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Title: Impact of radon residential concentration in the development of lung cancer in Transilvania, Romania

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Body: Lung cancer represents the most frequent cause of mortality caused by malignancies in the world. The World Health Organization (WHO) have classified radon (Rn) as a [Class A] known human carcinogen, because of the wealth of biological and epidemiological evidence and data showing the connection between exposure to radon and lung cancer in humans. The aim of this study was to investigate the correlation between the exposure to radon and lung cancer in patients from the centre counties of Transilvania, Romania. Material and method: We conducted a case-control study, by location of 250 Rn detectors between 2009-2011, 104 Rn detectors in patients with lung cancer and 146 Rn detectors in controls from the centre counties of Transilvania. Results: We observed that the risk of developing lung cancer has increased with the magnitude of Rn exposure. At a Rn concentration between: 0-49,9 Bq/m³ OR was 1; at 50-79Bq/m³ OR was 2,14 (CI 1,04-5,11); 80-139,9 Bq/m³ OR was 2,44 (CI 1,19-5,10); >140 Bq/m³ OR 2,60 (CI 1,19-5,45). Conclusion: The strength of association between residential Rn exposure and lung cancer is increasing with higher concentration of Rn. This findings support the implication of Rn in developing lung cancer.