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Title: Spirometry changes due to prolonged exposure to high level of fluoride in drinking water

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Body: Introduction: fluorosis is dental and skeletal tissue changes due to increase fluoride exposure this can also result in systemic and biochemical changes. Pulmonary involvement is established as a result of toxic exposure to inhaled fluoride however animal studies have shown that chronic fluorosis causes by ingested fluoride can cause marked destruction in lung tissues. This can result in impairment of spirometry results. Objective: the study was done to observe the spirometry changes in effected population and compare it with control and correlate it with skeletal changes. Method: People from Sammo Rind village Sindh with underground water fluoride concentration of 6-8 ppm were taken as cases, and from Gadap where level of flouride in drinking water is not high (less than 1ppm) were included as controls. Clinical examination, hematology and biochemical tests were performed Spirometry was done in all. Results were analyzed using SPSS 16. Results: 121 cases and 121 controls were included in the study. Mean age was 30 and 33.47 in cases and control respectively. Males were 90 (74.4%) and 84(69.4%) and females were31 (25.6%) and 37(30.6%) in cases and controls respectively. Spirometery results were normal in only 22.31% cases verses 54.54% controls. Restrictive pattern was in 47.1% and 23%, obstructive defect was in 23% and 6.6% and combined defect was in 8.6% and 15.7% in cases and controls respectively. This was related to dental changes and serum ,plasma and urinary fluoride levels but not related chest wall deformity. Conclusion: study shows that lung function impairment occur in effected population and these are independent of skeletal deformities.