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Lung functions and respiratory symptoms among rice millers in Anuradhapura district, Sri Lanka

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Objectives: Rice is the most important crop cultivated in Sri Lanka and rice milling is the largest agro-based industry in the country. The general objective of this study was to identify and quantify the effects of inhalation of rice husk dust on the respiratory function of the rice millers in Anuradhapura district, Sri Lanka.

Methods: Rice millers (male: 84, female: 84) and controls (male: 84, female: 84) were selected and matched for determinants of lung functions, including smoking pack year index. Data were collected via a validated respiratory symptom and occupational history questionnaire, a physical examination and spirometry. Subjects with a known history of respiratory or cardiac diseases were excluded from the study.

Results: The rice millers, irrespective of gender, had significantly lower mean forced vital capacity (FVC), forced expiratory volume in the first second (FEV₁) and peak expiratory flow rate (PEFR) values ($p < 0.05$) and increased prevalences of respiratory symptoms when compared with controls. Among millers, 42% of males and 38% of females had features of chronic respiratory disease. Further, the mean FEV₁/FVC ratio was significantly higher among male millers, while the mean mid expiratory flow rate (FEF_{25-75%}) was significantly lower among female millers, than their respective controls. Exposure to the dust over a few hours caused significant reductions in FVC and FEV₁ in female millers.

Conclusions: The observed deficiencies in lung functions of rice millers were probably caused by the occupational exposure to rice husk dust. Wearing face masks, worker education and adequate ventilation in mills are recommended.