

## Hygienic estimation of training conditions of pupils with chronic respiratory diseases

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Among the chronic respiratory diseases, children frequently suffer of recurrent bronchitis and chronic asthma. Statistics show that recurrent and persistent chronic bronchitis represents 26-42% of all bronchopulmonary diseases. Some of the most common diseases recorded in medical practice, both in children and adults, are diseases of the respiratory system. Respiratory diseases in the Republic of Moldova have little tendency to increase, and the average prevalence consists of 37,4% of general morbidity. However, chronic bronchitis and asthma morbidity have a high tendency to increase. The prevalence of chronic bronchitis in Republic of Moldova is 3,21±0,12‰, and 1,34±0,08‰ for asthma.

A decisive role in the pathogenesis of these diseases is evaluating risk factors such as ecological harmful factors, food, passive smoking, intra and extra domicile environment (habitual exhaust, household chemicals, dust, pollen and damp), weather conditions, additives and alimentary dyes, pharmaceutical remedies used without a medical prescription, and the lifestyle of the family.

The training conditions of children in the schools were investigated from 6 rural locations. We evaluated 2000 microclimatic indices, 2000 of concentration of CO<sub>2</sub> and CO, and 70 probes

for determination of fungals pollution. During the study in the winter, air temperatures were very low. In the school Gordinești, district Edineț, temperatures were registered at 15°C. At the beginning of the lessons the average temperature was 12,8°C ±0,4, and 13,6°C ±0,1 at the end of the day. Temperatures were recorded as lower than the hygienic norm temperature levels (18-20 °C) in the following schools: „Fetești”, the district of Edineț, „Mihai Eminescu”, and „Mihai Sadoveanu” from the district of Cahul. Relative air humidity in the classrooms varied during the lessons, but exceeded the hygienic normative levels (the hygienic norm being 30-60%) in all investigated schools. The concentration of carbon dioxide exceeded admissible limits at the end of the school day in all schools, the biggest values being registered in Fetești, „Ion Inculeț” and „Mihai Eminescu”, which exceeded the hygienic normative (MAC - 0,1%) 3 times during the day. Air pollution in the buildings from fungus (*Penicillium*, *Mucor*) and high relative air humidity presented the main factors in the development of chronic respiratory diseases amongst children.

**Key words:** chronic bronchitis, bronchial asthma, children, risk factors.

## Frequency and impact of glutathione-S-transferase gene polymorphisms on lung function and bronchial asthma susceptibility in Moldovan children

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Asthma is a highly prevalent chronic inflammatory disease of the respiratory tract with genetic predisposition. However, the complex mechanisms of its inheritance, from the genetic predisposition of atopy to allergic diseases, are still not completely understood. Recent data suggest that the pathogenesis of atopic diseases is complex and might be caused by gene-gene and/or gene-environmental interactions. Polymorphisms of the glutathione-S-transferase (GST) genes are known risk factors for some environmentally related diseases.

The aim of the present study was to investigate the frequency of polymorphisms in the GSTT1, GSTM1, GSTP1 and NAT2 genes in the population groups of healthy Moldovans and children with asthma, and to analyze their role on lung function.

The studied population included 180 subjects – 90 children with asthma, aged 5 to 17 years (mean ± VEM age of 10,9 ± 0,4

years) and 90 healthy controls who showed no signs or history of allergic diseases (mean age 13,5 ± 0,2 years). The asthma group included 51 males and 39 females, who were randomly selected from asthmatic children referred by the Allergy Clinic of the Research Institute for Maternal and Child Healthcare, Chisinau, Moldova, during 2009-2010. Asthma was defined according to the criteria of the Global Initiative for Asthma (GINA). A complete clinical history, physical examination, and pulmonary function test (PFT) were performed for all the subjects in accordance with standards. Forced expiratory volume in 1 s (FEV<sub>1</sub>) and forced vital capacity (FVC) were measured using a portable spirometer (Spirobank G, Mir, Italy). Genes coding for the xenobiotic-metabolizing enzymes (GSTT1, GSTM1, GSTP1 and NAT2) were evaluated by polymerase chain reaction (PCR).

Analysis of the xenobiotic-metabolizing enzyme genes'