

Reduced HAV IgG Seropositivity Among Unvaccinated People Living with HIV: The Weak Shield

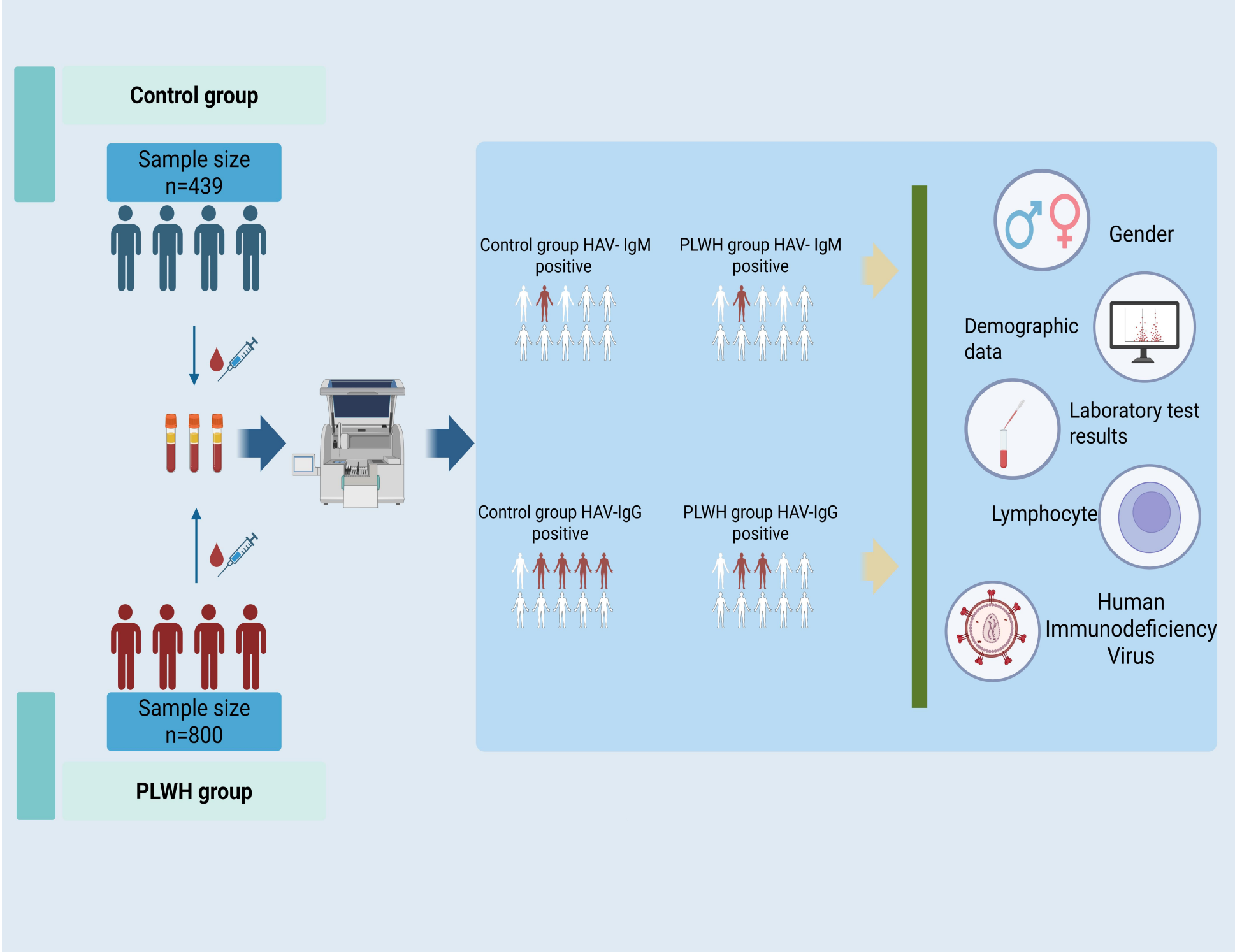
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Background

People living with HIV (PLWH) represent a high-risk population for hepatitis A virus (HAV) infection, with exposure risk equal to or higher than that of the general population, particularly within adult risk networks. Anti-HAV immunoglobulin G (IgG) serves as a neutralizing antibody and is considered a key marker of protective immunity against HAV infection. However, the serologic profile of anti-HAV IgG and IgM among unvaccinated PLWH remains insufficiently characterized, especially in South China.

Methods

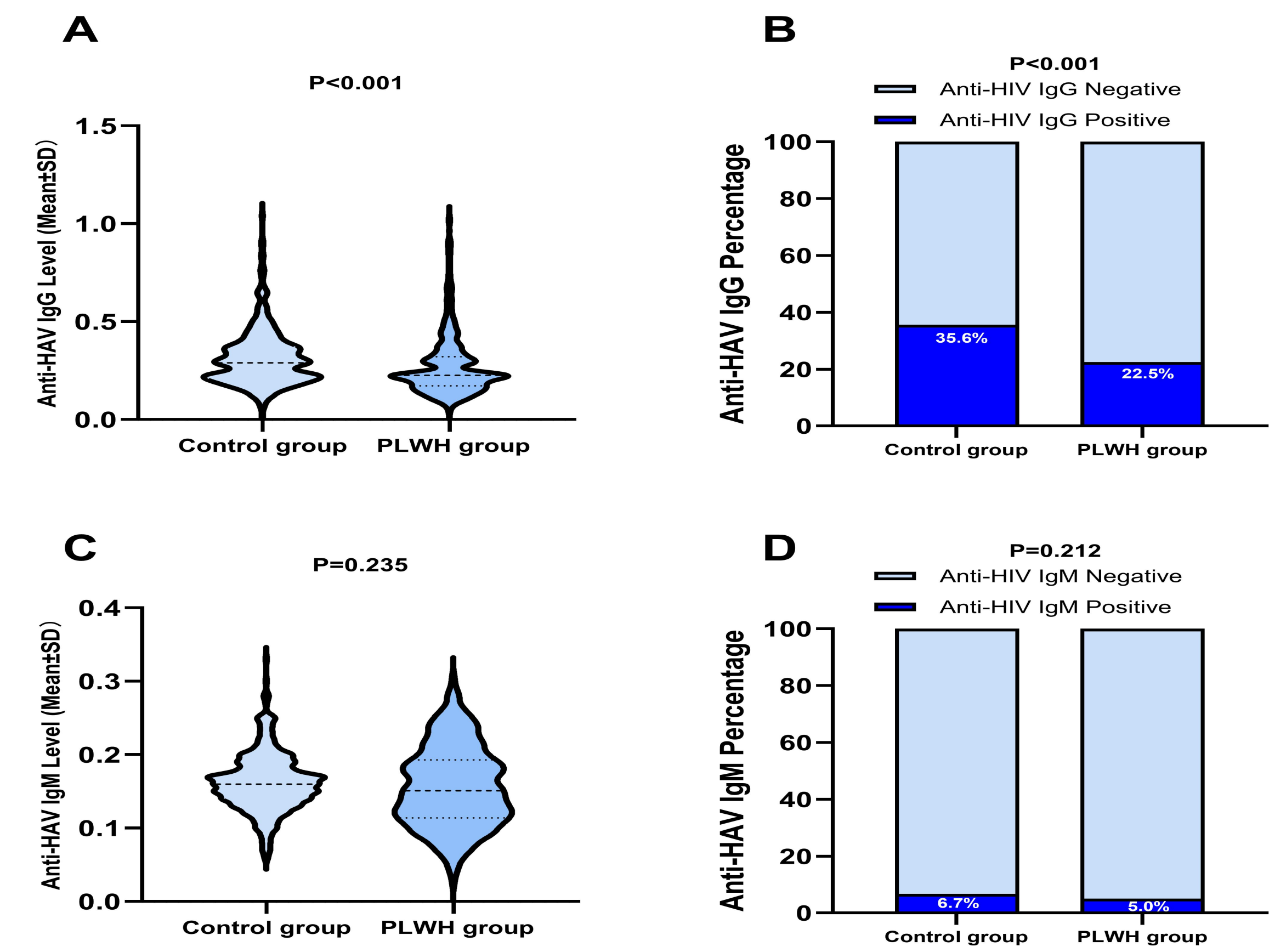


A total of 1232 unvaccinated adults were enrolled in the study, including 800 PLWH and 432 HIV-negative controls, to evaluate serological markers of HAV immunity. Serum anti-HAV IgG and immunoglobulin M (IgM) were measured using enzyme-linked immunosorbent assays, and demographic, immunological, and biochemical data were collected.

Results

1. Lower anti-HAV IgG seropositivity and concentrations in PLWH

PLWH had significantly lower anti-HAV IgG concentrations (0.27 ± 0.16 vs. 0.31 ± 0.14 ng/mL, $P < 0.001$) and a lower IgG seropositivity rate (22.5% vs. 35.6%, $P < 0.001$) compared with HIV-negative controls, whereas no differences were observed in IgM levels or positivity between the two groups.



(A) Serum levels of HAV- specific IgG were significantly higher in the control group than in the PLWH group (0.31 ± 0.14 vs. 0.27 ± 0.16 , $p < 0.001$). (B) The proportion of people with seropositivity IgG against HAV in the control group was higher than in the PLWH group (35.60% vs. 22.50%, $p < 0.001$). (C) Serum levels of HAV- specific IgM were similar in both groups (0.15 ± 0.05 vs. 0.16 ± 0.05 , $p = 0.235$). (D) The proportion of people with IgM positivity was similar in both groups (6.70% vs. 5.00%, $p = 0.212$).

Conclusion

This study identifies HIV infection as an independent risk factor for lower anti-HAV IgG seropositivity and antibody titers compared with HIV-negative individuals. Within the PLWH cohort, age and serum globulin levels emerged as independent factors of anti-HAV IgG seropositivity, whereas age, baseline CD8⁺ T-cell count, CD4/CD8 ratio, lymphocyte count were independently associated with anti-HAV IgM seropositivity. These findings support incorporating routine anti-HAV IgG screening into the long-term care of all PLWH, with targeted vaccination of susceptible individuals to reduce both personal infection risk and potential community transmission. Younger PLWH require particular attention due to their concurrent low sero-protection and ongoing HAV exposure.

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2. HIV infection and age as independent predictors of IgG seropositivity

Multivariable logistic regression identified HIV infection (OR = 0.599, 95% CI 0.413–0.869, $P = 0.007$) and age (OR = 1.019, 95% CI 1.007–1.031, $P = 0.002$) as independent factors associated with anti-HAV IgG seropositivity.

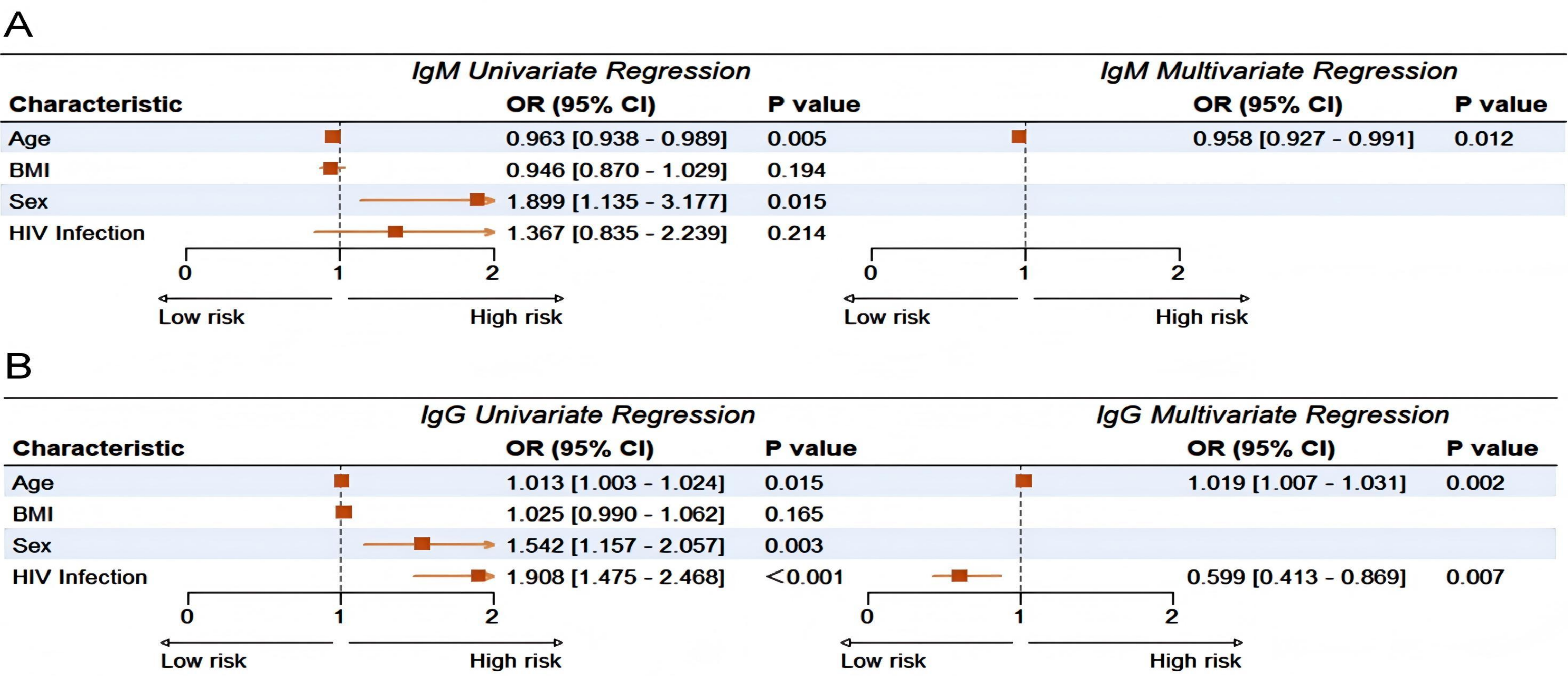
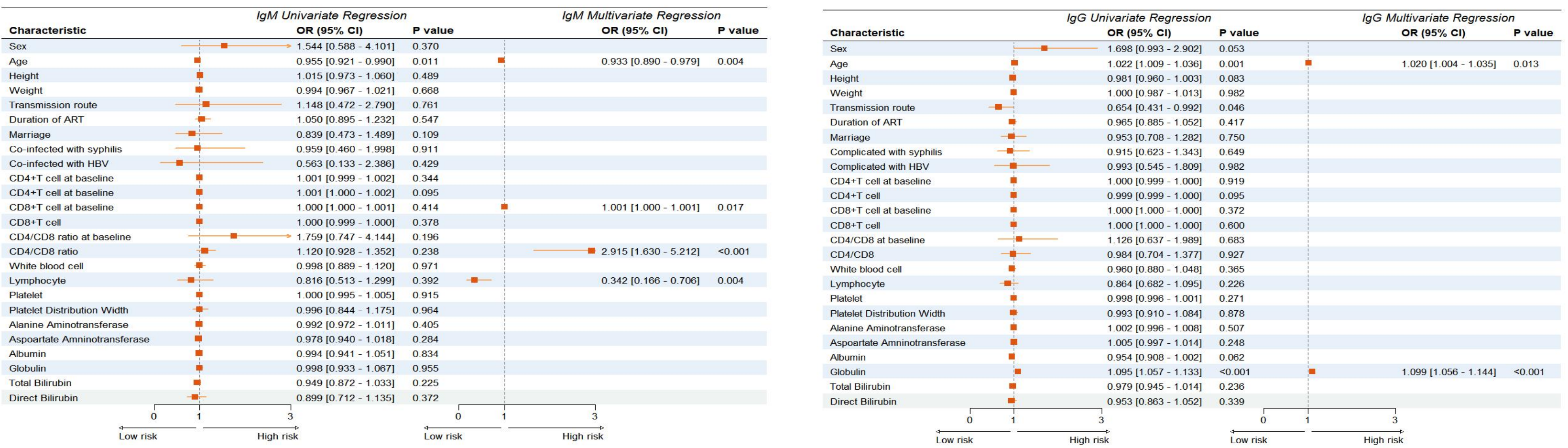


Figure A depicts the multivariate analysis for serum anti-HAV IgM, while Figure B depicts the corresponding analysis for serum anti-HAV IgG.

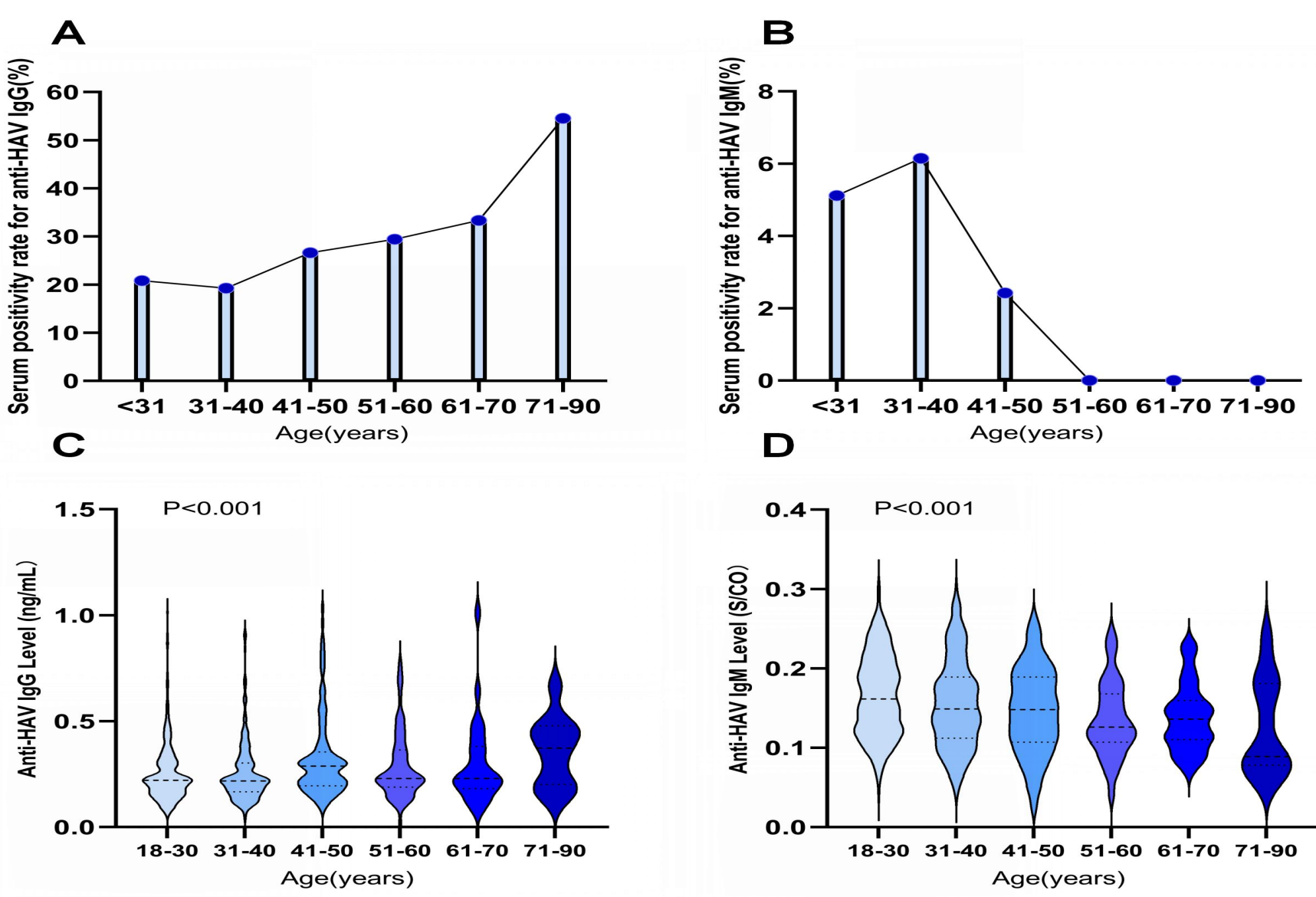
3. Distinct factors associated with IgG and IgM positivity within PLWH

Among PLWH, those who were IgG-positive tended to be older ($P = 0.003$) and had higher serum globulin levels ($P < 0.001$), whereas IgM positivity was associated with younger age ($P < 0.001$) and a higher CD4/CD8 ratio ($P = 0.030$).



4. Opposite age-related trends between IgG and IgM seroprevalence

Age-stratified analyses further revealed that IgG seroprevalence increased with age, while IgM positivity showed a declining trend.



(A) IgG seropositivity increases with age, peaking in the 71–90 years age group, (B) whereas IgM seropositivity peaks in the 31–40 years group before declining sharply in older age groups. (C) Significant differences in anti-HAV IgG titers among age groups ($P < 0.001$). (D) In contrast, anti-HAV IgM titers exhibited a significant decreasing trend with age ($P < 0.01$).