



COMPARATIVE ANALYSIS OF THE IMPACT ON AIR POLLUTION ON THE RESPIRATORY SYSTEM OF CHILDREN IN THE MUNICIPALITIES OF STARA ZAGORA, GALABOVO AND GURKOVO

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ABSTRACT

Monitoring of key pollutants - sulfur dioxide and particulate matter in the Municipalities of Stara Zagora, Galabovo and Gurkovo is mainly used in the assessment of health risks to exposed populations.

The most vulnerable group of children from 0 to 17 years. The structure of morbidity in children, as well as the area as a whole, shows leadership respiratory pathology with a share of 47.62%.

The proportion of respiratory diseases in the Municipalities of Stara Zagora, Galabovo and Gurkovo in children below the average for the area.

Key words: atmospheric pollutants, morbidity, dust, sulfur dioxide, respiratory system

INTRODUCTION

The information from the monitoring of air quality is used primarily in health risk assessments for exposed populations. The results of studies provide evidence of increased sensitivity of biologically determined risk populations to the effects of air pollution. This may occur at lower doses with prolonged exposure. Usually affect certain systems of the human body: respiratory, cardiovascular, immune and nervous systems, as well as individual organs - kidneys, spleen, liver and other (1, 2, 3).

Analysis of atmospheric air quality within the Region of Stara Zagora - in the Municipalities of Stara Zagora, Galabovo and Gurkovo shows that the main pollutants of the so-called common pollutants - Sulfur dioxide and particulate matter. One of the most sensitive populations exposed to these pollutants are children.

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The aim of this study was to analyze the results of monitoring of atmospheric pollutants and their effects on the respiratory system of children from 0 to 17 years.

MATERIALS AND METHODS

Samples of ambient air sampling for contaminants in four monitoring stations, which are part of the National System for Environmental Monitoring for the period 2011-2012.

Information on morbidity was obtained from the Regional Health Inspectorate Stara Zagora - health statistics-tracking form 1A Annexes 5 and 6.

All results were statistically processed by the methods of grouping the data and an alternative assay.

RESULTS AND DISCUSSION

The average concentration of particulate matter year 2011 is 55,07 $\mu\text{g}/\text{m}^3$, at average annual rate 40 $\mu\text{g}/\text{m}^3$. This is mainly due to heating with solid fuels by households during the winter and adverse weather conditions. For 2012 no exceedances of the annual average concentration (4).

In the municipality Galabovo for sulfur dioxide in 2012 were recorded 2 exceedances of threshold value of the daily average rate under statutory limit respectively 24 times and 3 times

per calendar year. Compared to 2011, when registered over the limit of average rate is 6 evidenced reduce pollution on this indicator (Figure 1).

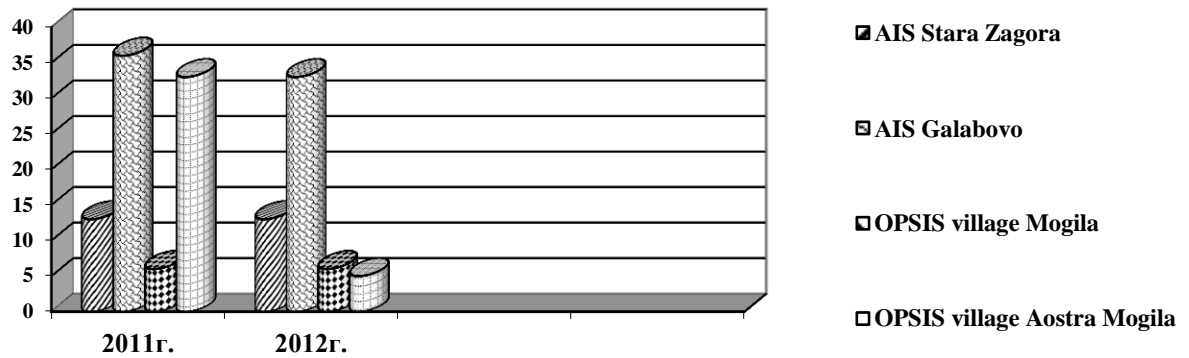


Figure 1. Levers of annual average on indicators Sulphur dioxide of different locations

The overall incidence of municipality Stara Zagora in 2011 was 252 947.83 ‰, while children from 0 to 17 years it is 245 725.17 ‰. The overall incidence of municipality Galabovo is 92 944.55 ‰, and in children aged 0 to 17 years is 118 976.34 ‰. Used municipality Gurovo as a control, as it does that no industrial sources of pollution. The overall incidence of municipality Gurkovo is 17497.56

‰, and in children aged 0 to 17 years it is 23 839.85 ‰. The leading role of respiratory pathology with a share of 29%. Respiratory pathology is a leader in the structure of morbidity in children, respectively - 47.62% in the municipality Stara Zagora, 33.4% in the municipality Galabovo and 29% - in the municipality Gurkovo at 50.9% on average for the area (Figure 2).

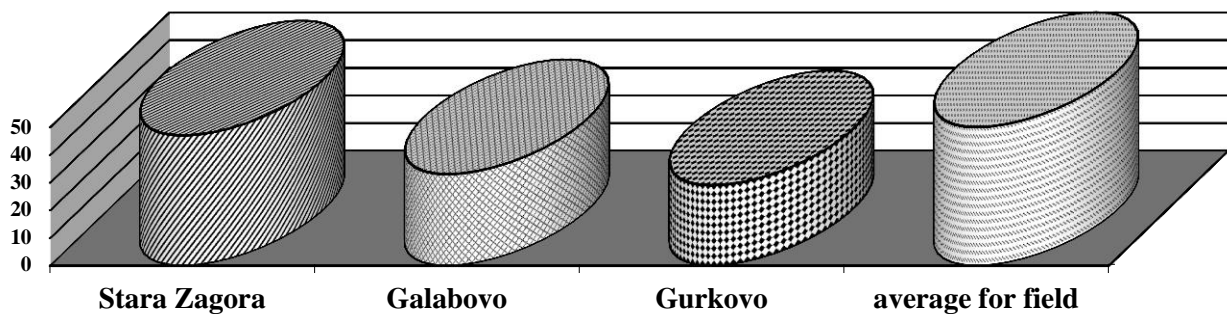


Figure 2. Proportion of respiratory diseases in the structure Of morbidity by municipalities

The results of the structure of morbidity for 2012 are similar. The highest share again respiratory diseases. The proportion of respiratory diseases in the municipality Stara Zagora, Galabovo and Gurkovo in children below the average for the area (5).

The morbidity of respiratory diseases per 100 000 population in children aged 0 to 17 years is the highest in the municipality Stara Zagora (117 024.7) that exceeds nearly three times that of Galabovo (39,739) and almost 17 times that municipality Gurkovo (6915), but in the three municipalities it is below average for the region of Stara Zagora (121 834) (Figure 3).

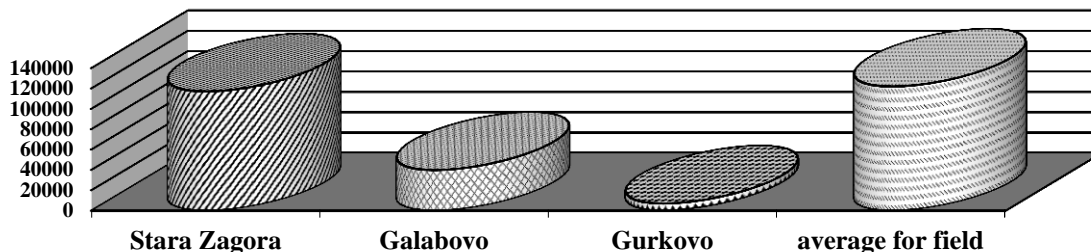


Figure 3. Morbidity of respiration diseases in 100000 human population in children from 0 to 17 years in municipalities

Examination of the respiratory diseases in nosological units for the age group 0 to 17 years shows that the largest share acute infections of the upper respiratory tract in all the municipalities in the area as a whole.

Second are acute bronchitis and bronchiolitis in the municipality Stara Zagora and Galabovo, as well as the area as a whole. In the municipality Gurkovo secondly arranged bacterial pneumonia. Disease asthma has the largest share in the municipality Galabovo followed by municipality Stara Zagora, as both totals were above average for the area. In the municipality Gurkovo of the values are below the average for the area.

The highest share is bacterial pneumonia in the municipality Galabovo followed municipality Gurkovo, as both totals were above average for the area. The value of this indicator for the Municipality of Stara Zagora is below the average for the area.

CONCLUSION

There was no direct correlation between air pollution and major morbidity structure of Stara Zagora area respiratory diseases. However, the establishment of a higher proportion of acute bronchitis and bronchiolitis of the total respiratory pathology in the municipality Galabovo than the average for the area and a higher proportion of asthma in children aged 0 to 17 years in municipalities Gulubovo and Stara

Zagora than average area shows real existing potential risk to children's health .

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