

Investigating blood alcohol concentrations in injury-related deaths before and during the COVID-19 national lockdown in Western Cape Province, South Africa: A cross-sectional retrospective review

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Background. Alcohol is a significant contributor to injury-related morbidity and mortality in South Africa (SA). During the COVID-19 global pandemic, restrictions to movement and to legal access to alcohol (i.e. ethanol) were introduced in SA.

Objectives. To investigate the effect of alcohol bans during the COVID-19 lockdown periods on injury-related mortality and blood alcohol concentrations (BACs) in these deaths.

Methods. A retrospective, cross-sectional analysis of injury-related deaths in Western Cape Province (WC), SA, between 1 January 2019 and 31 December 2020 was conducted. Cases where BAC testing was performed were further examined according to the periods of lockdown and alcohol restrictions.

Results. A total of 16 027 injury-related cases were admitted to Forensic Pathology Service mortuaries in the WC over the 2-year period. An average decrease of 15.7% injury-related deaths in 2020 compared with 2019 was noted, as well as a 47.7% decrease in injury-related deaths during hard lockdown (April - May 2020) compared with the same period in 2019. In the injury-related deaths, 12 077 (75.4%) had blood specimens collected for BAC testing. In 5 078 (42.0%) of submitted cases, a positive BAC (≥ 0.01 g/100 mL) was reported. No significant difference was observed in the mean positive BAC between 2019 and 2020. However, in April and May 2020, the mean BAC observed (0.13 g/100 mL) was less than that in 2019 (0.18 g/100 mL). A high number of positive BACs in the 12- 17-year age group (23.4%) was observed.

Conclusion. There was a clear decrease in injury-related deaths in the WC during the COVID-19-related lockdown periods, which coincided with the alcohol ban and restriction of movement, and an increase following relaxation of restrictions on alcohol sales and movement. The data illustrate that mean BACs were similar between all periods of alcohol restriction compared with 2019, apart from hard lockdown in April - May 2020. This coincided with a smaller mortuary intake during the level 5 and 4 lockdown periods.

S Afr Med J 2023;113(6):e372. <https://doi.org/10.7196/SAMJ.2023.v113i6.372>

Alcohol is an important contributor to morbidity and mortality globally, with the World Health Organization (WHO) reporting significant health risks associated with alcohol consumption.^[1,2] The South African (SA) government acknowledged alcohol as an important contributor to violent crime and domestic violence,^[3] providing alcohol-related harms interventions in the Western Cape Province (WC).^[4] To assess the efficacy of proposed interventions, it is critical for health and government agencies to have access to updated and relevant data on the impact of alcohol on health outcomes.

In March 2020, the WHO declared COVID-19 a global pandemic, which prompted lockdowns in many countries.^[5] In SA, the government authorised five different lockdown alert levels (ALs), with restrictions on movement and alcohol and tobacco sales (Table 1).^[6] This provided a unique opportunity to examine the effect of alcohol and travel restrictions on injury-related mortality. For example, during level 5 lockdown in SA, a 53% reduction in hospital presentations at a major public hospital in Cape Town (CT), WC, was reported (50% and 74% reduction in violent trauma and road traffic injury admissions, respectively).^[7] At a regional hospital in the WC, similar observations of a 59 - 69% reduction in trauma admissions during AL5 and 4 were reported.^[8] Both studies reported a spike in trauma patients when restrictions were lifted. In the Netherlands, a decrease of 23.3% in alcohol-related cases presenting to trauma

units was reported following COVID-19 lockdown limiting travel and alcohol sales.^[9] While these reports allude to the reduction in traumatic injuries during alcohol bans, it is evident that the role of other restrictions such as travel may have contributed. By investigating the period in SA when the alcohol ban was lifted, while the curfew remained the same, Barron *et al.*^[10] reported that deaths due to unnatural causes in SA still decreased by at least 120 cases per week. This was attributed to the alcohol sales ban, specifically.

This study therefore aimed to build on these data by investigating injury-related fatalities in the WC between 2019 and 2020, and specifically during the lockdown and alcohol ban periods. We further aimed to investigate the blood alcohol concentrations (BACs) in injury-related deaths in these periods. The rationale for this research was to provide updated mortality data involving alcohol and violence to guide policy and interventions, and to further contribute to the evidence available on reducing alcohol availability as a mechanism to reduce trauma cases.

Methods

Study setting

The WC is one of nine provinces in SA, with a population of >7 million people,^[11] 51% female and 49% male,^[12] ~11.8% of the total SA population.^[12] In SA, provincially based Forensic Pathology

Services (FPS) are mandated to support the SA Police Service (SAPS) in investigating suspected unnatural deaths, according to the National Health Act No. 61 of 2003 (NHA),^[13] and as mandated by the Inquests Act No. 58 of 1959.^[14] This includes obtaining any relevant history, the performance of autopsies and the collection of specimens for ancillary investigations such as the analysis of alcohol in blood.^[14]

In the WC, FPS performs this function through 16 mortuary facilities, which together receive ~11 000 suspected unnatural deaths annually (~80% of which occur in the CT metropole).^[15] These include homicides, suicides, accidents (including road traffic collisions (RTCs)), and sudden, unexpected and procedure-related deaths.^[14]

During autopsy, blood specimens (typically femoral; however, the site is not routinely recorded) are collected, preserved with 1 - 2% sodium fluoride and potassium oxalate, and submitted to the National Health Forensic Chemistry Laboratory (FCL) for alcohol concentration determination. At the FCL, BAC testing is performed using headspace sampling and gas chromatography with flame ionisation detection according to national standards. Note that no BAC analyses were performed by the authors themselves.

Study design and sample population

A descriptive, cross-sectional and retrospective study of injury-related deaths across the WC between 1 January 2019 and 31 December 2020 (inclusive) was performed. Further analyses were conducted on injury deaths where BAC testing was requested. Natural deaths or those unconfirmed to be injury-related were excluded, among which were fragmented and severely decomposed remains. Cases where specimens were withdrawn, not submitted or not processed due to drying were excluded. BACs were further assessed according to the *per se* legal limit of driving under the influence of alcohol in SA (0.05 g/100 mL or 0.05%).^[16]

Data collection and analysis

Mortality data were collected from the FPS Business Information Management System (BIMS), which is uploaded by forensic pathology officers (FPOs) at WC mortuary facilities. The study was limited to routinely collected variables, which included demographics (age, sex and mortuary of autopsy), death information (date, time, manner, external mechanism of injury and cause of death) and BAC. BAC data were verified using the National FCL laboratory information management system (LIMS) data. Where data were not available or clearly stated in the BIMS/LIMS databases, these were recorded as 'unspecified'.

All data were analysed using the statistical package STATA 13 (StataCorp, USA). The Pearson's goodness of fit test was used to assess differences in frequency distributions between 2019 and 2020 data. Pairwise differences were corrected using Bonferroni correction. The Shapiro-Wilk test indicated that the data were not normally distributed, and therefore the Wilcoxon rank sum and Kruskal-Wallis tests were used to assess group comparison. Significance was set at 0.05 for all statistical tests.

COVID-19 lockdown levels and alcohol restriction

Data were analysed according to lockdown levels and periods of alcohol restrictions in SA (Table 1).

Ethics

The study obtained ethical approval from the University of Cape Town (UCT) Human Research Ethics Committee (ref. no. 751/2020) and the WC Health Research Committee (ref. no. 202011_049). Approval was also obtained from the Director of FPS in the WC.

Results

Injury-related deaths in the WC

A total of 21 979 suspected unnatural deaths occurred in the WC between 1 January 2019 and 31 December 2020, primarily within the CT metropole (73.3%). Significantly fewer cases were admitted to each mortuary in 2020 than in 2019 ($p < 0.001$). Of the total deaths, 16 027 (73.5%) were injury related, comprising 70.7% of 11 832 total cases in 2019, and 75.5% of 10 147 cases in 2020 ($p < 0.001$) (Fig 1). On average, a 15.7% decrease in total unnatural death admissions, and a 47.7% decrease in injury-related cases occurred during lockdown AL 5 and 4, which included the ban on alcohol sales (27 March - 30 May 2020) (Fig. 1).

Most injury victims were male (82.1%), and the mean injury death victim age was 33 years (standard deviation 16.3 years; range 1 day - 97 years). Young adults aged between 20 and 29 years (29.8%) and 30 and 39 years (27.8%) dominated the sample population (Fig. 2).

The distribution of paediatric deaths (<18 years) differed between 2019 and 2020 ($p = 0.0337$) (Table 2).

The suspected manners of death for the entire study period were recorded as suicide ($n = 1\ 374$; 8.6%), homicide ($n = 8\ 190$; 51.1%), accident (transport-related) ($n = 2\ 673$; 16.9%), accident (other) ($n = 1\ 096$; 6.8%) and under investigation ($n = 2\ 694$; 16.8%). A significantly increased proportion of homicide cases was recorded in 2020 ($n = 4\ 008$; 52.35%) compared with 2019 ($n = 4\ 182$; 49.96%), while a decreased proportion of transport-related accident cases was observed in 2020 ($n = 1\ 157$; 15.11%) compared with 2019 ($n = 1\ 516$; 18.11%) ($p < 0.001$).

During the study period, most injury-related death cases occurred over the weekend, with 18.7% of cases occurring on a Saturday and 22.7% on a Sunday (Fig. 3). In 2020, a smaller proportion of deaths occurred on a Sunday, with larger proportions of deaths on Wednesdays and Thursdays (all $p < 0.001$).

During periods of complete ban of alcohol sales and on-site consumption in AL5 and 4 (Table 1), the distribution of injury-related death cases during the week was significantly different from the same period in 2019 ($p < 0.001$) (Fig. 3A). A similar decrease in injury deaths over the weekend was observed during periods of reduced alcohol sales during lockdown ALs 3b, 2 and 1 in 2020 (Table 1) compared with the same period in 2019 ($p < 0.001$) (Fig. 3B).

BAC in injury-related deaths

BAC testing was requested in 12 077 injury-related death cases (75.4%), for which results were available in 11 502 cases (95.3%). In 6 of these cases, BAC analysis was not possible owing to insufficient volume or poor-quality sample. Where BAC analysis was possible ($n = 11\ 496$), alcohol was not detected (<0.01%) in most cases ($n = 6\ 999$; 60.9%) (Fig. 4).

During the study period, the distribution of BACs reported followed a similar pattern to weekly injury-related deaths (Fig. 5). There were more injury-related deaths occurring at the weekend where ethanol was detected (>0.01%), and in significantly more cases with BAC >0.05% in 2019 than 2020 ($p < 0.001$).

The distribution of positive BAC levels according to demographics, manner of death and lockdown restrictions is illustrated in Table 3.

A significant decline in positive BACs overall (and >0.05%) was observed during lockdown ALs 5, 4 and 3b, as well as during complete alcohol bans in 2020 (Table 3, Fig. 6A - C). This aligned with a similar decline in total caseload and injury-related death caseload recorded, and was largely attributed to significant declines in positive BACs in males in the age groups 18 - 39 and 60 - 69 years (Table 3).

Table 1. COVID-19 lockdown levels and periods of alcohol restriction in South Africa (March 2020 - February 2021) (adapted from SA National Government)^[6]

Lockdown alert level	Dates of lockdown (2020)	Dates of alcohol sales ban (2020)	Curfew hours
5	27 March - 30 April	Complete ban, 27 March - 24 May	Only essential travel
4	1 May - 31 May	Partial ban, 25 May - 11 July	Only essential travel
3a	1 June - 12 July	Partial ban, 1 June - 12 July	22h00 - 04h00
3b	13 July - 17 August; 29 December - 11 January 2021; 12 January 2021 - 1 February 2021	Complete ban, 13 July - 14 August; 29 December - 11 January 2021; 12 January 2021 - 1 February 2021	23h00 - 04h00 21h00 - 06h00 21h00 - 05h00
2	18 August - 19 September	Partial ban, 15 August - 27 September	23h00 - 04h00
1	21 September - 28 December	No alcohol ban, 28 September - 28 December	00h00 - 04h00

BAC in homicide and transport-related deaths

Overall, there were fewer total transport-related accidents and homicide cases in 2020 compared with 2019. There was, however, an increased proportion of homicide cases in 2020. Analysis of homicides and transport-related deaths according to BAC in the different ALs illustrated decreases in the numbers of cases with positive BACs (especially >0.05%) (Figs 7A - C), during AL5 and 4 during full alcohol restrictions. Again, this coincided with a decline in overall cases received by the mortuary in 2020, especially in AL5.

Discussion

This study examined injury-related deaths in the WC over a 2-year period, and further analysed the effect that the COVID-19 lockdown and restrictions on alcohol had on BAC results in these deaths during 2020. Most FPS mortuary facilities saw a decrease in caseload in 2020, with an average decrease of 15.7% unnatural deaths in 2020 compared with 2019. Moreover, there was a 47.7% decrease in total injury-related deaths during lockdown AL5 and 4 (April - May 2020) compared with the same period in 2019. This aligns with the 53% decrease in trauma admissions at Groote Schuur Hospital (a large academic hospital in CT) during the same period,^[7] and similar declines in unnatural deaths reported in a study relating to the curfew and restricted sale of alcohol during COVID-19.^[17] Decreases in general and orthopaedic trauma presentations during the COVID-19 restrictions were further reported in several other SA studies.^[18-20]

While there was a decrease in homicide cases during AL5 and 4 of lockdown, the relaxation of restrictions in AL 3 resulted in a rebound effect, with a spike in homicide cases, resulting in an increased proportion of homicide cases in 2020. The same effect was reported in trauma units, which showed a 107% increase in

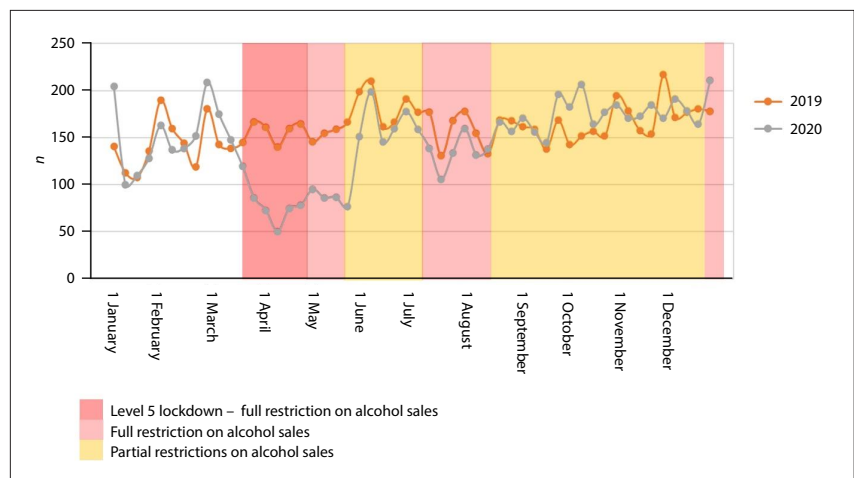
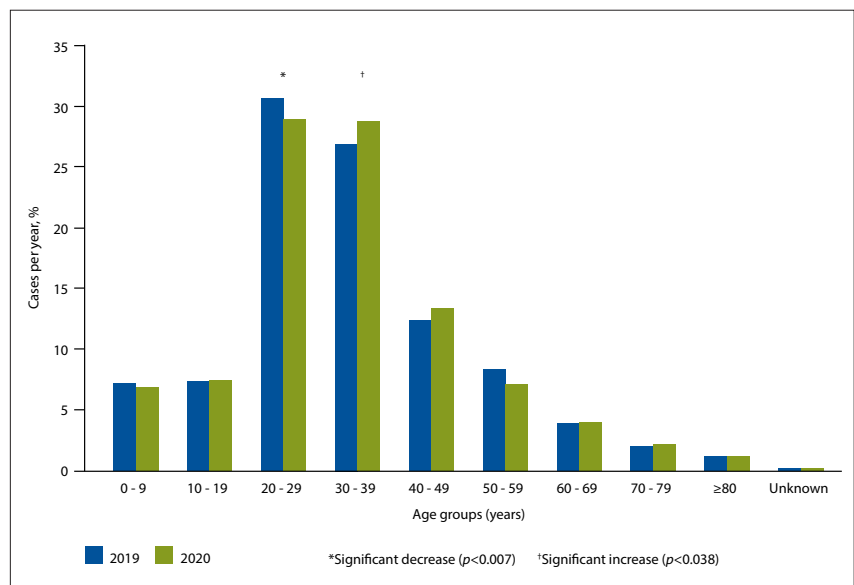


Fig. 1. Weekly injury-related deaths in the Western Cape between 1 January 2019 and 31 December 2020 showing levels of alcohol restriction and lockdown level 5 in 2020.



*Fig. 2. Percentage distribution of injury-related deaths in Western Cape Province per year and by age group (*significant decrease (p<0.007); †significant increase (p=0.038).)*

violent assaults and firearm injuries in AL3 when alcohol sales resumed.^[7] The incidence rates of homicides per 100 000 population in the WC were 61.1 in 2019 and 57.2 in 2020,^[21,22] which are higher

than the 55/100 000 reported for the WC in the injury mortality survey,^[23] and much higher than the national per capita ratio reported by SAPS of 9.3 in 2019 and 5.8 in 2020.^[24]

Table 2. Age distribution of injury-related deaths in children per year in 2019 and 2020

Age (years)	2019, n (%)	2020, n (%)
<1	344 (36.5)	280 (33.0)
1 - 5	174 (18.4)	156 (18.4)
6 - 12	139 (14.7)	152 (17.9)
13 - 17	284 (30.1)	260 (30.6)
Total	1 072	952

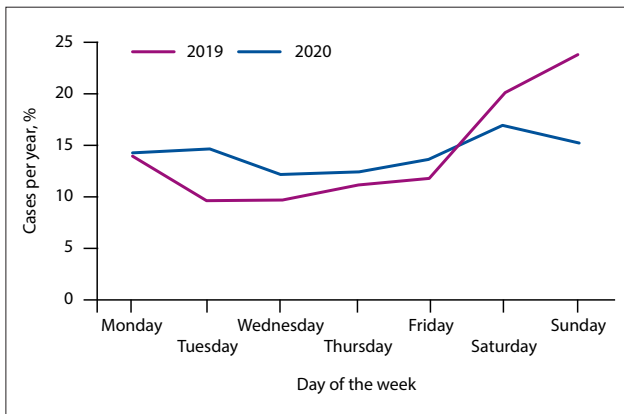


Fig. 3A. Percentage distribution of cases by day of the week during periods of complete alcohol ban in 2020 compared with the same period in 2019.

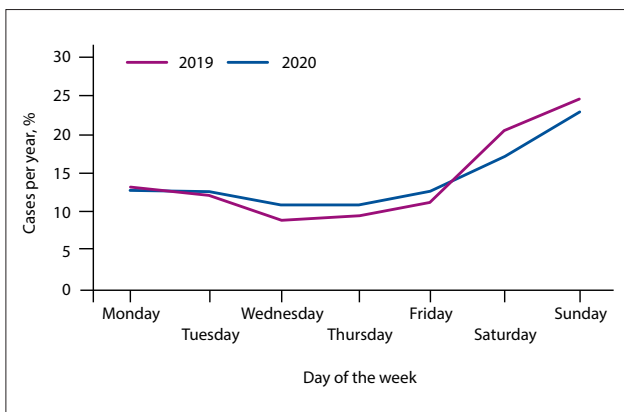


Fig. 3B. Percentage distribution of cases by day of the week during periods of reduced alcohol sales in 2020 compared with the same period in 2019.

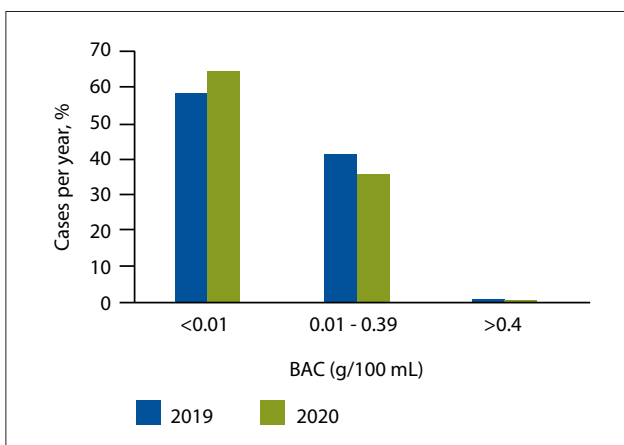


Fig. 4. Percentage distribution of cases by blood alcohol concentration (BAC) level (g/100 mL) between 2019 and 2020 in injury-related deaths in Western Cape Province.

The incidence rate of suicides was 10/100 000 in both years in this study, consistent with findings from the study in Spain,^[25] suggesting that the lockdown had no effect on suicides. The incidence rates of RTCs were 22.1 and 16.5/100 000 for 2019 and 2020, respectively. The decrease in 2020 could be due to fewer RTCs occurring due to lockdown measures in general, as has been reported in other countries.^[26] RTC presentations to trauma units, which decreased substantially during AL5 and 4, returned to normal rates in AL3,^[7] in keeping with findings in transport-related fatalities in this study.

The female-to-male ratio of injury-related deaths in the WC of 1:4 was not significantly different between the 2 years, and was consistent with previous injury mortality findings.^[23,27] The mean age of 33 years, with young adults between 20 and 40 years comprising the majority of decedents, was consistent with the injury mortality survey in 2017,^[23] which suggests young people in this economically active age group are at a higher risk of injury-related deaths than older adults. Surprisingly, examination of injury-related deaths in children revealed an increase in the 6 - 12-year age group in 2020. A previous study reported a significant negative impact on the physical and psychological wellbeing of children during lockdown,^[28] which may explain this increase, as children were not attending school and recreational activities were severely curtailed.^[6] Children of caregivers who showed hazardous drinking habits have been shown to be negatively impacted by poor parental supervision and neglect,^[29] which could also be a contributing factor. However, these all require further investigation.

The present study's finding of most injury-related deaths occurring over weekends is similar to previous studies on alcohol-related deaths and homicides.^[30-33] People generally have more time for leisure activities over weekends, and consume more alcohol over Thursdays, Fridays and Saturdays than during the rest of the week.^[34] This is in keeping with the finding of an increase in the number of injury-related deaths with positive BAC, and especially with BACs >0.05% over weekends, in both years. A greater number of injury-related deaths identified in October 2020 compared with 2019 could be due to the relaxation in restrictions, both on alcohol and curfew (Table 1), with people having the opportunity to go out and drink, resulting in a possible rebound effect.^[35,36] A similar increase in alcohol-related emergencies post lockdown was reported.^[35]

The significant difference in the weekly distribution of injury-related deaths during the complete and partial alcohol ban periods may be related to the alcohol restrictions and the limitation on movement. We were unable to separate the differential effect of the alcohol restrictions from the limitations on movement in injury deaths. However, Moultrie *et al.*^[17] found the restrictions on movement less important than the alcohol ban. They did, however, acknowledge the lack of data on potential confounding factors as a limitation in their study.

In the study population, a positive BAC was reported in 5 078 (42.2%) of tested cases. This is similar to a previous local study finding 41% of injury-related deaths examined having a positive BAC.^[27] Of the cases with positive BAC in this study, 79% had BAC greater than the legal driving limit of 0.05%. This is in keeping with the heavy episodic drinking (HED) (consuming >6 drinks per occasion monthly) culture that is reported to be prevalent in SA.^[37] A recent online survey of drinking patterns during the COVID-19 restrictions found nearly half (48.5%) of the participants (346 out of 798 respondents) to be classified as heavy episodic drinkers.^[38]

The finding of a relatively high number of positive BACs in the 12 - 17-year age group (~23%) was unexpected. It is possible that adolescents could be accessing alcohol from their parents, as was suggested by Rossow *et al.*^[39] in their study on parental influence on children's drinking behaviour. BAC is not routinely analysed

in children; thus this finding may be an under-representation of the true role of alcohol in the deaths of children, and merits further investigation.

A clear decline in BACs >0.01% and especially >0.05% during the three full alcohol bans in 2020 was observed, aligning with a decline in the caseload. However, it was evident

that while alcohol was 'banned', people had stockpiled or had access to alcohol by other means, as there were still positive cases.

Homicide and RTCs accounted for the greatest proportion of cases with positive BAC in comparison with suicides, non-transport-related accidents and those that were unknown or under investigation, with the majority of RTCs involving pedestrians in both years. This is in line with a previous SA study that found the involvement of pedestrians to be a great risk factor for alcohol-attributed fatal RTCs.^[40]

Study limitations

Data collection was limited to routinely captured variables in BIMS by forensic officers, and data-capturing errors may have occurred. Cases where cause of death was under investigation or undetermined may

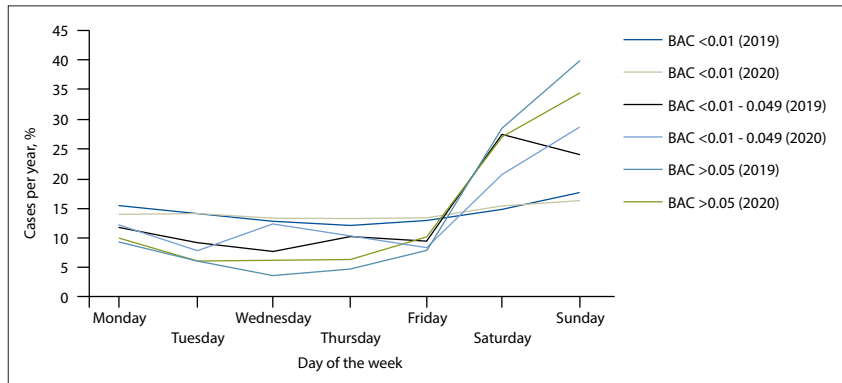


Fig. 5. Percentage distribution of injury-related deaths per year by days of the week and blood alcohol concentration (BAC) level (g/100 mL).

Table 3. Distribution of alcohol-positive cases in 2019 (n=6 003) and 2020 (n=5 493)

Variable	Mean (SD) g/100 mL BAC positive cases		BAC >0.01g/100 mL (n (%) available BAC results)		BAC >0.05g/100 mL (n (%) available BAC results)	
	2019	2020	2019	2020	2019	2020
Total	0.18 (0.1)	0.17 (0.09)	2 523 (42.0)	1 974 (35.9)*	2 241 (37.3)	1 771 (32.2)*
Sex						
Female	0.20 (0.11)	0.19 (0.11)	338 (41.4)	257 (37.1)	305 (37.4)	230 (33.2)
Male	0.17 (0.1)	0.17 (0.09)	2 183 (42.1)	1 717 (35.8)*	1 935 (37.3)	1 541 (32.1)*
Age						
0 - 11	-	0.030 (-)	-	1 (1.0)	-	-
12 - 17	0.10 (0.07)	0.11 (0.07)	54 (26.2)	40 (20.5)	41 (19.9)	34 (17.4)
18 - 29	0.16 (0.09)	0.16 (0.09)	1 017 (43.4)	729 (35.4)*	892 (38.1)	644 (31.3)*
30 - 39	0.19 (0.1)	0.18 (0.1)	771 (42.3)	649 (37.0)*	688 (37.8)	599 (34.1)
40 - 49	0.20 (0.11)	0.19 (0.1)	358 (45.3)	315 (41.1)	327 (41.4)	289 (37.7)
50 - 59	0.20 (0.1)	0.18 (0.1)	224 (44.4)	179 (44.5)	206 (40.9)	158 (39.3)
60 - 69	0.19 (0.11)	0.14 (0.09)	73 (36.3)	42 (22.5)*	65 (32.3)	36 (19.3)*
70 - 79	0.17 (0.09)	0.10 (0.08)	22 (3)	18 (21.7)	19 (21.6)	11 (13.3)
>80	0.07 (0.04)	0.01 (-)	4 (14.3)	1 (2.9)	3 (10.7)	-
Manner of death						
Homicide	0.17 (0.09)	0.16 (0.09)	1 465 (41.4)	1 160 (34.3)*	1 291 (36.5)	1 035 (30.6)*
Suicide	0.14 (0.09)	0.14 (0.09)	199 (35.1)	156 (29.2)	171 (30.1)	130 (24.3)
Accident – transport	0.20 (0.1)	0.20 (0.09)	499 (49.7)	379 (49.7)	465 (46.3)	354 (46.4)
Accident – other	0.18 (0.1)	0.19 (0.11)	90 (32.5)	58 (21.7)*	75 (27.1)	52 (19.5)
Lockdown levels in 2020 (corresponding periods in 2019)						
No lockdown	0.18 (0.1)	0.18 (0.1)	469 (39.3)	548 (41.2)	423 (35.5)	493 (37.1)
Level 1	0.16 (0.09)	0.17 (0.09)	773 (43.3)	698 (41.0)	678 (38.0)	639 (37.5)
Level 2	0.19 (0.1)	0.17 (0.09)	250 (42.1)	269 (41.5)	231 (38.9)	240 (37.0)
Level 3a	0.19 (0.11)	0.18 (0.1)	349 (42.9)	275 (36.5)	312 (38.4)	248 (33.0)
Level 3b	0.18 (0.1)	0.17 (0.09)	239 (43.5)	98 (19.6)*	211 (38.4)	87 (17.4)*
Level 4	0.18 (0.1)	0.16 (0.08)	189 (40.7)	48 (15.7)*	170 (36.6)	41 (13.4)*
Level 5	0.18 (0.11)	0.10 (0.09)	254 (42.1)	38 (14.9)*	216 (35.8)	23 (9.0)*
Alcohol bans in 2020 (corresponding periods in 2019)						
Complete ban	0.18 (0.11)	0.17 (0.09)	434 (43.1)	147 (19.4)*	384 (38.1)	127 (16.8)*
Partial ban	0.18 (0.1)	0.17 (0.09)	685 (42.0)	641 (39.0)	617 (37.8)	577 (35.1)
No restrictions	0.17 (0.1)	0.17 (0.1)	1 404 (41.8)	1 186 (38.4)	1 240 (36.9)	1 067 (34.5)

*p<0.001.
BAC = blood alcohol content; SD = standard deviation.

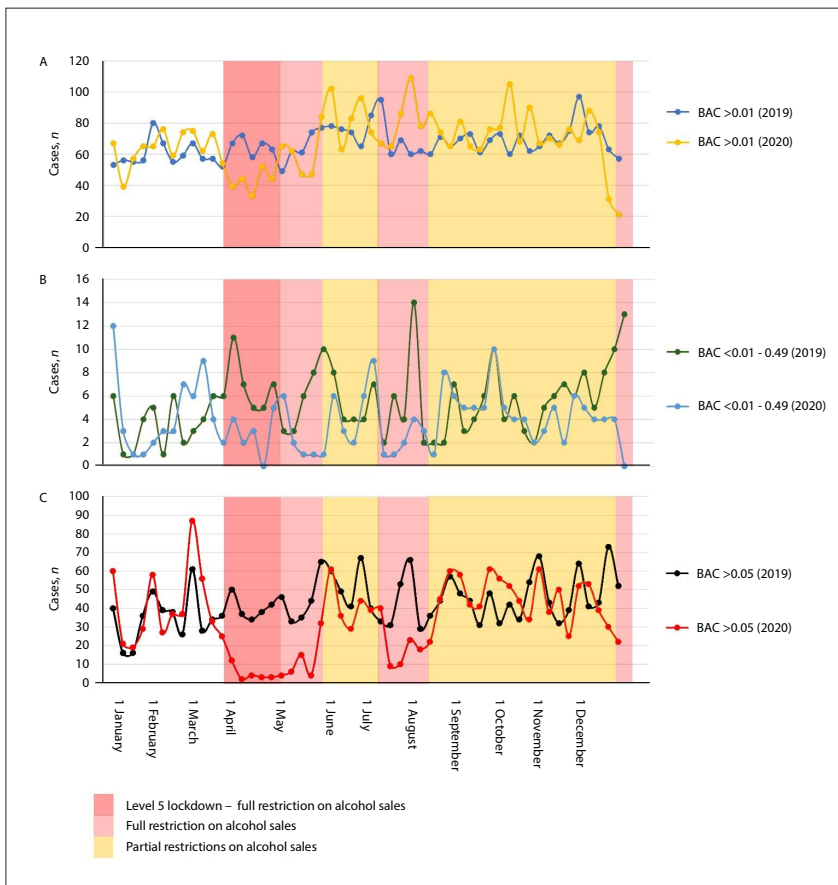


Fig. 6A - C. Weekly injury-related death cases in Western Cape Province by blood alcohol concentration (BAC) (g/100 mL) between 1 January 2019 and 31 December 2020, showing alert level 5 lockdown and alcohol restriction periods.



Fig. 7A - C. Weekly homicide and transport-related deaths in WC by blood alcohol concentration (BAC) (g/100 mL) showing alert level 5 lockdown and alcohol restriction periods.

have subsequently changed, and may not have been updated on BIMS. Individuals who died some time after an initial injury may have

been intoxicated at the time, but BAC tests may not have been requested, or BAC was low due to the prolonged survival time. FPS

has no current standard practice regarding testing of BAC in persons <18 years of age, and it is left to the pathologist's discretion. This may result in an underestimation of the prevalence of alcohol-related injury deaths in paediatric cases.

Blood sampling occurred routinely during postmortem examinations, and any errors made during sampling and handling were not accounted for. Analysis was performed at FCL, and the authors cannot account for possible errors in analysis or reporting. Very few toxicology results were available at the time of data collection owing to extensive backlogs at FCL. Consequently, toxicology results were not analysed in this study. The role of drugs in these cases could not be assessed, and warrants further investigation considering the reported prevalence of drug use in injury-related deaths.^[27] The findings in this study relate to the WC, and may not be applicable to other provinces in the country.

Conclusion

A retrospective analysis of BAC in injury-related deaths in the WC during 2019 and 2020 was performed to determine whether the COVID-19 lockdown and restricted access to alcohol impacted injury-related deaths and BACs in these cases. This study confirmed the great burden of injury-related mortality in the WC, and illustrated an almost 50% decrease in injury-related deaths during the stricter lockdown periods that coincided with the alcohol ban and limitation of movement, and a rebound increase following relaxation of restrictions on movement and alcohol sales. There was no difference in the mean BACs between 2019 and 2020. However, a large average difference in AL5 and 4 was observed (0.18% and 0.13%, respectively). This study highlighted the importance of routine consolidation of mortality and alcohol data, and highlighted key risk groups, such as paediatrics and adult males. The impact of other drugs should not be ignored in assessment of injury-related deaths, but could not be investigated in this study. Standardised practice in the testing of alcohol and toxicology in injury-related death cases, and especially in children, is further recommended.

Declaration. This research was conducted in fulfilment of VRB's MMed in Forensic Pathology.

Acknowledgements. Calvin Mole for data analysis.

Author contributions. VRB and BD conceptualised the study. VRB, IM and BD collected the data. VRB drafted the initial manuscript. IM and BD revised the manuscript.

All authors approved the manuscript for publication.

Funding. We gratefully acknowledge funding for data analysis from the Division of Forensic Medicine and Toxicology.

Conflicts of interest. None.

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Accepted 28 March 2023.