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The Relationship between the Diagnosis Period and the Internal and External Air Quality in Tuberculosis Patients

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Objectives: Tuberculosis (Tb) is a contagious disease caused by *Mycobacterium tuberculosis*. Studies showing the relationship between Tb development and air pollution are limited and the results are conflicting. In this study, we investigated the effects of indoor and outdoor air pollution on the risk of active tuberculosis development

Methods: We included 200 Tb patients diagnosed and treated in Düzce University Medical Faculty Hospital between 2013-2018 to the study. Information about the indoor air pollution in the period that they were diagnosed, was obtained by telephone calls (85 patients were reached). Air quality parameters were taken from the national air quality monitoring network of Düzce city.

Results: Of the 200 patients, 62.5% were male and 37.5% were female. The mean age was 56.2 (min: 20, max: 94). 91% of patients were new diagnosed, 76.5% were pulmonary Tb, 20% were extrapulmonary Tb. The seasons that the patients diagnosed in were spring (31%), autumn (25.5%), summer (22%) and winter (21.5%) respectively. Warming, income level, biomass exposure, smoking and farming activities of patients who were reached with phone. Rate of diagnosed with culture and EZN positivity 48.4% is significantly higher from diagnosed with clinic 10,9% in patients who warms with stove (Fisher's Exact test p=0.019. Bonferroni subgroup analysis used). Rate of diagnosed with culture and EZN positivity 52.1% is significantly higher from diagnosed with clinic 8.3% in patients who exposed to biomass. Smoking, passive exposure, alcohol use and farming were not associated with case definition. In univariate analysis, there was no significant independent effect of warming (F=2.656, p=0.107, Mean Square=1.344) and biomass use (F=3.824, p=0.054, Mean Square=1.934) on case definition. Mean values of air pollution parameters in case types. According to the case definitions, PM10, SO2 and temperature mean values of the diagnosed month did not show statistically significant difference. Relative humidity level of the months is significantly higher, in which cases diagnosed with EZN and culture positive compared with cases diagnosed with culture positive alone (p=0.023).

Conclusion: In our study which we investigated the relationship between bacteriological case definitions and indoor and outdoor air quality parameters in tuberculosis show that the biomass exposure and warming with stove is higher in cases who has EZN and culture positivity. It was olso observed that relativity humidity level of the months is significantly higher, in which cases diagnosed with EZN and culture positive compared with cases diagnosed with culture positive alone.

Keywords: Air pollution, biomass, tuberculosis