

**“SILENT AGONY OF MINERS IN WEST BENGAL: SEARCH FOR BIOMARKERS OF
NEWER KINDS”**

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Miners studied in West Bengal, are compelled to suffer from several kinds of occupational hazards. The dimensions of hazards vary from negligible to fatal status. Unfortunately hardly there is any anthropocentric EIA in mining areas as per Schedule-I of EIA Notification 1994. Results of a number of cross-sectional studies amongst different kinds of miners were found to be logistic enough to promote newer kind of Mining EIA assessment with greater anthropocentric significances.

Aim: To review and reassess the extent of occupational damage of the miners, in terms of newer predictive parameters because early detection is the primary ingredient of preventive measure.

Methods: Hundred and twelve mine workers of both underground (n1=34) & open cast coal mines (n2) and of stone chip {Basalt} (hard rock) mines (n3) were investigated for their various occupational hazards along the period of four years. In addition to standardized physical parameters, dynamic pulmonary function, ergonomic posture analysis, specific vision parameters like Near Point Convergence (NPC), Intra Ocular Pressure (IOP), & Fundus Florescein Angiography (FFA) were assessed using RAF. Scale, Noncontact Tonometer and non-mydratic Topcon retinal camera respectively. Bone mineral densities were determined by DEXA scan. Serum lipid profiles and Serum Lipoprotein(a) {Lpa} were also assessed by standardized methods and ELISA Kits. Additionally erythrocyte surface

deformities were nano-scopically analyzed by standard methods using Atomic Force Microscopy.

Results: NPC, IOP, & FFA all are deviated from normal ranges. 58.2% miners are found to be suffering from low back pain and RULA and REBA score confirmed that. Deterioration in FVC, and FEV1 ($p < 0.01$ for all) and abnormal Lpa status in spite of normal lipid profile were found. BMD showed abnormality particularly for Basalt miners. Erythrocyte surface showed typical roughness at the nano-metric level