

# Hospitalization of children and adolescents in Poland between 2004-2008

## Hospitalizacja dzieci i młodzieży w Polsce w latach 2004-2008

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**Cel pracy.** Analiza przyczyn hospitalizacji dzieci i młodzieży w Polsce w latach 2004-2008 na podstawie ogólnopolskich danych o chorobowości szpitalnej.

**Materiał i metody.** Dane dotyczące dzieci i młodzieży w wieku 0-18 lat hospitalizowanych w latach 2004, 2006 i 2008 uzyskano z ogólnopolskiej bazy danych istniejącej w NIZP-PZH w Warszawie. W pracy uwzględniono grupy chorób oznaczone symbolami od A00 do T98 (z wyłączeniem grupy O80-O84 dotyczącej kobiet przebywających w szpitalu z powodu porodu) zgodnie z międzynarodową klasyfikacją ICD-10. Do oceny częstości występowania poszczególnych chorób posłużono się współczynnikami hospitalizacji (liczba hospitalizacji w ciągu roku z powodu danej choroby na 10 000 osób w danej grupie wieku).

**Wyniki.** W ciągu pięciu lat współczynnik hospitalizacji osób poniżej 18 roku życia wzrósł o 19,5% (z 1245,3/10 000 ludności w 2004 roku do 1487,6/10 000 ludności w 2008 roku). Największy wzrost hospitalizacji odnotowano wśród młodzieży w wieku 15-18 lat (21,2%) oraz dzieci w wieku 1-4 lat (20,8%). Natomiast najmniej wzrosła częstość hospitalizacji w analizowanym okresie wśród dzieci w wieku 10-14 lat (4,7%). Badania wykazały, że najczęstszą przyczyną hospitalizacji dzieci były choroby układu oddechowego, trawiennego oraz urazy i zatrucia.

**Wnioski.** Mimo iż badania wykazują zmiany jedynie w odniesieniu do hospitalizacji z powodu głównych grup chorób, to jednak znaczny wzrost hospitalizacji w ciągu analizowanego okresu w najmłodszej grupie społeczeństwa polskiego może stanowić ważną wskazówkę dla kształtowania przyszłej polityki zdrowotnej kraju.

**Słowa kluczowe:** *dzieci, młodzież, chorobowość szpitalna, hospitalizacja, Polska*

**Aim.** To analyze the causes of hospitalization of children and adolescents in Poland between 2004-2008 on the basis of the national data on hospital morbidity.

**Materials & methods.** The data on children aged under 18 years hospitalized in 2004, 2006 and 2008 obtained from the NIPH-NIH database in Warsaw. The study included groups of diseases marked with symbols from A00 to T98 (with an exception of the group O80-O84 of women admitted to hospital due to delivery) according to ICD-10. To assess the prevalence of diseases the hospital rates were used (number of hospitalizations per year due to the disease per 10 000 persons in that population age group).

**Results.** During five years the hospitalization rate of children grew by 19.5% (from 1245.3/10 000 population in 2004 to 1487.6/10 000 population in 2008). The greatest increase in hospitalization was found among adolescents aged between 15 and 18 years (21.2%) and children aged 1-4 years (20.8%) while the smallest one was in the group aged 10-14 years (4.7%). Studies showed that children were hospitalized primarily because of respiratory diseases, diseases of the digestive system, injuries and poisonings.

**Conclusions.** Although studies show changes only in relation to hospitalization for major disease groups, a significant increase in hospitalizations in the youngest group of Polish society can provide an important clue for shaping the future of health policy of the country.

**Key words:** *children, adolescents, hospital morbidity, hospitalization, Poland*

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## Introduction

The analysis of incidence and causes of hospitalization is an important element in assessing health situation of a population and provides a better opportunity for a valid health diagnosis than in other

systems. A particularly important group in terms of public health are the young. In Poland, as in many other developed countries, for many years there has been observed a decrease in the subpopulation of children and adolescents and an increase in the

number of the elderly aged over 65 years. The analysis of the Central Statistical Office shows that in our country in 1989 people aged 0-18 years accounted for 30.9% of the Polish population while in 2008 this percentage was much lower, at only 20.7% [1]. Meanwhile, studies have revealed that one in five children aged 0-14 years have chronic diseases, among which the most common are: allergy, asthma and eye diseases [2]. At the same time, despite a systematic decline in infant mortality observed in Poland, which amounted to 5.6% per 1000 live births in 2008, its value is still higher than in most EU countries [3].

## Aim

To analyze the causes of hospitalization of children aged under 18 years in Poland between 2004-2008 on the basis of the national data on hospital morbidity.

## Materials and methods

The data on children and adolescents aged under 18 years hospitalized in 2004, 2006 and 2008 were obtained from an national database existing since 1979 at the National Institute of Public Health – National Institute of Hygiene (NIPH-NIH) in Warsaw. This database contains information collected within the framework of the Statistical Research Programme of Public Statistics. Since 1997, all disease entities have been coded according to the International Statistical Classification of Diseases and Related Health Problems (ICD-10). The study included groups of diseases marked with symbols from A00 to T98 with an exception of the group O80-O84 of women admitted to hospital due to delivery. Only the disease which constituted the main cause of hospitalization was used in this analysis. To assess the prevalence of diseases the hospital rates were used (number of hospitalizations per year due to the disease per 10 000 persons in that population age group). Epi Info package was used to assess the significance of differences between the ratios of hospitalization.

## Results

During five years the hospitalization rate of people under 18 years of age in relation to the size of this population in the country grew by 19.5% (from 1245.3/10 000 population aged 0-18 years in 2004 to 1487.6/10 000 population aged 0-18 years in 2008). The frequency of hospitalization increased more significantly among girls (21.2%) than boys (18%) – Table I. In particular age groups the greatest increase in hospitalization was found among people from 15 to 18 years old (21.2%) and children aged 1-4 years (20.8%) while the smallest one was in the group aged 10-14 years (4.7%).

Most hospitalized children were the youngest ones (7008.7/10 000 children under one year of age in 2008), and the rate of hospitalization decreased with the children's age, in 2008 reaching a value of 950.5/10 000 children aged 10-14 years and 1094.6 per 10 000 children aged 15-18 years. Generally, boys were more often admitted to hospitals than girls. Only in the age group of 15-18 years the frequency of hospitalization among girls was higher than among boys.

Table II shows the causes of hospitalization among children under one year of age. Among the youngest children the most frequent causes of hospitalization were: *Certain conditions originating in the perinatal period* (P00-P96), respiratory diseases (J00-J99), infectious and parasitic diseases (A00-B99) and a group of diseases including *Congenital malformations, deformations and chromosomal abnormalities* (Q00-Q99). During the five analyzed years, a significant increase was noted in the incidence of hospitalization in this age group regarding diseases of blood and blood-forming organs (by 134.5%), infectious diseases (by 23.8%), *Certain conditions originating in the perinatal period* (by 22.7%) and *Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified* (by 23.8%).

Table I. Trends of children and youth hospitalization by age and gender (2004-2008). Hospitalization rate per 10 000 inhabitants

Age groups	2004 N=1 102 757			2006 N=1 147 822			2008 N=1 185 112			Percentage difference <sup>1</sup> 2004-2008		
	Overall	M	F	Overall	M	F	Overall	M	F	Overall*	M*	F*
Overall	1245.3	1312.4	1174.9	1376.8	1453.4	1296.4	1487.6	1548.4	1423.7	19.5	18.0	21.2
<1	6259.1	6847.2	5635.7	6363.8	6961.3	5732.5	7008.7	7547.8	6438.3	12.0	10.2	14.2
1 - 4	1392.1	1547.1	1228.7	1543.3	1711.7	1365.1	1682.3	1829.5	1526.6	20.8	18.3	24.2
5 - 9	1102.8	1220.5	980.0	1195.9	1324.4	1060.8	1224.3	1327.6	1115.4	11.0	8.8	13.8
10 - 14	907.4	949.8	862.9	973.5	1022.4	922.4	950.5	988.2	911.0	4.7	4.0	5.6
15 - 18	903.5	816.0	995.3	1038.5	950.6	1130.6	1094.6	986.4	1207.8	21.2	20.9	21.4

M – males, F – females

<sup>1</sup> no sign indicates an increase, minus sign (-) indicates fall

\* changes in age groups statistically significant ( $p < 0,05$ )

Table II. Changes in the hospitalization of children under one year of age (2004-2008). Hospitalization rate per 10 000 inhabitants

Group of diseases	2004 N=220 698			2008 N=278 424			Percentage difference <sup>1</sup> 2004-2008		
	O	M	F	O	M	F	O	M	F
A00-B99	399.6	430.6	366.6	494.9	523.4	464.7	23.8*	21.6*	26.8*
C00-D48	28.3	32.6	23.7	36.9	28.1	46.2	30.4	-13.8	94.9
D50-D89	114.6	136.1	91.7	114.1	133.3	93.8	-0.4	-2.1	2.3
E00-E90	39.1	39.7	38.5	91.7	89.6	93.8	134.5*	125.7	143.6
F00-F99	6.3	5.8	6.9	3.3	3.4	3.3	-47.6	-41.4	-52.2
G00-G99	154.2	177.7	129.3	120.0	114.1	126.3	-22.2	-35.8	-2.3
H00-H59	117.4	122.8	111.8	117.4	118.9	115.7	0.0	-3.2	3.5
H60-H95	136.1	149.6	121.7	124.8	132.1	117.0	-8.3	-11.7	-3.9
I00-I99	30.8	32.3	29.2	28.6	31.3	25.7	-7.1	-3.1	-12.0
J00-J99	1403.1	1610.7	1182.4	1427.1	1624.8	1218.1	1.7	0.9	3.0
K00-K93	300.3	350.9	246.6	298.1	336.2	257.9	-0.7	-4.2	4.6
L00-L99	96.7	104.8	88.1	117.5	130.8	103.4	21.5	24.8	17.4
M00-M99	9.5	9.3	9.7	8.7	9.1	8.3	-8.4	-2.2	-14.4
N00-N99	271.1	275.1	268.1	296.2	303.5	288.3	9.3	10.3	7.5
O00-O99	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P00-P96	2355.2	2524.5	2175.3	2890.3	3064.2	2706.4	22.7*	21.4*	24.4*
Q00-Q99	477.3	517.1	435.0	456.8	510.9	399.6	-4.3	-1.2	-8.1
R00-R99	198.8	196.6	201.2	246.2	249.0	243.2	23.8*	26.7	20.9
S00-T98	120.7	131.0	109.9	136.1	145.1	126.6	12.8	10.8	15.2

O – overall, M – males, K – females

<sup>1</sup> no sign indicates an increase, minus sign (-) indicates fall

\* changes statistically significant ( $p < 0,05$ )

Indicated in gray four most common causes of hospitalization in a given age group

Data according to International classification of diseases and health problems (ICD-10):

A00-B99 Certain infectious and parasitic diseases

C00-D48 Neoplasms

D50-D89 Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism

E00-E90 Endocrine, nutritional and metabolic diseases

F00-F99 Mental and behavioural disorders

G00-G99 Diseases of the nervous system

H00-H59 Diseases of the eye and adnexa

H60-H95 Diseases of the ear and mastoid process

I00-I99 Diseases of the circulatory system

J00-J99 Diseases of the respiratory system

K00-K93 Diseases of the digestive system

L00-L99 Diseases of the skin and subcutaneous tissue

M00-M99 Diseases of the musculoskeletal system and connective tissue

N00-N99 Diseases of the genitourinary system

O00-O99 Pregnancy, childbirth and the puerperium

P00-P96 Certain conditions originating in the perinatal period

Q00-Q99 Congenital malformations, deformations and chromosomal abnormalities

R00-R99 Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified

S00-T98 Injury, poisoning and certain other consequences of external causes

Among children in the age groups of 1-4 and 5-9 years still the most common causes of hospitalization were infectious and parasitic diseases (A00-B99) and respiratory diseases (J00-J99). Moreover, other causes of hospitalization were diseases of the digestive system (K00-K93), and injuries and poisoning (S00-T98) – Table III and IV. In-depth analysis showed that between 2004-2008 in the age group of 1-4 years the number of children admitted to a hospital because of infectious and parasitic diseases (54.6%) and respiratory diseases (13.5%) increased significantly. However, among children aged 5-9 years there was a significant increase in hospitalizations only due to respiratory diseases (13.7%).

Children in the age groups of 10-14 and 15-18 years were hospitalized primarily because of respiratory diseases (J00-J99), diseases of the digestive system (K00-K93), *Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified* (R00-R99), and injuries and poisoning (S00-T98). During the period of five years under analysis among patients aged 10-14 years there was a significant decrease in hospitalizations due to the digestive system diseases (18.2%), whereas there was an increase in hospital admissions due to diseases of bones and joints, muscles and connective tissues (87.1%) and injuries and poisonings (11.8%). However, in the group of children aged 15-18 years there was a significant

Table III. Changes in the hospitalization of children aged 1-4 years (2004-2008). Hospitalization rate per 10 000 inhabitants

Group of diseases	2004 N=202 717			2008 N=244 937			Percentage difference <sup>1</sup> 2004-2008		
	O	M	F	O	M	F	O	M	F
A00-B99	185.4	195.1	175.3	286.7	293.8	279.2	54.6*	50.6*	59.3*
C00-D48	37.9	41.4	34.1	44.9	46.1	43.6	18.5	11.4	27.9
D50-D89	18.3	21.5	14.9	30.5	38.2	22.3	66.7	77.7	49.7
E00-E90	19.0	18.4	19.6	38.1	35.2	41.2	100.5	91.3	110.2
F00-F99	4.7	6.1	3.3	5.5	6.5	4.5	17.0	6.6	36.4
G00-G99	49.3	51.9	46.6	43.7	42.1	45.3	-11.4	-18.9	-2.8
H00-H59	16.5	16.9	16.0	16.5	16.4	16.7	0.0	-3.0	4.4
H60-H95	25.0	28.6	21.3	34.7	39.0	30.1	38.8	36.4	41.3
I00-I99	7.8	8.7	6.7	9.8	9.8	9.9	25.6	12.6	47.8
J00-J99	460.5	528.7	388.7	522.7	596.8	444.2	13.5*	12.9*	14.3*
K00-K93	158.5	179.5	136.4	174.8	196.1	152.2	10.3	9.2	11.6
L00-L99	31.5	34.1	28.8	48.4	50.6	46.1	53.7	48.4	60.1
M00-M99	12.7	13.8	11.5	16.5	17.2	15.8	29.9	24.6	37.4
N00-N99	82.2	83.8	80.5	79.0	78.3	79.8	-3.9	-6.6	-0.9
O00-O99	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P00-P96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q00-Q99	71.8	86.9	55.9	83.5	95.0	71.3	16.3	9.3	27.5
R00-R99	71.6	76.5	66.3	87.8	91.9	83.5	22.6	20.1	25.9
S00-T98	139.4	155.1	122.8	159.2	176.5	140.9	14.2	13.8	14.7

O – overall, M – males, K – females

<sup>1</sup> no sign indicates an increase, minus sign (-) indicates fall

\* changes statistically significant (p <0.05)

Indicated in gray four most common causes of hospitalization in a given age group

Indication of disease groups as in Table II.

Table IV. Changes in the hospitalization of children aged 5-9 years (2004-2008). Hospitalization rate per 10 000 inhabitants

Group of diseases	2004 N=230 258			2008 N=225 120			Percentage difference <sup>1</sup> 2004-2008		
	O	M	F	O	M	F	O	M	F
A00-B99	90.8	97.6	83.8	100.3	103.1	97.4	10.5	5.6	16.2
C00-D48	40.8	46.6	34.7	41.9	40.7	43.1	2.7	-12.7	24.2
D50-D89	16.3	21.2	11.3	21.8	26.7	16.7	33.7	25.9	47.8
E00-E90	25.9	22.5	29.4	40.2	35.5	45.1	55.2	57.8	53.4
F00-F99	10.8	12.8	8.8	12.8	14.8	10.8	18.5	15.6	22.7
G00-G99	38.2	41.8	34.5	38.0	39.8	36.0	-0.5	-4.8	4.3
H00-H59	26.8	26.5	27.2	23.6	23.3	23.9	-11.9	-12.1	-12.1
H60-H95	21.2	23.9	18.4	34.6	40.3	28.6	63.8	68.6	55.4
I00-I99	9.7	10.0	9.4	10.5	11.5	9.5	8.2	15.0	1.1
J00-J99	327.4	365.8	287.1	372.1	415.3	326.7	13.7*	13.5*	13.8*
K00-K93	125.2	135.3	114.7	113.4	124.0	102.2	-9.4	-8.4	-10.9
L00-L99	22.8	24.6	20.9	28.9	29.8	27.9	26.8	21.1	33.5
M00-M99	25.1	29.6	20.3	45.3	42.4	48.3	80.5	43.2	137.9
N00-N99	74.2	73.5	75.0	70.9	73.1	68.6	-4.4	-0.5	-8.5
O00-O99	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P00-P96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q00-Q99	41.9	52.2	31.2	45.3	51.5	38.8	8.1	-1.4	24.4
R00-R99	75.5	75.7	75.4	82.5	84.7	80.1	9.3	11.9	6.2
S00-T98	130.2	160.9	97.9	142.2	171.1	111.7	9.2	6.3	14.1

O – overall, M – males, K – females

<sup>1</sup> no sign indicates an increase, minus sign (-) indicates fall

\* changes statistically significant (p <0.05)

Indicated in gray four most common causes of hospitalization in a given age group

Indication of disease groups as in Table II.

Table V. Changes in the hospitalization of children aged 10-14 years (2004-2008). Hospitalization rate per 10 000 inhabitants

Group of diseases	2004 N=234 422			2008 N=206 324			Percentage difference <sup>1</sup> 2004-2008		
	O	M	F	O	M	F	O	M	F
A00-B99	61.2	66.7	55.5	44.3	44.6	44.0	-27.6	-33.1	-20.7
C00-D48	39.2	41.0	37.2	37.5	36.6	38.5	-4.3	-10.7	3.5
D50-D89	11.8	14.1	9.4	18.4	23.3	13.3	55.9	65.2	41.5
E00-E90	29.9	28.4	31.6	51.0	49.9	52.1	70.6	75.7	64.9
F00-F99	10.1	9.9	10.2	10.3	9.7	11.0	2.0	-2.0	7.8
G00-G99	40.3	38.1	42.6	41.2	39.2	43.3	2.2	2.9	1.6
H00-H59	21.0	20.4	21.6	20.1	19.0	21.2	-4.3	-6.9	-1.9
H60-H95	10.0	11.5	8.3	11.6	12.7	10.5	16.0	10.4	26.5
I00-I99	18.4	19.4	17.4	21.3	23.8	18.7	15.8	22.7	7.5
J00-J99	131.7	132.6	130.7	126.3	129.8	122.5	-4.1	-2.1	-6.3
K00-K93	118.5	115.1	122.1	96.9	95.8	98.0	-18.2*	-16.7	-19.7
L00-L99	25.2	25.5	24.9	28.4	29.4	27.3	12.7	15.2	9.6
M00-M99	32.5	26.2	39.1	60.8	44.3	78.2	87.1*	69.1	100.0*
N00-N99	57.4	56.3	58.6	53.6	57.2	49.9	-6.6	1.6	-14.8
O00-O99	0.2	0.0	0.4	0.2	0.0	0.3	0.0	0.0	-25.0
P00-P96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q00-Q99	26.4	31.1	21.4	28.4	29.6	27.0	7.6	-4.8	26.2
R00-R99	99.1	87.7	111.0	105.1	92.7	118.2	6.1	5.7	6.5
S00-T98	174.5	225.8	120.9	195.1	250.6	137.0	11.8*	11.0	13.3

O – overall, M – males, K – females

<sup>1</sup> no sign indicates an increase, minus sign (-) indicates fall\* changes statistically significant ( $p < 0.05$ )

Indicated in gray four most common causes of hospitalization in a given age group

Indication of disease groups as in Table II.

Table VI. Changes in the hospitalization of children aged 15-18 years (2004-2008). Hospitalization rate per 10 000 inhabitants

Group of diseases	2004 N=214 662			2008 N=230 307			Percentage difference <sup>1</sup> 2004-2008		
	O	M	F	O	M	F	O	M	F
A00-B99	39.8	39.9	39.8	44.2	41.4	47.1	11.1	3.8	18.3
C00-D48	46.6	43.2	50.2	50.4	44.5	56.5	8.2	3.0	12.5
D50-D89	9.2	8.7	9.6	15.5	16.3	14.8	68.5	87.4	54.2
E00-E90	28.2	24.9	31.6	47.2	41.0	53.7	67.4	64.7	69.9
F00-F99	10.7	7.2	14.4	12.1	7.9	16.6	13.1	9.7	15.3
G00-G99	35.9	29.3	42.9	45.4	35.4	55.8	26.5	20.8	30.1
H00-H59	17.2	14.7	19.8	17.9	14.6	21.4	4.1	-0.7	8.1
H60-H95	7.2	7.6	6.8	8.0	8.3	7.7	11.1	9.2	13.2
I00-I99	29.6	32.0	27.0	38.4	42.9	33.7	29.7	34.1	24.8
J00-J99	83.9	74.9	93.4	85.7	77.3	94.4	2.1	3.2	1.1
K00-K93	105.4	81.0	131.0	101.7	81.9	122.5	-3.5	1.1	-6.5
L00-L99	28.5	27.1	29.9	33.9	33.8	33.9	18.9	24.7	13.4
M00-M99	44.8	35.6	54.5	76.9	60.7	93.8	71.7*	70.5	72.4*
N00-N99	69.1	43.0	96.5	77.1	54.7	100.5	11.6	27.2	4.1
O00-O99	37.6	0.0	77.0	52.4	0.0	107.2	39.4	0.0	39.2
P00-P96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q00-Q99	16.1	16.5	15.7	21.1	19.9	22.4	31.1	20.6	42.7
R00-R99	84.6	58.4	112.0	117.4	81.0	155.5	38.8	38.7	38.8*
S00-T98	209.1	272.0	143.2	249.3	324.8	170.3	19.2*	19.4*	18.9*

O – overall, M – males, K – females

<sup>1</sup> no sign indicates an increase, minus sign (-) indicates fall\* changes statistically significant ( $p < 0.05$ )

Indicated in gray four most common causes of hospitalization in a given age group

Indication of disease groups as in Table II.

increase in hospitalizations due to diseases of the digestive system (by 71.7%), as well as injuries and poisonings (by 19.2%).

## Discussion

Studies have shown that although the main reasons for hospitalization in children varied depending on the age of the patients, the most common causes of admission of children to hospital wards in 2004 and 2008 did not change. In Poland, as in other countries, children were hospitalized primarily because of respiratory diseases, diseases of the digestive system, and injuries and poisonings [4].

It is not surprising that children aged under one year were hospitalized more frequently than older children. The most common cause of the youngest age group admission to hospital wards was a group of diseases known as *Certain conditions originating in the perinatal period* (P00-P96). During the five years there was a nearly 23% increase in the incidence of hospitalization for this group of diseases. It can be assumed that one reason for this is the problem of overweight and obesity in the adult population, including women in reproductive age [5]. As indicated by the study, obesity in the period before pregnancy and during pregnancy is an important risk factor for many complications that threaten the health of both mother and child [6]. Another problem often coexisting with obesity is diabetes in pregnant women [7, 8]. Among life-threatening fetal and neonatal consequences associated with the occurrence of these diseases in pregnant women there are mentioned: macrosomia, congenital abnormalities, intrauterine death, shoulder dystocia and a more frequent necessity of Caesarean section [6-10]. Akin's and colleagues [11] research also shows that macrosomic deliveries are twice as likely to be accepted in the neonatal intensive care units.

Communicable diseases accounted for a significant cause of hospitalization of children in younger age groups. It seems that a significant increase in hospital admissions due to this group of diseases should be combined with viral and bacterial infections of the gastrointestinal tract. Many studies have shown that the most important cause of enteritis in hospitalized children is rotavirus (RV) [12-14]. The WHO data indicate that children under 3 years of age [15], and especially infants, are vulnerable to RV infections due to difficulties with feeding and a possibility of easy dehydration. The average age of children infected with RV is lower in comparison with children who have gastroenteritis caused by other viruses [16]. The main symptoms of rotavirus infection in children are severe diarrhea and vomiting, and hence often hospitalization of children is needed. The analyses

carried out in Italy show that in 2001-2003 RV accounted for 84% of cases of viral enteritis and 17% of all infectious diseases of the digestive tract in hospitalized children under 4 years of age [17].

In all age groups the most common causes of hospitalization in children were respiratory diseases. Studies have shown that a significant increase in hospitalizations for this group of diseases targeted children aged 1-4 and 5-9 years. As it results from many reports, a growing epidemiological and economic problem of the last decades, both in developed and developing countries, is bronchial asthma in children [18-20]. According to the data from the Polish Central Statistical Office 3.9% of children up to 14 years of age suffered from asthma in 2004 [2]. Especially dangerous are asthma exacerbations requiring emergency medical intervention and hospitalization. Research shows that among children admitted to hospitals due to exacerbation of asthma nearly half are small children aged 3-5 years [21].

Diseases of the musculoskeletal system and connective tissue constitute a group of diseases which make the frequency of hospitalization increase significantly among young people in older age groups. In recent years a noticeable decline in physical activity interest among children and young people favours the development of faulty posture, among which are often present various spinal deformities including: scoliosis, kyphosis and lordosis. Most cases of faulty posture are detected only at puberty, most often in the course of screening in schools. However, scoliosis may develop earlier in life [22]. A consequence of late detection of severe deformities of the spine is a need to perform more complicated procedures such as barcing or even surgery [23]. Doctors also point to the back pain, which is increasingly reported by younger people [24]. The analyses within the international HBSC study (Health Behaviour in School-aged Children: A WHO Collaborative Cross-National Study) showed that in 2002 in Poland 9.5% of students aged 11, 13 and 15 years suffered from the back pain (so-called „dorsalgia”), and in 2005 it amounted to 10.7% of teenagers aged 16 and 18 years [25,26]. Also, in Germany in 2002 about 1.4 million people aged up to 24 years suffered from the back pain, and direct costs of treatment of back disorders in children and young people amounted, at least, to 100 million Euros [27].

Among those in the age groups of 10-14 and 15-18 years during the period of time the incidence of hospitalization due to injuries and poisonings increased significantly. The period of adolescence is a time of taking up numerous risky health behaviors. For years, the main causes of health or disability of adolescents and young adults have been accidents and

injuries. The HBSC survey mentioned above showed a gradual increase in the proportion of children aged 11, 13, and 15 years, who in the past 12 months sustained an injury requiring medical attention (such as hospitalization, outpatient medical assistance or a nurse). The frequency of yielding to injuries increases with the age of respondents. According to the data from 2005, during the 12 months preceding the survey, 31.1% of injuries happened to children aged 16 and 18 years, 12.2% of them suffered from several injuries [28]. The analyses showed that these injuries occurred most commonly during sports or recreational activities, participation in fights, as a result of road accidents, but seldom during school activities.

Apart from injuries, in the group of diseases marked S00-T98 there are placed cases of poisoning (e.g. drugs). In children under 5 years of age poisonings occur at random, mostly due to the lack of supervision by adults or the wrong dose of medication [39,30]. However, during puberty, most cases of poisoning are suicide attempts, intentional overdosing due to taking drugs or toxic substances [31, 32]. Most suicides among teenagers are observed in the age group 15-19 years [33]. The use of psychoactive substances by adolescents, including alcohol also

remains a problem. The results of the ESPAD studies (The European School Survey Project on Alcohol and Other Drugs) systematically carried out since 1995 in several European countries reveal that drinking by minors is becoming more and more popular, and increases with age [34-36]. Attention also needs to be paid to an increasingly lower age of those who begin drinking, especially that among negative consequences of drinking alcohol and using other psychoactive substances we may mention damage to health, psychological problems, injuries and accidents [37].

In conclusion, it should be noted that in the analyzed years a demonstrated significant increase in hospitalizations among the youngest part of the Polish population can provide an important clue for shaping a future health policy in the country. This paper analyzes the change in the main groups of diseases (according to the ICD10), however, it only allows for certain trends to determine the reasons for children's hospitalization in Poland. In order to gain a further insight into the reasons for children's admission to hospital wards a deeper analysis of data which would include individual diseases is required. Studies of this kind will be carried out shortly.

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