# STRESZCZENIE

Infections of the respiratory system constitute the most frequent clinical problem that paediatricians in primary healthcare centres have to deal with. Parents
and custiodians often enquire during their visits about drugs and substances that can reduce the incidence of infections in their children.

Vitamin D3 is a nutrient which affects the skeletal system and the calcium-phosphate metabolism in a well-known and widely recognised manner. However,
an increasing number of studies has established the range of its influence to be far wider. More and more attention is currently being paid not only to its effect on
the cardiovascular system, the nervous system, blood glucose level abnormalities
and neoplastic diseases, but also on the immune system. Calcitriol, through activating vitamin D receptor, influences among others the expression of genes responsible
for suppressing inflammatory cytokines. Additionally, it stimulates the expression
of genes producing cathelicidin, which constututes the first, independent of the immune system cells, line of defence against pathogens. Its synthesis takes place
in leukocytes, skin cells and epithelial cells of the respiratory, gastrointestinal
and genitourinary systems.

 The primary aim of the study was to assess the correlation between vitamin D3 deficiency and the incidence of respiratory infections in children. More precisely,
we set out to determine the concentration of vitamin D3 in the blood of children, the incidence of respiratory infections, and the link between the said incidence in relation to age and sex.

One hundred and seventy-six children, aged from 1 to 18 years, were included in the study. They were all patients of the Primary Healthcare Centre in Bialystok.
A median number of respiratory infections was determined for each subject, based on available medical documentation. Subsequently, the concentration of vitamin D3 was measured in the blood samples drawn at the medical laboratory. One hundred and four children with the concentration score below 30 ng/ml were assigned to the study group, whereas 72 patients with the concetration above 30 ng/ml constituted the control group. Children from the study group were administered vitamin D3 in therapeutic doses adapted to their age, whereas children from the control group were prescribed vitamin D3 in prophylactic doses. Following a year of such supplementation
the incidence of respiratory infections was determined again, based on the available medical documentation.

At the study outset, the results obtained through statistical analysis showed
the incidence of respiratory infections to be higher in children with vitamin D3 deficiency than in patients with its normal concentration. Moreover, all the children aged from
7 to 18 years displayed vitamin D3 deficiency. After a year of vitamin D3 supplementation the incidence of respiratory infections decreased in both groups.
In addition, the infections were more frequent in patients from the control group,
who were taking lower doses of vitamin D3,than in the subjects who were administered therapeutic doses.

 It must therefore be concluded that vitamin D3 may constitute a cheap, safe and widely available immunomodulatory factor. In addition, vitamin D3 ought to become one of the parametres assessed in children with frequent and recurrent respiratory tract infections.