

## General Growth Parameters of a Group of School Children Depending on the Enamel Resistance to Dental Caries

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### Abstract

In the issue there are presented the results of examination of 1301 5-16-year-old children from Lviv (Ukraine). It has been compared means of body height and weight in school children and to assessed association between this variables and enamel resistance to dental caries. Our study reported that the highest indices of growth and weight were revealed only in 9-13 year old children. Our attempt to detect an association between dental caries, height and weight of body showed that children without dental caries are higher and their weight is increased in all aged groups except 16-year old children comparing to the children with dental caries. It was established that children with caries resistant enamel are higher than children with caries susceptible enamel.

**Aims:** The aim of this investigation is to compare means of body height and weight in school children from Lviv (Ukraine) and to assess any association between this variables and enamel resistance to dental caries.

**Keywords:** School children, Height and weight of body, Dental caries

### Introduction

According to statistics and scientific research the number of healthy children among school children is significantly decreased up to 12,7% in recent years [1-3]. No doubt that the measures directed on preserving and strengthening of children's health should be based on the data of the state of their health. Physical development criteria and dental observations data are the objective indicators of child's development [4-6]. Scientific studies of lasts years have evaluated the general growth parameters of school children. The results of these studies may vary, it is very interesting to research the association between dental caries and alterations in the general parameters of growth.

### Materials and Method

For this purpose 1301 5-16-year-old children from Lviv (Ukraine) were examined (677 girls (52,04%) and 624 boys (47,96%) by trained dentist examiners. The following data were recorded for each child: name, age, gender, diagnosis (with/without dental caries), severity of dental caries, height and weight of the body. Measures of weight (kilograms) and height (centimeters) were assessed using a standard physician's scale and a Stadiometer [7,8]. Caries was assessed according to the guidelines given by WHO (1997) under natural day light using mouth mirrors and probes. Decayed, missing and filled permanent teeth (DMFT) due to caries were recorded and summarized as DMFT by a calibrated investigator. All examinations were performed by the same person, in standard conditions. Ethical approval and parental consent was obtained for this study. Data for the various groups were compared using Student's t-test. **Results**

It was estimated that the height of the 7-year-old children, in the average, is  $126.54 \pm 0.55$  cm, the weight – is  $25.78 \pm 0.47$  kg and  $DMF=0.93 \pm 0.13$ ; the height of the 12-year-old children, in the average, is  $155.53 \pm 0.67$  cm, the weight – is  $45.62 \pm 0.84$  kg and  $DMF=3.92 \pm 0.22$  and the height of the 15-year-old children, in the average, is  $168.25 \pm 0.92$  cm, the weight – is  $55.68 \pm 0.47$  kg and  $DMF=5.40 \pm 0.31$ . The greatest increase of length and weight of the body is observed in 9-13-year-old children in prepubertal and pubertal periods of growth. From 5 till 16 years the height of the examined children increased from  $113.09 \pm 0.46$  cm to  $171.29 \pm 0.85$  cm (on 58.20 cm – this mean we take as 100%). There were fixed the following means (in %) of body length increasing – from 5 to 6 years – for 13.37%, from 7 to 8 years – for 10.62%, from 9-10 and 10-11 years – for 10.43%, from 10.59%.

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Age (in years)	DMF+df	Caries resistant children	DMF+df	Caries susceptible children
5	up to 4	113.71 ± 0.89	5 and more	112.04 ± 0.85
6	up to 5	120.84 ± 0.87	6 and more	120.79 ± 0.67
7	up to 5	125.45 ± 1.12	6 and more	126.44 ± 0.86
8	up to 5	133.92 ± 1.15	6 and more	131.95 ± 0.91
9	up to 4	140.56 ± 1.58	5 and more	135.63 ± 0.98
10	up to 3	147.58 ± 1.78	4 and more	141.94 ± 1.18
11	up to 2	150.41 ± 1.82	3 and more	150.19 ± 1.46
12	up to 2	155.18 ± 1.77	3 and more	155.13 ± 0.71
13	up to 3	160.71 ± 1.03	4 and more	161.04 ± 1.31
14	up to 3	165.10 ± 2.43	4 and more	166.44 ± 1.17
15	up to 4	170.39 ± 2.85	5 and more	165.91 ± 1.22
16	up to 5	173.54 ± 2.02	6 and more	169.56 ± 1.93
Whole		146.41 ± 1.02		144.83 ± 1.28

**Table 1.** Indices of the height depending on the enamel resistance of examined children.

Besides, the height correlated positively with the age depending of sex. In boys, mean height from its minimum ( $114.23 \pm 0.62$  cm) in 5 years age rose to the maximum ( $177.77 \pm 0.91$  cm) at 16 years age. Similarly, in girls, meanheight increased from  $111.85 \pm 0.67$  cm in 5 years to  $164.80 \pm 0.72$  cm in 16 years age. Meanheight, as well as median weights, were slightly more in boys than girls at various ages except 12 years. Bodyweight also increased in boys, as well as girls with the increase in age. In boys meanweight increased from  $21.04 \pm 0.37$  kg (5 years) to  $64.47 \pm 1.44$  kg (16 years). Weight gain was more in later age groups. In girls also, similar trend was seen, where by the weight increased from  $19.80 \pm 0.53$  kg at 5 years to  $56.05 \pm 1.23$  at 16 years. Mean, as well as median weights were higher for boys (than girls) at all ages at different ages except 12 years. Median mean of DMF index increased from  $0.36 \pm 0.09$  in 6 years to  $5.71 \pm 0.31$  in 16 years. In boys mean DMF increased from  $0.25 \pm 0.09$  kg (6 years) to  $5.02 \pm 0.46$  kg (16 years). DMF also increased in girls, as well boys as with the increase in age. In girls meanweight increased from  $0.40 \pm 0.12$ kg (6 years) to  $6.33 \pm 0.40$  kg (16 years). It was revealed that children without dental caries are higher and their weight is increased in all aged groups except 16-year old children comparing to the children with dental caries.

## Discussion

We have studied the height of the examined children depending on caries resistance Table 1. It was established that children with caries resistant enamel are higher than children with caries susceptible enamel. It is obviously presented in 9-10 and 15-16-year-old children.

## Conclusions

Our study reported that the highest indices of growth and weight were revealed only in 9-13 year old children. Taking into consideration that increasing of the body length from 5 to 6 years for 13.37% took place, we suppose that in responsible to that fact intensity of dental caries of the permanent teeth increases in 2.91 times from 6 to 7 years. Our attempt to detect an association between dental caries, height and weight of body showed that children without dental caries are higher and their weight is increased in all aged groups except 16-year old children comparing to the children with dental caries. It was established that children with caries resistant enamel are higher than children with caries susceptible enamel.

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