

Atherosclerosis in HIV+ Patients Taking Antiretroviral Therapy: A Systematic Review and Meta-Analysis

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Elizabeth Q Huggins¹, Nalley Mora¹, Sasha Zivin¹, Bamidele Tayo¹

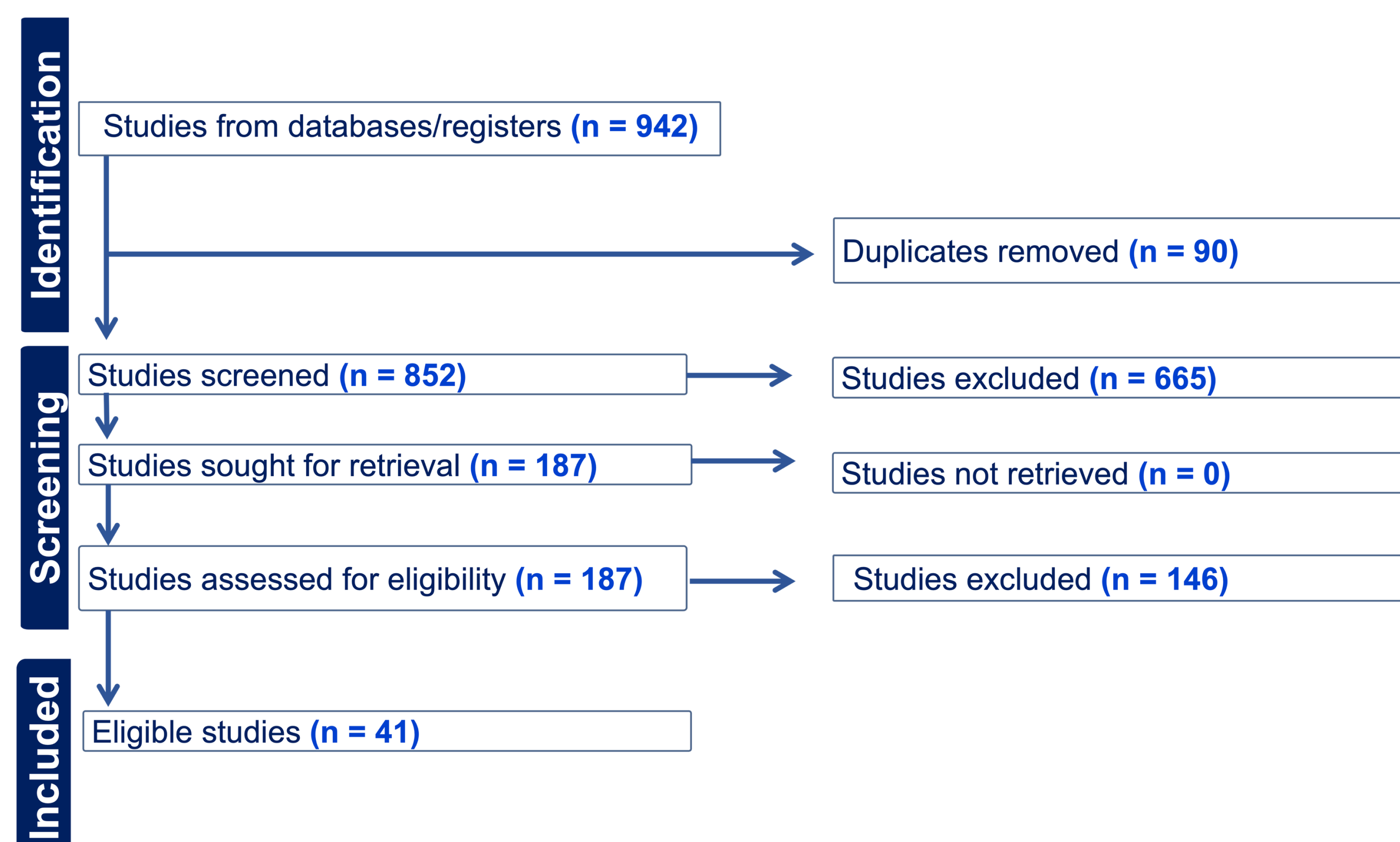
¹Department of Public Health Sciences, Parkinson School of Health Sciences and Public Health, Loyola University Chicago, Chicago, IL, USA

Preliminary analysis of the data shows a greater mean CIMT in HIV+ patients taking antiretroviral therapy for more than 6 months compared to treatment-naïve or HIV- individuals. A rigorous meta-analysis is forthcoming to confirm these findings.

BACKGROUND

- HIV has become a chronic illness in recent decades due to the widespread use of antiretroviral therapies (ART) and other interventions. The CDC reported the rate of death decreased by 37% between 2010 and 2018.¹
- While the death rate has decreased significantly, age-associated diseases have occurred earlier and more frequently in patients living with HIV. Studies have pointed to the virus and treatment as possible causes for this increase.²⁻⁴
- This systematic review and meta-analysis aims to bring clarity to this relationship by investigating the prevalence of atherosclerosis in people living with HIV and taking ART.
- The following question is explored in this review: Is atherosclerosis more prevalent in HIV-positive individuals who have been on antiretroviral therapies (ART) for more than six months?
- Atherosclerosis is measured by the common carotid intima-media thickness (CIMT). CIMT \geq 1mm is considered atherosclerosis.⁵

METHODS



- Comprehensive and exhaustive searches retrieved 942 studies from five sources (Embase, PubMed, CENTRAL, Web of Science Core Index and Web of Science Preprint index).
- 852 studies were screened by four team members according to our inclusion/exclusion criteria for selecting literature.
- Full-text of 187 articles were screened by four team members and 146 studies were excluded.
- 41 studies are being considered for data analysis, quality assessment and synthesis. Data reconciliation is in process.

RESULTS

- Preliminary analysis was conducted on 41 studies.
- 38 studies identified cases, HIV+ patients taking ART for 6+ months.
- 21 studies identified controls, HIV- patients or treatment-naïve.
- Sex/gender was not reported consistently across studies.
- Of those who reported sex/gender, 992 controls and 3089 cases identified as male. Male participants outnumbered female participants in most studies.

RESULTS CONTINUED

Characteristics of eligible studies (N=41)	
Publication date 2001 – 2010 (n, %)	18 (43.9)
Publication date 2011 – 2021 (n, %)	23 (56.1)
Total participants (n)	9,305
Cases (n)	5,630
Controls (n)	2,884
Age of all participants, years (mean, SD)	43.9 (3.2)
Age of cases, years (mean, SD)	44.3 (10.4)
Age of controls, years (mean, SD)	42.7 (9.6)
Duration of ART treatment, months (mean)	79.1

- The mean CIMT of cases was observed in 28 studies and the median CIMT was observed in 14 studies
- The mean CIMT of controls was observed in 18 studies and the median CIMT was observed in 8 studies.
- The mean difference of CIMT between cases and controls was 0.35 ± 0.27 mm with a p value 0.2 not reaching statistical significance.
- Some studies only reported the CIMT measurements for the cases or used a specific cutoff value (e.g. 0.8 mm)

CIMT Measurements	Millimeters
CIMT cases, mean (SD)	1.03 (0.25)
CIMT controls, mean (SD)	0.67 (0.18)
CIMT cases, median (IQR)	0.75 (0.63 – 1.08)
CIMT controls, median (IQR)	0.70 (0.60- 0.89)

CONCLUSIONS

- Preliminary analysis of the data shows a greater mean CIMT in HIV+ patients taking antiretroviral therapy compared to their treatment-naïve or HIV- individuals. However, data harmonization between means and median is likely to change findings. To that end, the team will undertake data harmonization and subgroup meta-analysis to account for these variations.
- A rigorous meta-analysis is planned to address the variations in reporting and data measurements and confirm the preliminary findings.

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