PEAK EXPIRATORY FLOW RATES AMONG WOMEN EXPOSED TO DIFFERENT COOKING FUELS IN RURAL INDIA

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Abstract. Plant or animal based material burned for cooking or heating (biofuels) can cause indoor air pollution. We studied the effect of exposure to biofuel and other types of fuel smoke on peak expiratory flow rates (PEFR) among rural Indian women. We conducted a community based cross-sectional study of 760 non-smoking women who cooked using one of four types of fuel: biofuel, kerosene, liquefied petroleum gas (LPG) or a combination of two or more fuels. A PEFR <80% of predicted was considered abnormal. An abnormal PEFR was seen in 43.3% of women using biofuels, 20.5% of those using kerosene, 23.4% of those using LPG and 21.4% of those using mixed fuel. Multivariate logistic regression analysis showed among those using mixed fuel, age [OR: -2.08, 95% confidence interval (CI): 1.32 - 3.28, p = 0.00], height (OR: -1.06, 95% CI: 1.00 - 1.12, p = 0.02) and exposure index (estimated hours spent cooking daily multiplied by the years cooked) (OR: -2.74, 95% CI: 1.68 - 4.47, p = 0.00) were significant predictors of abnormal PEFR. Among women using biofuels and LPG, only exposure index was found to be a significant predictor of abnormal PEFR (p<0.05). No significant association was found between abnormal PEFR and exposure index among women who used only kerosene for fuel (p>0.05). Using mixed fuel was found to be more likely to cause an abnormal PEFR.

Keywords: indoor air pollution, cooking fuels, peak expiratory flow rate (PEFR), rural India