ABSTRACT

**Background:** Cigarette smoking has been associate with numerous respiratory tract diseases, common among them is chronic obstructive airway disease (COPD) a component of cigarette which is Cadmium (Cd) has also been implicated in airway diseases especially COPD. This study seeks to assess the Cd level of smokers and non-smokers which is adequately represented in the urine and the lung function and determine the relationship. This study was carried out in Jos metropolis in North-central Nigeria.

**Methodology:** This was a cross sectional analytical study. A combination of 165 and smokers (subjects) and non-smokers (controls) were recruited. Of these 6 subjects and 4 of the controls samples were not analyzable due to poor storage. The recruits filled a standardized British Medical Research Council (BMRC) questionnaire as modified by Femi-Pearse, Anthropometric measurements were taken. Spirometry was done according to American Thoracic Society (ATS) guidelines and Urine samples taken for Cadmium and creatinine analyses.

**Results:** The PEF was 408.29 l/min (113.68) for subjects and 468.76 L/min (121.35) p=0.00, FEV1 3.25L (0.63) and 3.44L (0.50) for subjects and controls respectively (p=0.01) and FVC was 3.77L (0.77) for subjects and
4.04L (0.65) for controls (p=0.00) there was a significant difference between the groups. Ten percent of the subjects had a percentage of predicted FEV1 less than 80% compared to 5% of the controls (p=0.08). The ratio of FEV1 to FVC less than 70% (obstructive pattern) was 5.7% for the subjects and 2.5% for controls (p=0.15) these were not statistical significant. There was a significant difference between the Urinary Cadmium (Cd) among smokers and non-smokers, with smokers having a higher urinary Cadmium ratio to creatinine and log of the urinary Cadmium to creatinine compared to non-smokers. Linear regression analysis showed a decline in the lung function particularly FEV1 as the urinary cadmium levels were increasing.

**Conclusion:** This study revealed that smokers have lower lung function parameters than non-smokers especially the FEV1. Urinary cadmium levels were higher in smokers than non-smokers and as the cadmium levels rise among smokers the lung function worsens.