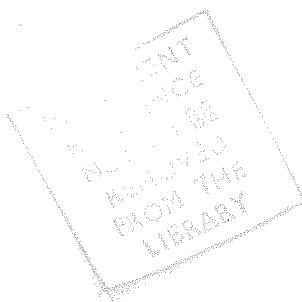


RISK OF CATARACT FORMATION
WITH
EXPOSURE TO BIOMASS SMOKE



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ABSTRACT

Nearly 80% of the 18 million Sri Lankans depend on biomass as a fuel for food preparation and cottage industries. Use of low quality biomass fuels in inefficient stoves, poor ventilation conditions and lengthy cooking practices often lead to high levels of exposures which may elevate the health risks and aggravate the existing health problems.

Yet, assessments on indoor exposure and the health implications are limited to handful of studies. We have initiated several research projects, including this cataract, to investigate the health risk associated with biomass smoke exposure.

Cataract is a lens opacities associated with some degree of visual impairment. Among the known risk factors for cataract are cigarette smoke and exposure to direct sunlight. In this study, a questionnaire was drafted to extract the confounding factors for cataract which includes age, sex, type of fuel used, type of wood stove, ventilation near the stove, cooking hours per day, total number of years involved in cooking, number of years exposed to biomass smoke, smoking habits, passive smoking, exposure to direct sunlight, health conditions such as diabetics, hypertension, glaucoma, physical injury on the eye, and the consumption of particular drugs.

Patients from National Eye Hospital in Colombo were surveyed over the period of April to September 2004. 197 patients who were treated for cataract in one or both eyes contributed to the survey along with 190 non-cataract patients as controls.

The univariate analysis shows that working under the sunlight (outside v inside: OR = 2.288, 95% CI = 1.147 – 4.563), duration of fire wood used (not cooked v >40 yrs: OR = 2.177, 95% CI = 1.261 – 3.759), cleaning ash (yes v no: OR = 1.715, 95% CI = 1.136 – 2.590), active smoking (yes v no: OR = 2.031, 95% CI = 1.071 – 3.850), duration of smoking (not smoking v >40 yrs: OR = 5.333, 95% CI = 1.148 – 24.783), medical disorder hypertension (having v not having: OR = 2.021, 95% CI = 1.211 – 3.374), consumption of drug such as oral steroids, long term aspirin, tamoxifen, allopurinol or amiodarone (consumption of drug v no: OR = 3.763, 95%CI = 1.857 – 7.624), physical injury on the eye such as a blow, a cut, a puncture, intense heat/cold, chemical burn or radiation therapy (undergone a physical injury v no: OR = 2.954, 95% CI = 1.219 – 7.159), other indoor smoke such as burning mosquito coils (burning through out the night v no other smoke : OR = 2.955, 95%CI = 1.739 – 5.021), type of the wood stove (3-stone v (3-stone + u-shape): OR = 2.653, 95% CI = 1.134 – 6.206), type of the ventilation near the wood stove (hole v chimney: OR = 3.70, 95% CI = 1.523 – 8.993) have significant risk and an association on cataract formation in the eye.

This preliminary analysis and the results support that the smoke from the firewood, lack of good ventilation near the stove and inefficient wood stoves increase the risk of cataract formation among women.