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## **Correlation Between VACS Index and Frailty in HIV+ People and How It Affects Cognition and Brain Volume**

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### **ABSTRACT**

The human immunodeficiency virus (HIV) is a retrovirus that causes an infection within the immune system and can lead to acquired immunodeficiency syndrome (AIDS) if not properly addressed. While this disease specifically attacks the immune system, it also affects other systems, such as the brain.

One major relationship we will be investigating is between HIV status and the Veterans Aging Cohort Study (VACS) index, which includes race, sex and other biomarkers such as CD4 count, viral load, hepatitis C infection, and hemoglobin. We hypothesize that there will be a strong correlation between the VACS index and frailty in those with HIV; we also predict there will be changes in cognition and brain volumes.

Ninety-seven individuals between the ages of 50 and 77 completed neuropsychological testing and neuroimaging. The mean age for males is 57.2 (54% AA) and females is 56.11 (78% AA). The mean years of education for men is 13.8, and 12.4 for women. Individuals were divided into 3 groups based on their severity of frailty (Non-Frail, Pre-Frail, and Frail (N=19). In the present study, we propose to examine potential differences in neuropsychological scores and structural neuroimaging between these groups. Additionally, we will examine whether the VACS index is predictive of more severe frailty and worse cognitive outcomes and structural neuroimaging.

Previous studies have shown that the VACS index is more predictive of mortality risks and frailty in older adults than HIV biomarkers alone. We plan to investigate if these indices are correlated to neuropsychological measures and neuroimaging.

**Keywords:** HIV, AIDS, Hepatitis C, Frailty

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