Incidence of Diffuse Large B-Cell Lymphoma in Relation to the HIV Epidemic in South Africa 2011-2021

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BACKGROUND

- Diffuse large B cell lymphoma (DLBCL) is HIV-associated and the most common type of non-Hodgkin lymphoma worldwide.[1]
- Young Black Africans in South Africa are disproportionately affected by HIV compared to other population groups.[2]
- Antiretroviral treatment (ART) was introduced in South Africa's public health facilities in 2004. Between 2004 and 2015, ART was initiated based on CD4 count and pregnancy status. Universal-test-and-treat ART policy was introduced in 2016.[3]
- We examined the impact of the HIV epidemic and antiretroviral therapy (ART) roll-out on incident DLBCL in South Africa by comparing characteristics and temporal trends of incident DLBCL between the Black and the White population.

METHODS

- We identified DLBCL diagnosed in South Africa from 2011-2021 in the pathology-based National Cancer Registry using International Classification of Disease Oncology, 3rd Edition, morphology codes.
- We computed age-specific incidence rates and estimated yearly age-standardized incidence rates (ASIR) using direct standardisation.
- We used Joinpoint regression to estimate annual percentage changes (APC) in the ASIR of DLBCL.

The high incidence of diffuse large B cell lymphoma (DLBCL) among middle-aged Black Africans in South Africa is likely to be driven by HIV. Wide coverage and timely initiation of ART should reduce DLBCL incidence in the future.

RESULTS

- Across all population groups in South Africa, 13,560 incident DLBCL were diagnosed from 2011-2021; among those, two-thirds (65%) were diagnosed among Black Africans and 22% among White individuals.
- The incidence rate of DLBCL was highest among middle-aged people in the Black population and older White people (Figure A).
- The overall ASIR per 100,000 persons was higher in White individuals (5.8) than Black Africans (1.8).
- In the Black population, we noted an increase in the ASIR of DLBCL between 2011-2017 with a declining trend thereafter (Figure B, Table).
- Similarly, in the White population, the ASIR of DLBCL increased from 2011 to 2019 with a declining trend thereafter (Figure B, Table).

Figure A: Age-specific incidence rate (ASR) of diffuse large B-cell lymphoma

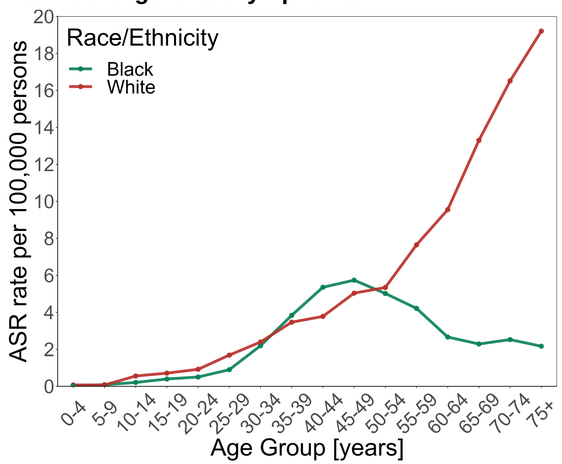


Figure B: Age-standardized incidence rate (ASIR) of diffuse large B-cell lymphoma

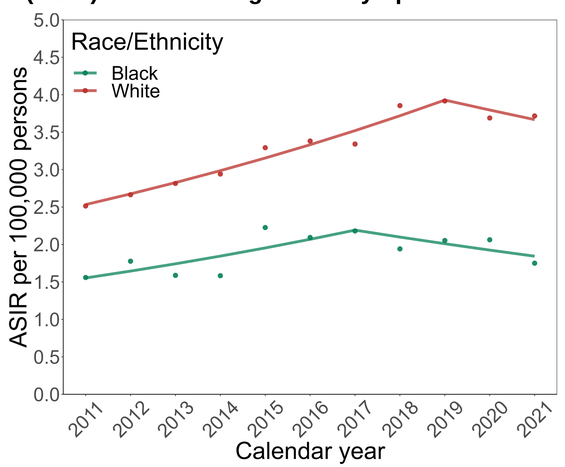


Table: Average annual percentage change in the ASIR of DLBCL by Race/Ethnicity

Race/Ethnicity	Trend 1		Trend 2	
	Period	***APC (95% CI)***	***Period***	***APC (95% CI)***
Black African	2011-2017	5.9% (0.02 to 37.1)	2017-2021	-4.2% (-22.8 to 3.7)
White	2011-2019	5.6% (4.8 to 7.9)	2019-2021	-3.4% (-8.1 to 2.4)

APC: Annual Percentage Change; CI: Confidence Intervals

CONCLUSIONS

- The age-specific DLBCL incidence patterns varied substantially between Black African and White individuals in South Africa.
- The high DLBCL incidence rates among middle-aged Black Africans suggest that HIV is a main driver of DLBCL incidence in this population.
- Despite the introduction of ART in 2004, incident DLBCL among Black Africans only started decreasing one year after the introduction of the universal-test-and-treat ART policy in 2016.
- Wide coverage and timely initiation of ART may help reduce the incidence of DLBCL among the Black African population in South Africa.
- Reasons for the increase in DLBCL rates over time among the White population remain unclear.
- The reduced DLBCL ASIRs in 2020-2021 might be partially attributed to the COVID-19 pandemic.

References

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