High Proportions of Adverse Births in Women with HIV and Non-communicable Disease Co-morbidities

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BACKGROUND

- HIV/antiretroviral therapy (ART) and non-communicable diseases (NCDs) like hypertension, diabetes and obesity are independently implicated in poor pregnancy outcomes.
- However, there are limited data on the interplay between HIV/ART and NCDs, and adverse birth outcomes in South African women.
- We aimed to examine the combined effects of HIV/ART, hypertension, and diabetes on adverse birth outcomes.

METHODS

- In a retrospective study design, we analyzed baseline and follow up data from an urban primary care antenatal care facility (ANC) in Cape Town, South Africa
- 479 women living with HIV (WLH) and 510 without HIV (≥18 years) were enrolled from the first ANC visit between 2017 and 2019 and followed through to delivery.
- Exposures examined:
  - HIV, hypertension (HPT), diabetes mellitus (DM) alone
  - HIV with obesity
  - HIV with HPT
  - HIV with DM (irrespective of chronicity)
- Birth outcomes studied:
  - Preterm delivery (PTD <37 gestational weeks)
  - Low birthweight (LBW <2500g),
  - High birthweight (HBW ≥4000g)
  - Small for gestational age (SGA <10 percentile)
  - Large for gestational age (LGA >90th percentile) (generated using the INTERGROWTH tool).
- Differences in proportions of adverse birth outcomes between exposure groups were tested with Chi-squared tests.

RESULTS

Table 1. Adverse birth outcomes in participants with a single morbidity

	WLH only n = 223	HPT only n = 25	Obesity only n = 161
PTD	26 (12)	4 (16)	8 (5)
LBW	30 (13)	7 (28)	7 (4)
HBW	8 (4)	0	9 (6)
SGA	31 (14)	6 (24)	9 (6)
LGA	16 (7)	0	27 (17)

Pregnant WLH with co-morbid NCD/NCDs experienced a higher proportion of adverse birth outcomes compared to WLH without NCDs. This suggests that the presence of NCDs exacerbate the risk of adverse birth outcomes among WLH.

Figure 2. Maternal morbidity by HIV status (n = 989)

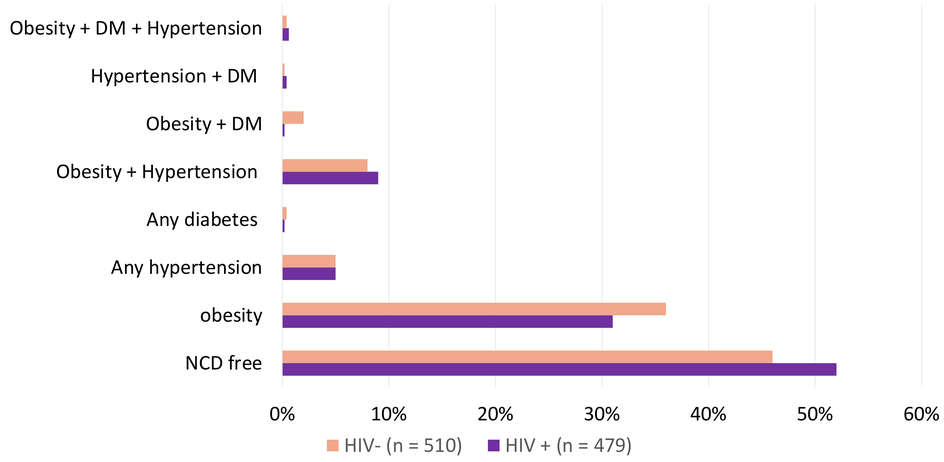


Figure 1. *Study flow diagram of participants*

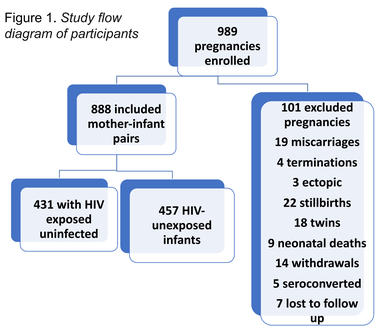
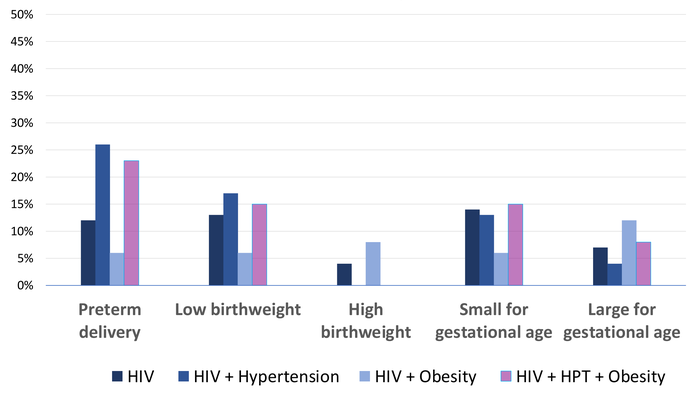


Figure 3. Proportions (%) of adverse births in WLH and co-morbid hypertension and obesity at an antenatal care facility in South Africa (n = 422)



- PTD appeared consistently higher in WLH + an NCD compared to WLH only
  - HIV + HPT: 26% vs 12%, p = 0.04
  - HIV + HPT + Obesity: 23% vs 12%, p = 0.03
- LBW was higher in WLH + an NCD compared to WLH only:
  - HIV + HPT: 17% vs 13%, p = 0.02
  - HIV + HPT + Obesity: 15% vs 13%, p = 0.03
- HBW and LGA were higher in WLH + obesity compared to WLH only:
  - HIV + Obesity: HBW 8% vs 4%, LGA 15% vs 7%
- SGA was higher in WLH + an NCD compared to WLH only:
  - HIV + HPT + Obesity: 15% vs 14%, p = 0.04
- Notably some adverse events were lower in WLH when obesity was present:
  - LBW and SGA were higher in WLH only but lower in WLH + Obesity (13% vs 6%, p = 0.03 and 14% vs 6%, p < 0.001 respectively).

CONCLUSIONS

- Pregnant WLH with co-morbid NCD/NCDs experienced a higher proportion of adverse birth outcomes compared to WLH only.
- This suggests that NCD exacerbates the risk of adverse birth outcomes among WLH.
- While obesity is a risk factor for NCDs and adverse birth outcomes, lower proportions of LBW and SGA were noted in WLH and obesity, potentially from the protective nature of maternal weight.
- It is crucial, in high HIV burden settings to strengthen the prevention and management of dual burden of HIV and NCDs.
- Targeted interventions, integrated healthcare approaches, and policy initiatives to improve maternal and child health outcomes in populations affected by HIV and NCDs.

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