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MODIFICATION OF RISK OF ARSENIC-INDUCED PREMALIGNANT SKIN LESIONS BY AGE, BODY MASS INDEX, AND SMOKING IN BANGLADESH

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We evaluated whether the association between arsenic (As) exposure from drinking water and premalignant skin lesions differs by gender, age, body mass index (BMI), and smoking status at baseline in a large prospective cohort study in Arai hazar, Bangladesh. As exposure was measured by well As concentration, total urinary As concentration, and a cumulative As index comprised of water consumption and well use history. Prevalence proportions of skin lesions were calculated for levels of potential effect modifiers. Logistic regression was conducted to compute prevalence odds ratios and evaluate interaction on the multiplicative scale with control of potential confounders. Prevalence of skin lesions increased with decreasing BMI and increasing age and was higher among males, smokers of bidhi/cigarettes, and users of hukka (a tobacco product). Dose-response relationship between cumulative As index and skin lesions was significantly stronger among younger compared to older age groups ($<35, \geq 35$ $p=0.02$), among low BMI as opposed to high BMI ($<18.1, >20.5$; $p=0.04$) in overall study population, and among ever-smokers in contrast to never-smokers of bidhi/cigarettes/hukka in males ($p=0.03$). Patterns of these interactions were similar but less apparent when exposure was measured by total urinary As or water As concentration. Multiplicative interaction by gender was not significant for all three As measures. These estimates suggested that smoking of tobacco products and thinness may exacerbate harmful health effects of chronic As exposure from drinking water. Public health programs of smoking cessation and malnutrition reduction should be promoted and coupled with As remediation measures in Bangladesh.