An analysis of global HIV prevalence among refugees, asylum seekers, and migrants, using the US Bureau of the Census databank

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**Background:** As a risk-factor population for HIV infection, unsettled populations, in particular, refugees and migrants are understudied.

**Methods & Materials:** Using the US Bureau of the Census database, all studies listed of high quality with keywords “refugee,” “asylum,” “immigrant,” or “migrant” were collated. From this cohort, inapplicable and studies were deleted (eg, those listed as “non-migrants”). The data were analyzed using STATA 11, with respect to HIV prevalence, median year of collection, sample size, and age.

**Results:** There were 645 eligible studies from 40 countries carried out between 1987 and 2015 deemed adequate for analysis. Most studies were from Asia (70%) or Africa (24%). The overall HIV prevalence among unsettled populations was 6.5% (SD 9.8, median, 2.5%). Over the last 5 years, among 446 studies, the mean prevalence was 6.5%. The 151 studies among only females showed a higher prevalence than those among only males (8.4% vs 6.4%, P =0.43). The sample size of 95 studies with data ranged from 5 to 930 persons, mean 359 (the mean HIV prevalence for this subset, 11.5%). Studies with a smaller sample size tended to show higher HIV prevalence (correlation coefficient, -0.52). There was a small increase in prevalence through time (correlation coefficient, 0.05).

Studies before 2001 had a median prevalence of 7.7% while those after 2001 showed a median prevalence of 6.3% (P =0.0001, Kruskal Wallis). Age values were available for only 72 studies, with a mean prevalence of 10.5%, and slightly increased with age, correlation coefficient of 0.28. A regression analysis of age, sample size, and time of study against prevalence had only 24 studies but showed that only time of study as significant (P = 0.009, adjusted R square, 0.57).

**Conclusion:** These data on globally unsettled populations show that while studies with small sample size, of females, and of older age populations show a higher HIV prevalence, the key factor remains time of study, with a slow increase in HIV prevalence through the interval analyzed, 1987-2015. With a mean recent prevalence of 6.5%, it is important that HIV prevention activities be directed toward unsettled populations, regardless of other risk factors.

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Mitochondrial dysfunction among HIV-1 infected patients of South India and evaluation of mitochondrial DNA as a biomarker of mitochondrial toxicity


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**Background:** NRTI class of drugs though they cause mitochondrial toxicity, owing to their cost is the preferred class of drugs in resource-limited settings like India, hence there is a greater need to identify a novel biomarker of mitochondrial toxicity. In this study mitochondrial dysfunction was estimated from peripheral blood mononuclear cells (PBMCs) and the utility of mitochondrial DNA (mtDNA) as a marker of mitochondrial toxicity was evaluated.

**Methods & Materials:** In this longitudinal observational study, 40 HIV-1 infected patients treated with NRTI based regimen and 57 HIV-1 infected ART untreated patients were followed for 18 months at an interval of 6 months and data were compared with 24 HIV uninfected controls. Mitochondrial dysfunction was determined from mtDNA content by real time PCR, mitochondrial membrane potential damage (total lymphocyte ∆Ψm(low)) by flow cytometry and ND1 gene of mtDNA was sequenced.

**Results:** Among the HIV infected, mitochondrial dysfunction was more pronounced in the ART untreated than the treated. mtDNA content and total lymphocyte ∆Ψm(low) (p<0.0001) were significantly different among the HIV infected than the controls. Out of the 22 mtDNA variants observed in HIV infected individuals, 27% were found to be associated with mitochondrial mediated pathogenic conditions, distributed in 10% of on ART and in 8% of ART untreated. mtDNA content was significantly(p<0.0001) reduced in both the HIV infected groups, ART untreated had 83.3(65.56-113) and treated had 92.53(68.64-126.7), than the controls(127.5(110.6-167.7)) throughout the follow up, however it did not differ significantly among the HIV infected. Analysis of mtDNA content in relation to the adverse events, though differed significantly at the first (p = 0.014) and second visit (p = 0.029) was increased in the subsequent visits among the patients symptomatic for toxicity.

**Conclusion:** Mitochondrial dysfunction is evident among both the treated and untreated HIV-1 infected patients of South India. As mtDNA depletion failed to relate consistently with laboratory adverse events during the complete follow up, measuring mtDNA