OBJECTIVES: To determine if there is cognitive decline in HIV subjects with 
CD$_4$ $\geq$ 200 cells/mm$^3$ and those with CD$_4$ $<$ 200 cell/mm$^3$, correlating CD$_4$ counts 
with cognitive decline, determine the cognitive domain affected, and if detection 
of cognitive decline in subjects depend on the neuropsychological battery used.

DESIGN: A case-control study

SETTING: University of Benin Teaching Hospital, Benin City.

SUBJECT: Two hundred and eighty eight (288) subjects were recruited of which 
96 were subjects with CD$_4$ $\geq$ 200 cells/mm$^3$, 96 were subject with CD$_4$ $<$ 200 
cell/mm$^3$, and 96 were controls. They were stratified into groups and randomly 
selected from COPD, the ward, the antenatal clinic and among UBTH staff. They were matched for age, sex and education.

OUTCOME MEASURES
1. Cognitive test scores as assessed by: a Community screening instrument for 
dementia (CSI’D); b. computerized neuropsychological test ‘Fepsy’.
2. CD$_4$ counts.

RESULT:
Subjects with CD4 ≥ 200 cells/mm³ had a mean CD4 count of 266.8±44.323 cells/mm³ while subjects with CD4 < 200 cells/mm³ had a mean CD4 count of 118.3 ± 40.969 cells/mm³.

The mean CSI’D score for control is 66.45 ± 1.788, while the mean CSI’D score for subjects with CD4 ≥ 200 cells/mm³ is 66.313 ± 2.157 (P > 0.05). The mean CSI’D score for subjects with CD4 < 200 cells/mm³ is 56.615 ± 4.234 (P < 0.001). 32.6 of subjects with CD4 ≥ 200 cells/mm³ had abnormal cognitive function, while 99% of subjects with CD4 < 200 cells/mm³ had abnormal cognitive function, using the CSI’D score of the normal controls (i.e. normal ± 2SD) as the cut–off score.

The mean scores of subjects with CD4 < 200 cells/mm³, in all the five fepsy test items are worse (P < 0.001) compared to controls and subjects with CD4 ≥ 200 cells/mm³. A higher percentage of subjects with CD4 < 200 cells/mm³ had abnormal cognitive function compared with subjects with CD4 ≥ 200 cells/mm³ across all five fepsy items using means score of normal as cut-off.

The fepsy scores of subjects with CD4 ≥ 200 cells/mm³ is statistically insignificant compared to controls in 2 test items (Simple reaction time – both auditory and visual, Tapping task) but poorer scores were obtained in 3 test items (Binary choice and sensitivity, CVST, memory recognition). The result shows
that subjects with CD₄ 200 – 499 cell/mm³ had a higher percentage cognitive function abnormality compared to subjects CD₄ ≥ 500 cells/mm³

CONCLUSION

1. Subjects with CD₄ < 200 cells/mm³ have more severe cognitive decline.
2. Subjects with CD₄ ≥ 200 cells/mm³ have subtle cognitive decline, which was detected by timed task incorporated in fepsy.
3. Worsening cognitive decline correlates with falling CD₄ count, as a higher percentage of subjects with CD₄ < 200 cells/mm³ had abnormal cognitive function compared to subjects with CD₄ ≥ 200 cells/mm³ across all the test items.
4. Memory loss, slowing of psychomotor speed and thought processes are the main cognitive domains affected at CD₄ ≥ 200 cells/mm³, but with declining CD₄ < 200 cells/mm³ other cognitive domains are involved.