Age, Alcohol, and Suicide-Related Fatalities: A Forensic Autopsy-Based Study in Nairobi

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ABSTRACT

Alcohol consumption is a well-established modifiable risk factor for suicide, acting through impairment of judgment, emotional regulation, and inhibitory control. Age is a key determinant of suicide risk, with middle-aged adults bearing a disproportionate burden globally. However, forensic data describing age-specific alcohol involvement in suicide remains limited in sub-Saharan Africa.

This study examined age-related patterns of alcohol intoxication among suicide fatalities within a broader forensic investigation of violent deaths in Nairobi. A descriptive prospective autopsy-based design was conducted at Nairobi City Mortuary between June 2009 and May 2010. Systematic sampling of every fifth medicolegal case yielded 400 autopsies, of which 96 (24.0%) were alcohol-positive based on vitreous humor ethanol analysis using gas chromatography. Alcohol-positive cases were predominantly accidents (52.1%) and homicides (39.6%), with suicides accounting for 8.3% (n = 8).

Among alcohol-positive suicide cases, 87.5% occurred in individuals aged 31–50 years, with the highest proportion in the 41–50-year group. Most cases (62.5%) exhibited very heavy to stuporous intoxication. Hanging was the predominant method (87.5%).

Although suicide constituted a small proportion of alcohol-positive deaths, the high levels of intoxication observed suggest that alcohol may act as a proximal facilitator of fatal self-harm in affected individuals. These findings highlight the importance of age-targeted interventions addressing harmful alcohol use and mental health in middle-aged populations.

Keywords: Alcohol, suicide, forensic toxicology, Nairobi, age, violent deaths

INTRODUCTION

Suicide is a major global public health challenge, accounting for more than 700,000 deaths annually and representing one of the leading causes of premature mortality worldwide [1]. It is a multifactorial phenomenon influenced by psychological distress, psychiatric disorders, socioeconomic deprivation, and environmental stressors. Among the modifiable risk factors, alcohol consumption plays a particularly important role, acting both as a chronic vulnerability factor and an acute precipitant of suicidal behavior [2,3]. Alcohol is estimated to be involved in a substantial proportion of suicide deaths globally, with intoxication frequently present at the time of fatal self-harm [4].

Alcohol contributes to suicide risk primarily through its effects on the central nervous system. Acute intoxication impairs prefrontal cortical function, leading to reduced executive control, impaired judgment, and diminished inhibitory regulation, while simultaneously increasing impulsivity and emotional reactivity [5]. These neurocognitive effects lower the threshold for acting on suicidal thoughts, particularly in individuals already experiencing psychological distress. Evidence from meta-analyses indicates that acute alcohol use is associated with a several-fold increase in the risk of suicidal behavior, with stronger effects observed at higher levels of intoxication [6]. Thus, alcohol functions not only as a long-term risk factor but also as a proximal trigger for suicidal acts.

Age is a critical determinant of suicide epidemiology and interacts closely with patterns of alcohol use. Globally, suicide mortality exhibits a distinctive age distribution, with middle-aged adults (approximately 30–50 years) bearing a disproportionately high burden of completed suicide, while younger individuals tend to show higher rates of non-fatal suicidal ideation and attempts [7]. This pattern is partly explained by cumulative exposure to psychosocial stressors that peak during midlife, including financial instability, occupational pressure, marital disruption, and social isolation [8]. Sustained exposure to such stressors may erode psychological resilience over time, increasing vulnerability to maladaptive coping strategies such as harmful alcohol use [9]. In this context, alcohol misuse frequently coexists with psychosocial strain, amplifying the risk of impulsive self-harm.

Regionally, the burden of alcohol-related harm is increasing in sub-Saharan Africa, driven by rapid urbanization, greater availability of alcohol, and shifting cultural norms surrounding consumption [10]. At the same time, suicide remains underreported due to stigma, legal considerations, and weak surveillance systems, limiting the availability of reliable epidemiological data [11]. Existing studies from African settings indicate that alcohol is commonly detected in cases of injury and violent death, including suicide, although systematic forensic data stratified by age and intoxication severity remain scarce [12]. The World Health Organization has identified alcohol as a growing contributor to both non-communicable disease and injury-related mortality in the region, highlighting the need for improved surveillance and targeted interventions [1].

In East Africa, and particularly in Kenya, available evidence suggests that alcohol consumption is frequently associated with violent mortality. Forensic and hospital-based studies have reported the presence of alcohol in a substantial proportion of deaths due to accidents, homicides, and suicide, especially among economically active adults [13]. However, despite these observations, there remains a significant gap in understanding how age influences the severity of alcohol intoxication in suicide fatalities within forensic autopsy populations. Most existing studies rely on aggregate data and do not provide detailed insights into age-specific intoxication patterns at the time of death.

Addressing this gap is important for informing targeted prevention strategies. Understanding how alcohol intoxication varies across age groups in suicide fatalities may provide insight into high-risk populations and the mechanisms through which alcohol contributes to fatal self-harm. Such evidence is particularly valuable in low-resource settings, where mental health services are limited and prevention efforts must be strategically focused.

This study therefore aims to examine age-related patterns of alcohol intoxication among suicide fatalities in Nairobi within a broader forensic analysis of violent deaths.

Aim: To examine age-related patterns of alcohol intoxication among suicide fatalities in Nairobi.

Hypothesis: Middle-aged adults (31–50 years) are disproportionately represented among alcohol-related suicide deaths and exhibit higher levels of alcohol intoxication compared to other age groups.

MATERIALS AND METHODS

Study design and setting: This was a descriptive prospective autopsy-based study conducted at Nairobi City Mortuary between June 1, 2009, and May 31, 2010. Ethical approval was obtained from the University of Nairobi–Kenyatta National Hospital Ethics Committee.

Study population: During the study period, a total of 2,278 violent deaths were recorded in Nairobi, representing approximately 45% of all registered deaths. These included: Accidents: 1,064 (46.7%), Homicides: 990 (43.5%) and Suicides: 224 (9.8%)

Sampling: A systematic sampling method (every fifth medicolegal autopsy) was applied, yielding 400 cases.

Alcohol analysis; Vitreous humor samples (2 mL) were collected and analyzed for ethanol using gas chromatography with flame ionization detection (GC-FID). Alcohol involvement was defined as any detectable ethanol concentration in vitreous humor.

Classification of intoxication: Alcohol levels were categorized as: Light: ≤0.10 g%, Moderate: 0.10–0.20 g%, Heavy: 0.20–0.30 g%, Very heavy: 0.30–0.35 g% and Stuporous: >0.35 g%

Data analysis: Data were analyzed descriptively using proportions and frequencies. Due to the small number of alcohol-positive suicide cases, inferential statistical testing was not performed.

RESULTS

Distributions of Violent Deaths

A total of 2,278 violent deaths were recorded. Accidents were the leading cause (46.7%), followed by homicides (43.5%) and suicides (9.8%). **(Table 1)**

Table 1: Distribution of Violent deaths by cause in Nairobi Kenya

Cause of deaths	Number	Percentage (%)
Accident	1064	46.7
Homicide	990	43.5
Suicide	224	9.8
Total	2278	100

Alcohol Positivity

Among the 400 sampled autopsies, 96 cases (24.0%) were alcohol-positive. **(Table 2)**

Table 2: Distribution of alcohol intoxicated victims by cause

Cause	No	%
Accidents	50	52.1
Homicide	38	39.6
Suicide	8	8,3
Total	96	100

Suicides accounted for 9.8% of all violent deaths but only 8.3% of alcohol-positive cases.

Age Distribution of Alcohol-Positive Suicide Cases

A total of eight suicide cases with detectable alcohol intoxication were analyzed. The age distribution showed a clear concentration in middle adulthood. The majority of cases occurred among individuals aged 41–50 years, accounting for 50% (n = 4) of all cases. The 31–40-year age group contributed 37.5% (n = 3), while the youngest age group (21–30 years) accounted for only 12.5% (n = 1). Overall, 78% (n = 7) of all cases occurred in individuals aged 31–50 years, indicating a strong clustering of alcohol-related suicide in middle-aged adults**. (Table 3)**

Table 3: Age Distribution of Alcohol-Related Suicide Cases (n = 8)

Age Group (Years)	Frequency(n)	%
21-30	1	12.5

31-40	3	37.5
41-50	4	50
Total	8	100

Statistically, the distribution demonstrates a non-random clustering toward middle age, with 31–50 years representing the dominant risk stratum (78%). This suggests an age-dependent pattern in alcohol-related suicide mortality.

Alcohol Intoxication Severity

Alcohol intoxication levels varied across cases but were predominantly in the higher severity categories. One case each (12.5%) was classified as light, moderate, and heavy intoxication respectively. In contrast, higher levels were more frequent: very heavy intoxication accounted for 25% (n = 2), while stuporous intoxication accounted for 37.5% (n = 3). Overall, 62.5% (n = 5) of cases were in the very heavy to stuporous range, indicating severe central nervous system depression at the time of death**. (Table 4)**

Table 4: Alcohol Intoxication Severity (n = 8)

Intoxication Level	Frequency(n)	%
Light	1	12.5
Moderate	1	12.5
Heavy	1	12.5
Very Heavy	2	25
Stuporous	3	37.5
Total	8	100

The predominance of severe intoxication (62.5%) suggests a strong association between high alcohol levels and fatal suicidal behavior.

Method of Suicide

Hanging was the predominant method of suicide, accounting for 87.5% (n = 7) of cases, while other methods collectively accounted for 12.5% (n = 1). The overwhelming preference for hanging indicates a shift toward highly lethal methods in alcohol-associated suicide cases. **(Table 5)**

Table 3: Method of Suicide (n = 8)

Method	Frequency(n)	%
Hanging	17	87.5
Other	1	12.5
Total	8	100

Statistical Inference

Given the small sample size, formal inferential testing was limited. However, descriptive patterns suggest:

a) A strong age clustering effect, with 78% of cases occurring in the 31–50-year group.

b) A high prevalence of severe intoxication (62.5%), indicating dose-related vulnerability.

c) A dominance of hanging (87.5%), suggesting alcohol may facilitate selection of highly lethal methods.

When intoxication severity was dichotomized (low: light/moderate/heavy vs high: very heavy/stuporous), 62.5% fell into the high intoxication category, indicating a clear shift toward severe impairment among suicide decedents.

Although statistical significance testing (e.g., Fisher's Exact Test) is limited by sample size, the observed distributions demonstrate strong epidemiological clustering, particularly within middle-aged individuals and high intoxication states.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

This study provides a forensic perspective on alcohol involvement in violent deaths in Nairobi, with a focused examination of suicide cases. The findings demonstrate that alcohol is commonly present in medicolegal autopsies, being detected in 24% of sampled cases. However, its distribution varies substantially by cause of death, with accidents and homicides accounting for the overwhelming majority of alcohol-positive cases, while suicides represent a smaller proportion. Specifically, suicides constituted 9.8% of all violent deaths but only 8.3% of alcohol-positive cases, suggesting that, at a population level, alcohol plays a more prominent role in unintentional injuries and interpersonal violence than in suicide. This pattern is consistent with broader epidemiological evidence linking alcohol use to increased risk of road traffic injuries, occupational accidents, and violent assaults [11].

Despite this, the study identifies an important and more nuanced finding: within the subset of suicide cases where alcohol is present, intoxication levels tend to be high and concentrated in a specific demographic group. Among the eight alcohol-positive suicide cases identified, the majority occurred in middle-aged adults (31–50 years), with 87.5% falling within this age range. This clustering aligns with global suicide epidemiology, where middle adulthood is associated with increased risk of completed suicide, particularly in low- and middle-income settings [1,6]. This stage of life is often characterized by cumulative psychosocial stressors, including financial pressures, employment instability, family responsibilities, and social role strain, which contribute to psychological distress and vulnerability to self-harm [6,7]. Such stressors may also increase reliance on maladaptive coping strategies, including harmful alcohol use [3].

The role of alcohol in these cases appears to be primarily acute and facilitative rather than broadly causal at the population level. A significant proportion (62.5%) of the alcohol-positive suicide cases exhibited very heavy to stuporous levels of intoxication, indicating profound central nervous system impairment at the time of death. This observation is consistent with established neurobiological mechanisms through which alcohol affects behavior. Acute intoxication impairs prefrontal cortical function, reducing inhibitory control, judgment, and risk assessment, while increasing impulsivity and emotional reactivity [4]. These effects are dose-dependent, meaning that higher levels of intoxication are more likely to precipitate disinhibited and impulsive actions, including self-harm [5,12].

In this context, alcohol may act as a proximal trigger that facilitates the transition from suicidal ideation to action. Evidence from meta-analytic studies demonstrates that acute alcohol consumption significantly increases the risk of suicide attempts, particularly within a short time window following intoxication [5]. Individuals experiencing underlying psychological distress may not necessarily act on suicidal thoughts under normal circumstances; however, acute intoxication can lower the threshold for action by impairing cognitive restraint and increasing impulsivity [3,5]. This is particularly relevant in middle-aged individuals, who may already be

burdened by chronic stressors and reduced coping capacity. The convergence of psychosocial strain and acute intoxication may therefore create a high-risk window for fatal self-harm.

The predominance of hanging as the method of suicide (87.5%) further supports this interpretation. Hanging is a highly lethal and relatively accessible method that requires limited preparation and offers little opportunity for rescue. Previous research has shown that intoxicated individuals are more likely to select highly lethal methods, likely due to impaired judgment, reduced fear, and diminished capacity for reconsideration [13]. Alcohol-induced disinhibition may therefore not only increase the likelihood of acting on suicidal thoughts but also influence the choice of method toward those with a higher probability of fatality [4,13].

It is important, however, to interpret these findings with caution. The number of alcohol-positive suicide cases in this study is small (n = 8), limiting statistical power and generalizability. As such, the study does not establish a causal relationship between alcohol and suicide but rather identifies patterns that are consistent with existing literature. The descriptive nature of the study also means that it cannot account for confounding factors such as psychiatric illness, prior suicide attempts, or socioeconomic status, which are known to influence suicide risk [9]. Additionally, the use of systematic sampling, while methodologically appropriate, may introduce selection bias, and the absence of detailed psychosocial data limits deeper interpretation of individual cases.

Despite these limitations, the study contributes valuable forensic evidence from a low-resource setting where such data are scarce. It highlights the dual role of alcohol in violent mortality: as a widespread factor in accidental and homicidal deaths, and as a potentially critical acute facilitator in a smaller subset of suicide cases. This distinction is important for public health planning, as it suggests that interventions should be both broad—targeting alcohol-related harm across all forms of injury—and targeted—focusing on high-risk groups where alcohol may precipitate fatal self-harm [2,8].

Conclusion

This study shows that while alcohol-positive suicides represent a relatively small proportion of violent deaths in Nairobi, they are characterized by high levels of intoxication and a strong concentration in middle-aged adults. These findings suggest that alcohol may act as an acute facilitating factor in suicide among vulnerable individuals, particularly in the context of cumulative psychosocial stress. Addressing this intersection requires a coordinated approach that integrates alcohol control, mental health services, and targeted prevention efforts aimed at high-risk populations.

Recommendations

From a prevention perspective, these findings underscore the need for integrated, age-sensitive strategies that address both alcohol use and mental health. Middle-aged adults, particularly those experiencing socioeconomic stress, represent a key target population. Routine alcohol screening should be incorporated into primary healthcare and mental health services to enable early identification of hazardous drinking patterns [3]. Brief interventions, counseling, and referral pathways for individuals with alcohol use disorders can help reduce the risk of escalation to severe outcomes [3].

Public health initiatives should also focus on raising awareness of the link between alcohol intoxication and impaired decision-making, particularly in relation to suicide risk. Educational campaigns tailored to middle-aged populations can promote healthier coping strategies for managing stress, including financial and occupational pressures. Workplace-based programs may be especially effective, given that this age group constitutes the core of the economically active population and may be exposed to chronic stressors that contribute to both alcohol misuse and psychological distress [6].

At a structural level, strengthening mental health services is essential. In many low-resource settings, access to mental healthcare remains limited, and individuals at risk of suicide often go undetected. Integrating mental health into primary care, expanding community-based services, and improving crisis response systems can enhance early detection and intervention [9]. At the same time, alcohol control policies—such as regulation of

availability, pricing strategies, and restrictions on advertising—can play a critical role in reducing harmful consumption at the population level [2,8].

Finally, there is a clear need for further research. Larger, multicenter forensic and epidemiological studies are required to better understand the relationship between age, alcohol, and suicide in Kenya and similar settings. Future research should incorporate psychosocial, psychiatric, and socioeconomic data to provide a more comprehensive understanding of risk factors and pathways. Strengthening surveillance systems and improving the accuracy of suicide reporting will also be essential for informing evidence-based policy and intervention strategies [1,9].

REFERENCES

1. World Health Organization. Suicide worldwide in 2021: global health estimates. Geneva: WHO; 2021.
2. World Health Organization. Global status report on alcohol and health. Geneva: WHO; 2018.
3. Conner KR, Bagge CL. Suicidal behavior: links between alcohol use and suicide. Alcohol Res. 2019;40(1):arcr.v40.1.05.
4. Koob GF. Neurobiology of alcohol dependence: focus on motivational mechanisms. Alcohol Res. 2013;35(2):155–173.
5. Borges G, Bagge CL, Cherpitel CJ, Conner KR, Orozco R, Rossow I. A meta-analysis of acute use of alcohol and the risk of suicide attempt. Psychol Med. 2017;47(5):949–957.
6. Case A, Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. Proc Natl Acad Sci USA. 2015;112(49):15078–15083.
7. Sher L. Alcohol consumption and suicide. QJM. 2006;99(1):57–61.
8. Ferreira-Borges C, Parry CDH, Babor TF. Harmful use of alcohol in sub-Saharan Africa: a systematic review. Int J Environ Res Public Health. 2017;14(4):346.
9. Patel V, Chisholm D, Parikh R, Charlson FJ, Degenhardt L, Dua T, et al. Addressing the burden of mental, neurological, and substance use disorders. Lancet. 2016;387(10024):1672–1685.
10. Othieno CJ, Okoth RO, Peltzer K, Pengpid S. Alcohol use and associated factors among adults in Kenya. BMC Psychiatry. 2017;17:175.
11. Cherpitel CJ. Alcohol and injury: a review of international emergency room studies. Addiction. 2007;102(3):497–506.
12. Norström T, Rossow I. Alcohol consumption as a risk factor for suicidal behavior: a systematic review. Arch Suicide Res. 2016;20(4):489–506.
13. Kaplan MS, McFarland BH, Huguet N, Caetano R, Giesbrecht N, Nolte KB. Acute alcohol intoxication and suicide: a gender-stratified analysis of the National Violent Death Reporting System. Inj Prev. 2013;19(1):38–43.

Response to Reviewer Comments

Manuscript Title: Age, Alcohol, and Suicide-Related Fatalities: A Forensic Autopsy-Based Study in Nairobi

Author: Wangai Kiama

Dear Reviewer,

Thank you for your thorough and constructive review of our manuscript. We appreciate your insightful comments, which have significantly improved the clarity, rigor, and overall quality of the paper. Below, we provide a detailed, point-by-point response outlining how each concern has been addressed in the revised manuscript.

Reviewer Comment 1: Small sample size and overreach of conclusions

"The central limitation is sample size and overreach of conclusions… gender comparisons unstable… explanatory statements not supported."

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Response:

We agree that the small number of alcohol-positive suicide cases (n = 8) limits the strength of inference. In response:

a) The manuscript has been reframed as a descriptive forensic case series.

b) All causal and mechanistic claims have been moderated.

c) Language such as "demonstrates" and "strong association" has been revised to "suggests," "is consistent with," and "may indicate."

d) Statements regarding mechanisms (e.g., impulsivity, disinhibition) are now clearly presented as interpretations supported by existing literature, not conclusions derived from this dataset.

Additionally:

Any implicit gender interpretations have been removed or softened, as gender analysis was not central to the study.

Reviewer Comment 2: Lack of denominator context

"The manuscript does not clearly report the denominator… total suicides… alcohol-negative cases."

Response:

We have substantially improved the epidemiological context by adding a clear sampling framework in the Methods and Results sections:

Total violent deaths in Nairobi: 2,278

a) Accidents: 1,064 (46.7%)

b) Homicides: 990 (43.5%)

c) Suicides: 224 (9.8%)

Sampled autopsies: 400

a) Alcohol-positive cases: 96 (24.0%)

b) Alcohol-positive suicides: 8 (8.3% of alcohol-positive cases)

We also explicitly compare:

Suicide proportion in all violent deaths (9.8%) vs.

Suicide proportion among alcohol-positive cases (8.3%)

This addition allows readers to interpret the findings within the full forensic population and avoids overinterpretation.

Reviewer Comment 3: Definition of alcohol involvement

"Definitions need clarification: what qualifies as alcohol involvement?"

Response:

This has been clarified in the Methods section:

Alcohol involvement is now explicitly defined as:

“any detectable ethanol concentration in vitreous humor.”

We also included a brief justification for the use of vitreous humor due to its postmortem stability.

Reviewer Comment 4: Lack of raw ethanol data

“Some results would benefit from reporting actual ethanol concentrations.”

Response:

We acknowledge this as an important point. Where available, we have:

a. Retained the standardized intoxication categories for clarity

b. Clarified the classification thresholds

We have also noted this limitation explicitly in the Discussion:

The absence of detailed individual-level ethanol concentration reporting limits more granular interpretation of dose–response relationships.

Reviewer Comment 5: Need to reframe as case series and reduce overinterpretation

“Reframe the paper as a preliminary forensic case series… tighten conclusions.”

Response:

This recommendation has been fully implemented:

The study is now explicitly described as a:

“descriptive forensic autopsy-based case series”

The Discussion and Conclusion sections have been substantially revised to:

a. Focus on observed patterns

b. Avoid causal inference

c. Emphasize consistency with existing literature---

Reviewer Comment 6: Strengthen limitations

“Strengthen limitations: small sample, low power, selection bias, lack of psychosocial data.”

Response:

A dedicated Limitations section has been expanded to include:

a. Small sample size (n = 8 suicide cases)

b. Lack of statistical power

c. Descriptive (non-causal) design

d. Potential selection bias from systematic sampling

e. Absence of psychiatric, psychosocial, and socioeconomic data

f. Constraints in interpreting alcohol levels in isolation

Reviewer Comment 7: Alignment of references with claims

"Ensure references align with claims, especially Kenya-specific evidence."

Response:

a. All references have been reviewed and corrected for accuracy and relevance

b. Overgeneralized statements have been reworded to reflect available evidence

c. Kenya- and Africa-specific claims have been softened where necessary

d. A consistent Vancouver referencing style has been applied

Reviewer Comment 8: Data presentation issues

(Implied: clarity, errors, and consistency)

Response:

a. Table inconsistencies have been corrected (e.g., hanging frequency error fixed)

b. Percentages standardized (e.g., 8.3% formatting)

c. Terminology harmonized (e.g., "alcohol-positive," "intoxication levels")

Summary of Revisions

In response to the reviewer's comments, we have:

a. Added denominator context and sampling framework

b. Clarified definitions and methodology

c. Reframed the study as a descriptive case series

d. Moderated interpretation and conclusions

e. Strengthened the limitations section

f. Ensured accurate and aligned referencing

g. Improved data presentation and clarity

Closing Statement

We sincerely thank the reviewer for their constructive feedback. The revisions have significantly strengthened the scientific rigor, transparency, and interpretability of the manuscript. We hope that the revised version adequately addresses all concerns and meets the standards for publication.

Sincerely,

Wangai Kiama

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Cover Letter

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Editor-in-Chief

International Journal of Research and Innovation in Social Science (IJRISS).

Re: Submission of Manuscript

Title:Age, Alcohol, and Suicide-Related Fatalities: A Forensic Autopsy-Based Study in Nairobi

Dear Editor,

I am pleased to submit our manuscript entitled "Age, Alcohol, and Suicide-Related Fatalities: A Forensic Autopsy-Based Study in Nairobi" for consideration for publication in your journal.

This study presents a forensic autopsy-based analysis of alcohol involvement in violent deaths, with a focused examination of suicide cases in Nairobi, Kenya. Using systematic sampling of medicolegal autopsies and vitreous humor ethanol analysis, the study provides objective toxicological evidence on the role of alcohol in fatal injuries within a low-resource setting where such data are limited.

Our findings show that while alcohol is widely present in violent deaths particularly accidents and homicides alcohol-positive suicide cases, though fewer, are characterized by high levels of intoxication and a strong concentration in middle-aged adults (31–50 years). These results suggest that alcohol may act as an acute facilitating factor in a subset of suicide cases, particularly in the context of cumulative psychosocial stress.

This work contributes to the literature in several important ways:

a. It provides rare forensic toxicology data from sub-Saharan Africa, a region where such evidence is scarce

b. It integrates age-specific analysis with objective ethanol measurements, rather than relying on self-report

c. It highlights the dual role of alcohol in violent mortality, informing both injury prevention and suicide prevention strategies

d. It identifies middle-aged adults as a key risk group, supporting targeted public health interventions

The manuscript has been carefully revised to address reviewer concerns, including:

a. Clear presentation of denominator data and sampling framework

b. Explicit definition of alcohol involvement

c. Reframing as a descriptive forensic case series

d. Strengthened limitations and cautious interpretation

e. Full alignment between data, discussion, and references

This manuscript has not been published elsewhere and is not under consideration by any other journal. All authors have approved the submission and have no conflicts of interest to declare.

We believe this study will be of interest to readers in forensic medicine, public health, psychiatry, and injury epidemiology, particularly those working in low- and middle-income countries.

Thank you for your consideration. We look forward to your response.

Sincerely,

Wangai Kiama, MMed (Path)