

The influence of air pollution on the bone mineral density and serum markers in different areas of Tehran

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Abstract

Introduction: Osteoporosis is a common worldwide health-related problem. About 50% of men and 70% of women aged 50 years and over suffer from osteoporosis or osteopenia in Iran. Vitamin D deficiency has a high prevalence in Tehran population.

Materials and Methods: This study was carried out on 184, 20-69 year old residents of 14 blocks around (4 kilometers) of 5 air pollution stations in Tehran. These stations were divided into 2 areas (polluted and non polluted). For all participants in study BMD and serum markers include vitamin D, Ca, P, Alk-ph, PTH and bone mineral density in lumbar region (L2-L4) and hip were assessed. SPSS (11.5) was used for statistical Analysis. The difference between mean values was assessed with student T- test, χ^2 for quantitative measures and if necessary, Fisher Exact Test was used. Risk was evaluated with relative risk and Odds Ratio. P- value less than 0.05 was perceived as significant.

Results: Vitamin D deficiency prevalence in the men in polluted areas was higher than the men in non polluted areas ($p=0.029$). prevalence of osteoporosis in polluted areas in both sex was higher in contrast to non-polluted. (0.6% and 0.0% respectively, $p=0.034$). the chance of vitamin D deficiency in men living in polluted areas was 1.675 greater than the other men (odds ratio: 3.869, relative risk: 1.675).

Conclusion: living in air-polluted areas can be an important risk factor for osteoporosis. Since the change in residency place may not be so simple, attention should be paid to the other aspects to decrease vitamin D- deficiency. Food fortification with vitamin D would be a good choice.

Key Words: Air pollution, Osteoporosis, Vitamin D, BMD, Life style, Civilization, and Biochemical marker.

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