to Section 65, driving while under the influence of intoxicating liquor or drug having a narcotic effect, or with an excessive amount of alcohol in blood or breath states that while under the influence of intoxicating liquor or drug having a narcotic effect, or with an excessive amount of alcohol or blood in the breath, driving is prohibited. When drunk no person should be found on a public road, when drunk no person should drive a vehicle, or occupy the driver's seat of a motor vehicle the engine of which is running, while under the in-

fluence of intoxicating liquor or a drug having a narcotic effect.

Section 35, on conviction of certain offences licence and permit shall be suspended for a minimum period and learner's or driving licence may not be obtained (1) Subject to subsection (3), every driving licence or every licence and permit of any person convicted of an offence referred to in (a) section 61 (1) in the case of death of or serious injury to a person (b) section 63 (1) driving recklessly, (c) section 65 (1), (2) or (5) where such person is the holder of a driving licence or a licence and permit, shall be suspended in the case of (i) a first offence, for a period of at least six months (ii) a second offence, for a period of at least five years, or (iii) a third or subsequent offence, for a period of at least ten years.

According to SAPA (2011) cited in Dunne (2012), 19,780 drivers were arrested for drinking and driving in South Africa between October 2010 and September 2011. Only 600 drivers were found guilty and sentenced and 47 were given no option of another type of sentence and they were sentenced to prison. A lot still needs to be done in South Africa pertaining to the level at which cases of drunk driving are been handled.

The national laws of South Africa to combat drunk driving is about 10, whereas the country is making use of only 4 out of 10 in terms of enforcement. The enforcement of speed limit scores 3 out of 10 and the laws of seat belt use scores worse in terms of enforcement, scored 2 out of 10. Moreover, only about thirty-one percent of passengers in cars make use of seat belts in South Africa, as for drivers thirty-three percent of drivers make it a duty to wear a seat belt (WHO 2007).

Intoxication Level Perceptions

The use of breathalyzers has been used to know the level of intoxication while some other studies have explored individuals' perceptions of intoxication through the utilization of the Widmark Formula (McCartney et al. 2017). In 1932, the Widmark Formula was newly published and was made use of calculating estimated blood alcohol concentration (eBAC). Lately, the formula has been remodified by numerous authors to create room for gender equality (De Bejczy 2016), and breath alcohol concentration (eBRAC) has been included and it was well adjusted to give a perfect test. To determine eBAC four variables are required, which have been identified.

The four variables are the period of time in hours of the drinking moment, gender, body weight and the amount of alcohol ingested in grams of pure alcohol (Kypri et al. 2005). eBAC is represented by a theoretical measure of "C0", which assumes one hundred percent absorption and instantaneous distribution over a specific period of time. The absorption of alcohol is not complete when food has been eaten, therefore in realistic speaking, the peak is often less than 66.6 percent of this theory.

The Department of Forensic Medicine at the University of Dundee is the source of the "C0" formula, which was taken from lecture notes in 2011. In the "C0" formula WF is the representation of Widmark Factor an estimate of body water content. Basically, women on an average side have a smaller body mass and a higher proportion of fat than men the reason been for the mean experimental values are 0.68 for men and 0.55 for women. The average body sizes of men and women called for these variations. Considering these two critical factors women have a smaller volume of water on which the alcohol may distribute, therefore women reach a higher BAC faster than men when on the same intake of alcohol. Moreover, the suggestion was made that the Widmark Formula might overrate a person's BAC unless under controlled situations where the formula has been ascertained to be perfect (Kraus et al. 2005).

In a similar vein, it was identified that there were three limitations in the Widmark Formula. Number one, there is an assumption by the formula that a person has not consumed any food to absorb the alcohol, it also assumes that alcohol is ingested at a glance rather than in a space of time, and lastly, the variability in alcohol absorption is elimination rates between persons are not acknowledged (Donovan 2009). It was discovered that people were averagely perfect at calculating maybe they were above or under limits but not perfect at calculating BrAC levels (Bullers and Ennis 2006). There is definitely a way to make progress and make personal interventions, if researchers can discover the level at which men and women have the possibility to make the most mistakes. According to Neighbors et al. (2009), in a quest to put a reduction in the alcohol intake of young ones celebrating birthdays, they can be provided with personalized BAC feedback, which was discovered to reduce the highest BAC point attained by each

person who can probably attain a higher BAC level.

The Consumption of Alcohol in South Africa

The consumption of alcohol in South Africa was traced to the pre-colonial era where the consumption of alcohol was only common among the elders and senior citizens and few youths were engaged in drinking. The consumption of alcohol was mainly in ceremonies, celebration and during festive periods (Peltzer and Phaswana 1999).

In recent times, the consumption of alcohol has become a general thing among all facets of the society and most commonly among the students and youth of today. In the examination of a wider scenario as provided by the Department of Health's South African Demographic and Health Survey (SADHS 2008) cited in Shisana et al. (2008), thirty-nine percent of men and sixteen percent out of 15 years or above recorded in the study to have consumed alcohol in the past 12 months. It was interesting to know that higher rate for drinking was noted for both men and women in the urban areas and the highest rates were recorded by persons who had finished higher education whereas those who did not receive higher education were relatively low.

Based on a report by the World Health Organization (2010) cited in Poznyak (2014), 11.0 liters per capita of pure alcohol was consumed by South Africa making them the African country that consumes the most alcohol per capita. The alcohol consumption in South Africa has increased with the country now ranked as one of the top 20 most drinking nations in the world. This is based on the statistical update from the World Health Organization looking into alcohol intake per capita across 194 countries. According to this data in 2015, pure alcohol consumed by South Africa is 11.5 litres per capita per year which was initially 11.0 litres in 2014. This drinking habits is linked to impairment when it comes to driving which is a menace that needs attention and proper checkmating.

CONCLUSION

In conclusion, alcohol related impairment on driving is a menace to public and environmental health of people. The impacts of alcohol on driving simulates negative effects on drivers. Therefore, alcohol abuse in this context is unethical.

The recommendation drawn from this study will serve as a guide for concerned authorities in bringing a stop to this menace.

RECOMMENDATIONS

Some of the developed countries of the world have put measures in place to ameliorate the menace of alcohol impaired driving. However, within the context of South Africa the following recommendations can bring about a reduction in the consequences of drunk driving if it is given strict adherence.

Drunk Driving Laws

The law guiding alcohol impaired driving should be strictly maintained by all stakeholders, it should be made illegal nationwide to drive with a Blood Alcohol Concentration (BAC), which is more than 0.08 percent. There should be zero tolerance for driving with any measurable amount of alcohol in the driver's body system below the age of 21.

Sobriety Check Points

These kind of check points allow for police to check at specific points, they are highly visible locations, which allows to check if the driver is driving under the influence of alcohol. Thereafter a breath test may be performed on the driver if the police suspects the driver is intoxicated with alcohol.

Ignition Interlocks

An ignition interlock is a powerful device installed in cars, which serve as a breathalyzer for private vehicles. It is normally used for people found guilty of drunk driving and it is highly effective in preventing repeated offences while connected to such vehicles. Before starting a vehicle the driver needs to blow into the mouthpiece and if the device detects the amount of alcohol intake is more than a certain percentage the vehicle cannot start or move. This kind of device is programmed by driving related crime agencies of developed countries of the world and it has been found to be very effective.

Social and Mass Media Campaigns

Social and mass media messages in the form of a campaign can spread the message related to

dangers and consequences of alcohol impaired driving. The message should be spread with persuasion, use of a drama, billboards and other social media network that the people can easily access.

Administrative Charges, Revocation and Alcohol Screening Interventions

Administrative charges can lead to suspension of a driver's licence if found guilty of drunk driving, such culprit can also be made to pay some certain amount of fine, this will serve as deterrent to other people who are found guilty of drinking and driving. However, alcohol screening intervention is a way of assisting people who are victims of drunk driving through counseling, treatment and proper healthcare. This can be achieved through the combined effort of the healthcare delivery officers and social workers. This will put victims on the right track, rehabilitating them and counseling them to prevent future occurrence of drunk driving.

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