

DIFFERENCES IN LUNG FUNCTION IN PREADOLESCENT CHILDREN IN TWO CITIES WITH DIFFERENT AIR POLLUTION LEVELS

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Objective: In the study lung function in children exposed to different levels of outdoor air pollutants was tested. The risk of decreased lung function is particularly important in children living in highly polluted areas. We compared lung function in children living in polluted Zabrze (located in the Upper Silesian Industrial Region) and in relatively clean Gdynia (at the Baltic coast).

Materials and methods: Lung function and frequency of respiratory/allergic symptoms in children were measured. 258 children from Gdynia and 512 children from Zabrze aged 9-15 years, who were able to perform a correct spirometry examination, were examined. We used AioCare mobile spirometer that allows to collect data in the cloud. FVC, FEV₁, FEV₁/FVC index and PEF were measured. A survey about the frequencies of respiratory or allergic symptoms was also completed.

Results: The mean values of FVC, FEV₁, and PEF were statistically significantly higher among children in Gdynia than in Zabrze ($p \leq 0.032$). However the frequencies of seasonal rhinorrhea ($p = 0.015$) or cough episodes ($p = 0.022$) were significantly higher in Gdynia. The frequency of other respiratory or allergic symptoms was similar in both cities.

Conclusions: Air pollution in Zabrze influenced significant decrease of lung function among children.