

## Clinical Research Results Abstract

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### Airway inflammation and oxidative stress in biomass fuel smoke exposed women as assessed by exhaled Carbon monoxide levels

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Exhaled carbon monoxide (eCO) is being studied as a biomarker of air way inflammation and oxidative stress. It's utility as a potential marker in indoor air pollution remains incompletely characterized. Biomass fuel (BMF) smoke is considered a major indoor air pollutant worldwide. Aim: To assess the airway inflammation and oxidative stress in a population of women exposed to biomass fuel smoke by means of eCO. Method: Cross sectional study was conducted among non-pregnant women, over 18 years of age, currently using biomass as cooking fuel (n=400). eCO level was measured using Micro<sup>+</sup>™ Smokerlyzer (Bedfont scientific, UK). Two parameters were studied; Exposure index (EI) = hours of BMF use per day × Years of BMF use. EI≤150 was categorized as low exposure group (LEG) and EI>150 as high exposure group (HEG). Ventilation: Kitchens with both windows and chimneys were categorized as good ventilation group (GVG) while all other types were as poor ventilation group (PVG). Results: Mean age was 46 years±14SD. Mean exposure index was 170±108. Those who were unable to perform the test (n=4) and current smokers (n=8) were excluded. Median eCO was 2 (IQR=1). Majority (52.6%) had low exposures and good ventilation (73.7%). Mann-Whitney U test showed a significant difference between eCO for HEG vs LEG (U=20,989, p = 0.029). Mean ranks were 206 and 183 respectively. There was a significant difference among PVG and GVG (U=12,249, p=0.009). Mean ranks were 217 and 186 respectively. Effect size was smaller for both parameters (0.11 for EI and 0.13 for ventilation). Conclusion: These findings indicate that BMF smoke high exposure group and poor ventilation group showed airway inflammation and oxidative stress as measured by eCO.

#### Declaration of Interest

Authors have no conflicts of interest to declare.

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