

Respiratory Morbidity of Women Exposed To Different Levels of Indoor Air Pollution in Rural Bangladesh: a Cross-Sectional Study

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Introduction:

Cooking and heating with biomass fuels in simple traditional stoves, produce high levels of Indoor Air pollution (IAP) and are major causes of respiratory disease burden. We compared, the episodes of respiratory symptoms and lung function status of women using less polluting-Improved Cooking Stove (ICS ē chimney diverting smoke) and Gas Cooking Stove (GCS, smokeless) with those using more polluting-Traditional Cooking Stove (TCS) in rural Bangladesh.

Method:

This cross-sectional study was conducted in three rural villages on 155 women who were cooking regularly for the family at least for last one year in poorly ventilated kitchen using TCS (n=78), ICS (n=34) and GCS (n=43). Data were collected on respiratory symptoms events (RSE-cough, cold, phlegm, breathing difficulties, and chest tightness/discomfort) during the last 1 month and any of the RSEs in last 1 year using structured questionnaire. Lung function test was performed using spirometer. IAP was estimated using proxy measures such as cooking duration, frequency, type of fuels and stove type.

Results:

Mean (SD) age and BMI of the participants were 39 (SD = 12.23) year and 23.7 (SD=4.28) kg/m². TCS users had significantly higher risk of cold, (OR 1.23, p=0.01), breathing difficulty (OR 3.33, p=0.004), chest tightness/discomfort (OR 2.7, p=0.004), having phlegm without cough (OR 3.9, p=0.04), cough aggravated by smoke (OR 3.1, p=0.04,) in last 1 month and 6 or more episodes of RSEs (OR 8.3, p<0.001) last 1 year. Statistically significant difference was found in mean value of FEV1/FVC (ICS & GCS=89.97), TCS=86.73, p=0.001) and 59% of respondents had restricted lung function status irrespective of their use of different stove.

Conclusion

Traditional cooking stove use is associated with higher prevalence of respiratory morbidity symptoms and reduced level of lung function of women in rural Bangladesh. A large scale study is needed for more precise quantification of indoor air pollution and respiratory function.

Key words: Cooking method, respiratory symptom events, lung function, women, rural Bangladesh.