



Gender, Alcohol Intoxication and Homicide, in Nairobi County, Kenya: Autopsy Study

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Abstract

Background: Violence causing fatal trauma to the body, the commonest cause of unnatural death, is a preventable leading global public health problem. Violent deaths are categorized as those due to homicide, accidents or suicide. These deaths could result from gunshots, blunt injuries or mob justice. However, It has been positively correlated with alcohol intoxication. **Objective:** To determine the relationship of gender, alcohol intoxication and homicide, in Nairobi County, Kenya. **Methods:** This was a descriptive prospective study carried out at Nairobi City Council Mortuary, Nairobi, Kenya between June 1 2009 and May 31 2010. All the bodies that fulfilled the criteria of violent fatal outcomes were included. Bodies were categorized by gender and divided into 10 age groups of 10 years each. A complete forensic autopsy examination was done on each. Data were entered on a preformatted data sheet and analyzed using IBM statistical package for social sciences (SPSS) version 11. **Results:** A total of 2566 autopsy cases were reported between June 1 2009 and May 31 2010. A majority, 1154 (47.3%) of the deaths were due to homicide, 1064 (43.6%) accidents, and 224 (9.1%) suicide. Out of the 400 study subjects randomly selected from the 2566 autopsies studied for alcohol levels, 105 (26.3%) were found to have alcohol in the vitreous humor. Ninety-six (91.4%) had died violently, 38 (39.5%) homicide, accidents 50 (52.1%), and suicide 8 (8.3%). Homicide victims that were intoxicated, 36 were males (94.7%) and 2 were females (5.3%), A p-value of 0.03 (95% confidence interval) was found when the data was analyzed using an F-test. This was a statistically significant difference ($p = 0.03$) between homicide and alcohol intoxication. **Conclusions:** A causal role exists between male gender, alcoholic intoxication and the liability to die a homicidal death.

Subject Areas

Sociology

Keywords

Alcohol Intoxication, Autopsy, Homicides, Gender, Nairobi, Kenya

1. Background

Violence can generally be defined as the threatened or actual use of physical force or power against another person, against oneself, or against a group or community that either results in or has a high likelihood of resulting in injury, death or deprivation. Violent deaths are those fatalities that result from injuries consequent to use of force in cases where no natural cause can be identified [1]. Violence leading to fatal trauma is a preventable leading global public health problem. Its control and prevention depends on the magnitude and nature of the problem. An estimated 3.7% of all deaths in the world are violence related, with suicide being the most frequent form followed by homicide and then war related deaths [2] [3]. Violence leading to death is significant and preventable public health problem [4]. In 1990, an estimated 1,851,000 people died from violence (35.3 per 100,000) in the world. Categories of violent deaths are suicide, homicide and accidents [5].

Global rate of homicide is 7.6 per 100,000 [6]. The highest is 15.5 per 100,000 in the Americas and the lowest is to 3.8 per 100,000, in Europe. In Southern Africa it is 24.7 per 100,000 while in East Africa it is 20.8 per 100,000 [7].

The prevalence of Homicide by city is highest in Adana, Turkey 21% [4], 19.8% in Maputo Mozambique [8] and lowest in Ibadan, Nigeria 3.1% [9].

Most of Africa lacks statistics on violent deaths in South Africa where most studies from Africa have been conducted the leading cause of violent deaths is gunshot injuries [10].

Suicide, homicides, motor vehicle crashes and other violent deaths and injuries are linked inextricably to alcoholism [11]. It is well established that use of alcohol increases the risk of fatal injuries [12]. A significant proportion of violence-related deaths worldwide are associated with alcohol [13]. In Finland over 20% of the violent deaths are alcohol-related, with differences in epidemiologic patterns and trends for different types of violent death between sexes and age groups [14]. Alcohol is involved to a considerable extent in all major categories of violent deaths for all age cohorts [15].

Alcohol was found in the blood of the homicide victims [4]. Studies have established a strong connection between acute inebriation, alcohol addiction and suicides [16].

Among sociodemographic factors of alcohol consumption a link exists between alcohol and male gender [17]-[22].

2. Methods

2.1. Study Design and Setting

This was a descriptive prospective study of homicidal deaths in Nairobi between

June 1, 2009 and May 31, 2010. The study was carried out at the City Mortuary, Nairobi. IT is the largest mortuary in a Nairobi run by the City Council of Nairobi. This mortuary receives approximately 200 bodies of unnatural deaths every month and it is the main centre for medicolegal autopsies in Nairobi.

2.2. Study Subjects

The subjects of the study were selected at the City Mortuary as follows: The study subjects were recruited consecutively and this was for a period of one calendar year. All bodies that were as a result of violent injuries in Nairobi that occurred within the study period were included. Bodies that were badly decomposed and therefore estimation of exogenous alcohol was not possible, those without vitreous humour, those that arrived at the mortuary 72 hours after death unless it was a transfer from another mortuary facilities with indication that it was well preserved were excluded from the study.

2.3. Sampling

In this study, all cases of violent deaths for a period of twelve consecutive months were included. Alcohol level estimation was done on 400 of all the study subjects. The 400 were selected consecutively as every fifth subject. This was a purposeful sampling frame and size. Suitable bodies were identified and a complete forensic autopsy performed. Identification of the bodies was done by the relatives in the presence of a police officer as is the practice. The Autopsies were conducted in accordance with the law as regards investigations of unnatural deaths.

2.4. Laboratory Analyses

Vitreous humor was obtained by 18-gauge needle and syringe. The eye was cleaned with antiseptic, the eyelids drawn apart and the needle was inserted through the lateral canthus to the vitreous chamber. For alcohol estimation, two milliliters of the sample was preserved in a fluoride bottle sealed with a cellotape. It was transported in a cooler box and stored at temperatures of -4 degrees Celsius until time of analysis. Vitreous humor was cultured at the point of collection to avoid the need for a transport media. For bacteriology, materials required are those for Gram stain and biochemical tests. Alcohol estimation was done using Gas liquid chromatography at the Government chemists. The analysis was done on batches of ten. The concentration of alcohol was given as g/L, using the alcohol estimation machine at the Government chemist (**Figure 1**).

Microbiology studies were used as quality control to rule out endogenous alcohol formed by putrefaction. Culturing was done in blood agar, Macconkey, Robertson's cooked meat media, and Saborouds Dextrose agar at the Microbiology laboratory of the School of Medicine, University of Nairobi. Blood, MacConkey and Saborouds agars were incubated aerobically for 24 - 48 hours and examined at 24 and 48 hours. Robertsons cooked meat media was initially incubated at 37 degrees Celsius for 18 - 24 hours, thereafter subcultured onto blood



Figure 1. Alcohol analyzer machine at the government chemist.

agar and incubated under anaerobic conditions using Gas pack anaerobic system. This was incubated for 48 hours before being examined.

2.5. Data Analysis

Data were entered on a preformatted data sheet. The month, date, day of the week and time of death were noted. The cases were divided into male and female, and each gender divided into 8 age groups: 0 - 9, 10 - 19, 20 - 29, 30 - 39, 40 - 49, 50 - 59, 60 - 69, >70 years. Data were analyzed using IBM statistical package for social sciences (SPSS) version 11 (SPSS Inc., Chicago, and III).

2.6. Ethical Considerations

Approval for the study was sought and granted by the Kenyatta National Hospital Ethics and Research Committee (REF: KNH/UON-ERC/A/196). Authority to conduct the study was sought from the Medical Officer of Health, (MoH) Nairobi City Council and permission obtained from the Superintendent and pathologist in charge of the city Mortuary. Autopsies were conducted with adherence to ethical procedures that included consent from the relatives and confidentiality of the information gathered. Coding of the information was done to delink the samples from the source.

3. Results

3.1. Distribution of Deaths by Categories in Nairobi, Kenya

Autopsies were conducted on 2566 bodies over a period of one year. A majority, 95.2% (2442) were due to violent deaths, followed by natural deaths 3.2% (82), while 1.6% (42) were unascertained (**Table 1**).

Homicide was the commonest cause of death at 47.3% (1154), followed by accidents 43.6% (1064) and suicide 9.1% (224) (**Table 2**).

A total of 400 study subjects were randomly selected from the 2566 autopsy cases and studied for alcohol levels in the vitreous humor. Out of the 400, 26.3% (105) were found to have alcohol in the vitreous humor. A majority, 91.4% (96) had died violently. The distribution of lightly, moderately, heavily, very heavily, and stuporous intoxication were 13.5%, 16.7%, 28.1%, 14.6%, and 27.1% respectively (**Table 3**).

Those that were found to be intoxicated were further classified by cause of the violent death, homicide 39.6% (38), accidents 52.1% (50) and suicide 8.3% (8) (**Figure 2**).

Figure 3 shows distribution by level of alcohol intoxication amongst the homicide victims 3 (7.9%) were lightly intoxicated, 7 (18.4%) were moderately intoxicated, 8 (21.1%) were heavily intoxicated, 8 (21.1%) were very heavily intoxicated and 12 (31.6%) were stuporous.

Out of the Thirty-eight persons of homicide that were intoxicated, 36 (94.7%) were males and 2 were females (5.3%).

Table 1. Shows the distribution of the autopsy cases.

| Cause | No. | % |
|----------------|------|------|
| Violent deaths | 2442 | 95.2 |
| Natural death | 82 | 3.2 |
| Unascertained | 42 | 1.6 |
| Total | 2566 | 100 |

Table 2. Distribution of violent deaths by category in Nairobi Kenya.

| Cause of death | Numbers | % |
|----------------|---------|------|
| Homicide | 1154 | 47.3 |
| Accident | 1064 | 43.6 |
| Suicide | 224 | 9.1 |
| Total | 2442 | 100 |

Table 3. Categorization of the study subjects by level of alcohol intoxication.

| | No. | % |
|--------------|-----|------|
| Lightly | 13 | 13.5 |
| Moderately | 16 | 16.7 |
| Heavily | 27 | 28.1 |
| Very heavily | 14 | 14.6 |
| Stuporous | 26 | 27.1 |
| Total | 96 | 100 |

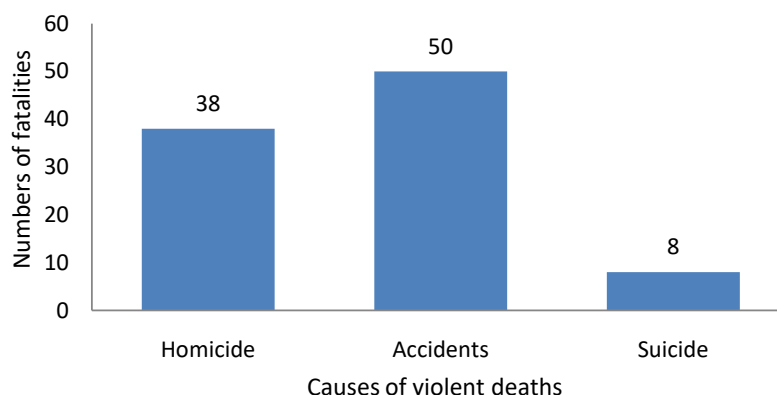


Figure 2. Alcohol distribution by cause.

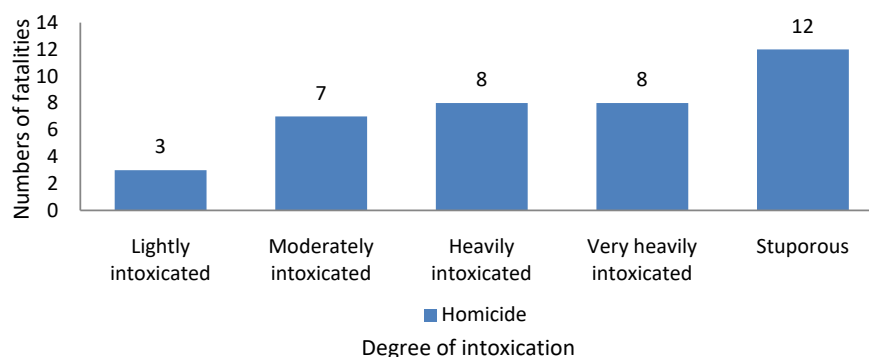


Figure 3. Homicide: Level of alcohol intoxication.

This study established that causal link exists between male gender and alcohol intoxication, further that alcohol intoxication is significantly related to violent deaths and in particular homicidal deaths [17]-[22].

3.2. Discussion

Homicides, is linked inextricably to alcoholism [11]. It is well established that use of alcohol increases the risk of fatal injuries. Blood alcohol concentration > 50 mg/100ml was found in 47.6% of violent deaths, amongst which 93% of these BAC was ≥ 100 mg/100ml [12].

Current study reveals that 1154 persons died due to homicide Amongst the homicide victims distribution by cause was, 44.7% were shot by police, 26.3% were victims of mob justice, 28.9% were murdered, of those found to be intoxicated by alcohol 38 (39.6%) had died due to homicide. In South Africa, over 60% of all adult victims of homicide are associated with alcohol [10].

Current study clearly associates male gender and alcohol intoxication as factors in homicidal deaths in Nairobi Kenya.

4. Conclusion

A causal role exists between male gender, alcoholic intoxication and the liability to die a homicidal death.

5. Recommendations

Current study reveals that alcohol intoxication contributed significantly to violent deaths resulting from homicide hence public policy ought to regulate alcohol intake.

The male gender is more predisposed to homicide and alcohol intoxication hence the plight of the boy child in this malady require significant attention.

Conflicts of Interest

The author declares no conflicts of interest.

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