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BACKGROUND

- Use of integrase strand transfer inhibitor (INSTI)-based regimens (mainly dolutegravir, DTG) in adults has been associated with weight gain.
- Association between INSTI use and weight gain has not been studied in adolescents and children.

OBJECTIVE

- To determine whether there was a greater increase in BMI in the first 2 years on INSTIs compared with the 2 years before INSTI initiation among young people living with HIV (YPHIV).

METHODS

- Population:
 - YPHIV aged 0-24 years enrolled in the DC Cohort, a longitudinal cohort of people living with HIV in care at 15 clinic sites in Washington, DC
 - Initiated INSTI-based regimens for the first time between Jan 2011-Mar 2019
 - ≥ 2 BMIs recorded at least 6 months apart within 2 years pre- and post- INSTI initiation.
- Analytic Methods:
 - Compared trajectory of BMI (and BMI-for-age z-score for YPHIV ≤ 19 years of age) pre- and post-INSTI initiation using piecewise linear mixed models.
 - Adjusted for BMI at INSTI initiation, sex, race, mode of HIV acquisition, smoking status, psychiatric disorder diagnosis, most recent HIV viral load and CD4 count (both time-updated).

RESULTS

- YPHIV were predominantly perinatally infected.
- YPHIV 0-24 years:
 - There was an increased mean rate of BMI change in the 2 years before (+0.58 kg/m²/year) and 2 years after (+1.04 kg/m²/year) INSTI initiation.
 - There was a greater rate of BMI increase following INSTI initiation compared with pre-INSTI (+0.45 kg/m²/year), but this was not statistically significant.
- YPHIV 0-19 years:
 - There was a significantly increased mean rate of BMI-for-age z-score in the 2 years after INSTI initiation (+0.21 units/year), but not in the 2 years before INSTI initiation (+0.02 units/year).
 - There was a significantly greater rate of increase in BMI-for-age z-score following INSTI initiation compared with pre-INSTI (+0.19 units/year).
- Mean BMI after 2 years of INSTI initiation remained in normal range.

Table 1. Characteristics of participants 0-24 years at INSTI initiation (n=69)

Variable	Median (IQR) or n (%)
Age, years	18 (14-21)
Non-Hispanic Black	66 (95.7%)
Male	33 (47.8%)
BMI, m/kg ²	21.8 (20.0-24.5)
Perinatal HIV acquisition	52 (75.4%)
CD4 count, cells/mL	609 (365-851)
HIV viral load, copies/mL	128 (undetectable-5,542)
History of AIDS	36 (52.2%)
First INSTI initiated:	
DTG	43 (62.3%)
EVG	23 (33.3%)
RAL	3 (4.3%)
Never smoker	59 (85.5%)
Psychiatric disorder diagnosis	12 (17.4%)

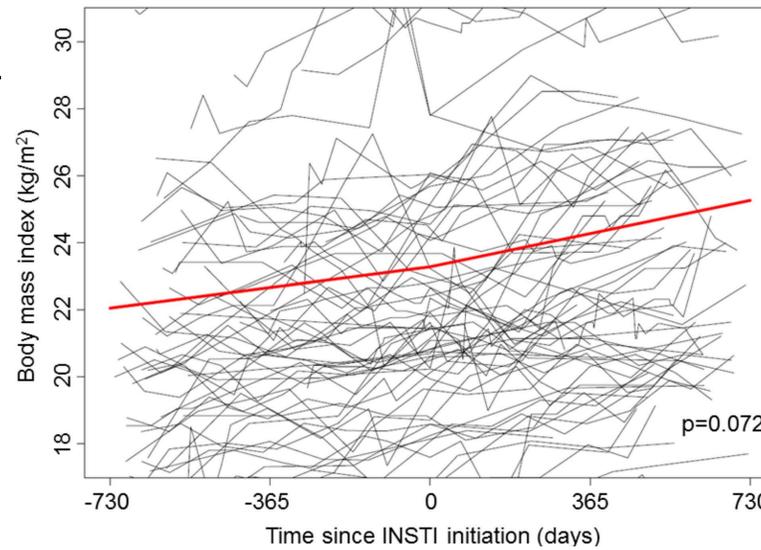


Figure 1: Spaghetti plot of BMI measurements, pre- and post-INSTI initiation in participants aged 0-24 years (896 measurements in 69 participants). The p-value is a test of difference in slope between the two years pre-INSTI vs two years post-INSTI initiation, adjusting for confounders.

Table 2. Rates of BMI change for participants 0-24 years (n=69)

Variable	Rate of BMI change (kg/m ² /year, 95 C.I.)	Adjusted p-value
Mean rate pre-INSTI	+0.58 (0.28, 0.89)	0.0003
Mean rate post-INSTI	+1.04 (0.67, 1.41)	<0.0001
Post- vs pre-INSTI initiation	+0.45 (-0.04, 0.95)	0.072

CONCLUSIONS

- YPHIV had higher rates of BMI-for-age z-score increase after INSTI initiation compared with pre-INSTI initiation.
- INSTI use was associated with an increase in BMI-for-age z-score (post vs pre-INSTI initiation) among YPHIV 0-19 years of age. There was insufficient evidence of an association in YPHIV 0-24 years of age.
- Even slight BMI increase in childhood can be associated with cardiovascular and metabolic disease in adulthood.
- Findings support need for continued monitoring of BMI trends and potential cardiometabolic implications in YPHIV receiving INSTIs.

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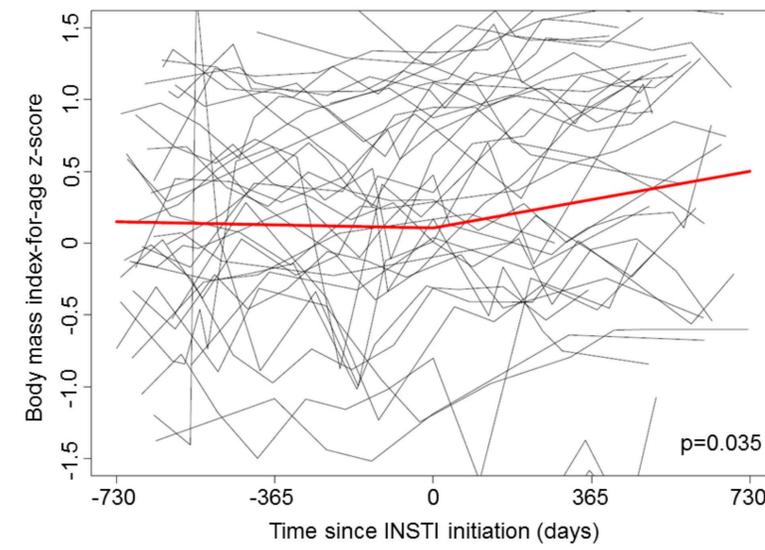


Figure 2: Spaghetti plot of BMI-for-age z-score measurements, pre- and post-INSTI initiation in participants aged 0-19 years (446 measurements in 38 participants). The p-value is a test of difference in slope between the two years pre-INSTI vs two years post-INSTI initiation, adjusting for confounders.

Table 3. Rates of BMI-for-age z-score change for participants 0-19 years (n=38)

Variable	Rate of BMI-for-age z-score change (units/year, 95 C.I.)	Adjusted p-value
Mean rate pre-INSTI	+0.02 (-0.09, 0.13)	0.71
Mean rate post-INSTI	+0.21 (0.08, 0.35)	0.0027
Post- vs pre-INSTI initiation	+0.19 (0.01, 0.37)	0.035