




Morbidity of children and adolescents with selected chronic diseases in Poland, 2017–2022

Zachorowalność dzieci i młodzieży na wybrane choroby przewlekłe w Polsce w latach 2017–2022

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ABSTRACT

INTRODUCTION: Chronic diseases are among the most common health conditions of children and adolescents and constitute one of the most serious phenomena and problems in the modern world. Chronic diseases include: asthma, allergies, heart diseases, hypertension, strokes, cancer and mental disorders. The aim of the study was to discuss the incidence of selected chronic diseases in children and adolescents aged 0–18 years in Poland.

MATERIAL AND METHODS: In January 2024, statistical data were received from the National Institute of Public Health – National Institute of Hygiene in Warsaw regarding the incidence of diabetes (E10-E14), obesity (E65-E68), hypertensive disease (I10-I15) and epilepsy (G40) among children and youth aged 0–18 years in 2017–2022 throughout the country. Then a figure was prepared that illustrates the incidence of the mentioned diseases (coefficient 10/000).

RESULTS: The largest group of registered cases (incidence) of overweight among children and adolescents in Poland in the analyzed period was recorded in 2018 (141.2/10,000) and the lowest in 2020 (126.8/10,000). The highest incidence of hypertension was in 2018 – 23.7/10,000.

CONCLUSIONS: The number of new cases of chronic diseases detected in children is systematically increasing not only in European countries. Chronic diseases are among the most serious phenomena and problems in the modern world resulting from their common occurrence in the population, and above all, from the consequences they cause in the individual and social sense.

KEYWORDS

chronic diseases, hypertension, asthma, Poland, diabetes, epilepsy

Received: 12.03.2024

Revised: 20.04.2024

Accepted: 06.06.2024

Published online: 27.08.2024

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Publisher: Medical University of Silesia, Katowice, Poland



STRESZCZENIE

WPROWADZENIE: Wśród najczęstszych schorzeń dzieci i młodzieży wyróżnia się choroby przewlekłe, które stanowią jedno z najpoważniejszych zjawisk i problemów współczesnego świata. Do chorób przewlekłych możemy zaliczyć m.in.: astmę, alergie, choroby serca, nadciśnienie tętnicze, udary mózgu, nowotwory, a także zaburzenia psychiczne. Celem pracy było omówienie zachorowalności na wybrane choroby przewlekłe dzieci i młodzieży w wieku 0–18 roku życia w Polsce.

MATERIAŁ I METODY: W styczniu 2024 r. otrzymano dane statystyczne pochodzące z Narodowego Instytutu Zdrowia Publicznego – Państwowego Zakładu Higieny w Warszawie dotyczące liczby zachorowań na cukrzycę (E10-E14), otyłość (E65-E68), chorobę nadciśnieniową (I10-I15) oraz padaczkę (G40) wśród dzieci i młodzieży w wieku 0–18 roku życia w latach 2017–2022 na terenie całego kraju. Następnie sporządzono rycinę, która ilustruje zachorowalność na wymienione choroby (współczynnik 10/000).

WYNIKI: Najliczniejszą grupę zarejestrowanych przypadków (zachorowalność) nadwagi wśród dzieci i młodzieży w Polsce w analizowanym okresie odnotowano w 2018 r. (141,2/10 000), a najmniej liczną w 2020 r. (126,8/10 000). Największa liczba zachorowań na nadciśnienie wystąpiła w 2018 r. – 23,7/10 000.

WNIOSKI: Liczba nowych przypadków zachorowań na choroby przewlekłe u dzieci systematycznie wzrasta nie tylko w krajach europejskich. Choroby przewlekłe stanowią jedno z najpoważniejszych zjawisk i problemów współczesnego świata, wynikających z powszechności ich występowania w populacji, a przede wszystkim ze skutków, jakie wywołują w sensie indywidualnym i społecznym.

SŁOWA KLUCZOWE

choroby przewlekłe, nadciśnienie, astma, Polska, cukrzyca, padaczka

INTRODUCTION

One of the basic elements of conducting health policy is having knowledge about the health status of the population of children and adolescents and their broader health needs. Such information should be collected routinely, possibly enriched and modified to reflect the current health situation of the society or the emergence of new medical procedures and technologies. The analysis of the epidemiology of chronic diseases in a given population group, on the one hand, is intended to serve as a reference point for taking new actions in the field of health care, but on the other hand, it is an attempt to summarize the actions already implemented. Analyses of the frequency and causes of morbidity in children and adolescents may be a source of information on factors affecting the health of this group. In Poland, most children and adolescents are hospitalized due to respiratory diseases (J00-J99), including a significant percentage of hospitalizations because of asthma, injuries, poisonings and other specific external effects (S00-T98), infectious and parasitic diseases (A00-B99), congenital defects, chromosomal distortions and aberrations (Q00-Q99), as well as cancer (C00-D48). The general health condition of Polish children (0–14 years old) is on average satisfactory, nonetheless, among children and adolescents from industrial areas, which include the Silesian Voivodeship, there is a higher incidence of respiratory diseases and various types of allergies. Currently, every fourth child has long-term health problems (26.1%), and they are more common in older children – among 10–14-year-olds (31.2%).

Children from urban areas are more likely to experience health problems that later result in more frequent hospitalizations than from rural areas (29.4 vs. 21.1%) [1,2].

However, the incidence of mental disorders in children aged 10–19 in Poland is 10.8% and affects over 409,000 teenagers (181,000 girls and 228,000 boys). 19% of boys in Europe aged 15–19 suffer from mental health disorders. Among girls it is over 16% [1].

Chronic disease is an undesirable phenomenon in a child's life and development. The Commission on Diseases of the World Health Organization defines chronic diseases as disorders or deviations from the norm that are permanent, caused by irreversible pathological changes, often leave behind disability, require special rehabilitation procedures, a long period of supervision, observation or care [1]. A chronic disease is a one that is characterized by a long duration and at the same time slow progression of pathological changes. Other terms for a chronic disease are:

- a disorder of a long duration that may be progressive and have a poor prognosis or may be associated with a relatively normal course of life despite abnormalities in physical or mental functioning
- an unfavorable condition that lasts for more than three months a year or requires continuous hospitalization for at least one month
- a disease that lasts for a significant period or is recurrent (further relapses occur over a long period of time)
- permanent, irreversible, progressive changes damaging the system, permanently reducing its



efficiency and effectiveness, mainly in so-called acute, but also chronic states, as one and the same constantly ongoing process of damage [2].

Many chronic diseases result in disturbances in the child's growth and weight, pathological changes in many organs, in addition to reduced mobility, and therefore the ability to exercise [3]. Chronic diseases in children are characterized by variability in the intensity of symptoms, have a long-term course, their treatment is usually long, and involves the necessity to subordinate the disease to a daily routine, long-term stays in hospital and separation from loved ones. Some chronic diseases directly threaten the child's life. The psychological consequences of chronic disease in children include anxiety and sadness, disturbance of the sense of security, as well as concentration on basic needs and the current situation. Children with chronic diseases feel like they have lost life prospects and have no influence on events. They are often accompanied by lower self-esteem, in addition to a sense of shame and being different from their healthy peers [4]. The aim of the study is to discuss the incidence of selected chronic diseases in children and adolescents aged 0–18 years in Poland.

MATERIAL AND METHODS

In January 2024, statistical data were received from the National Institute of Public Health – National Institute of Hygiene in Warsaw regarding the incidence of diabetes (E10-E14), obesity (E65-E68), hypertensive disease (I10-I15) and epilepsy (G40) among children and youth aged 0–18 years in 2017–2022 throughout the country. Then a figure was prepared that illustrates the incidence of the mentioned diseases (coefficient 10/000).

RESULTS

The largest group of registered cases (incidence) of overweight among children and adolescents in Poland in the analyzed period was recorded in 2018 (141.2/10,000) and the lowest in 2020 (126.8/10,000). The highest incidence of hypertension was in 2018 – 23.7/10,000.

The analysis of the incidence of diabetes as a chronic disease in the studied population of children and adolescents in the years 2017–2022 in Poland shows

that it is increasing and amounts to 19.1/10,000 in 2017 and 20.7/10,000 in 2022. Other analyzed chronic diseases were variable in nature.

Diabetes

Diabetes is one of the most serious health problems in the modern world. The factors contributing to the rapid development of diabetes in the world are primarily the numerical increase in the general population, aging societies, socio-cultural changes, urbanization and a modern lifestyle (an increment in the consumption of processed food and carbohydrates, a significant reduction in the share of vegetables and fruit in the diet, a decrease in physical activity). Type 1 diabetes is one of the most common chronic diseases occurring in children and adolescents, which may cause numerous organ and systemic pathologies, e.g. a loss of vision caused by changes in the retina or impaired kidney function. The disease develops as a result of the destruction of pancreatic β -cells, which are responsible for the secretion of insulin, the deficiency of which causes disturbances in the metabolism of carbohydrates, proteins and fats, and the disease manifests itself when more than 80% of pancreatic β -cells are destroyed [5]. Diabetes is characterized by acute and unexpected complications, contributing to practical and emotional problems for the patient and his family [6]. The clinical symptoms of type 1 diabetes include increased thirst (polydipsia), increased diuresis (polyuria) and weight loss despite a normal or increased appetite. The symptoms usually develop within a few weeks, and in infants and smaller children within 24 hours or several days [7].

Both in Poland and around the world, a gradual rise in the incidence of this form of diabetes is observed. Studies from the late 1990s showed an approximately threefold increase (until the 1980s) in the cases of diabetes among children up to 14 years of age [8]. The highest increment in the incidence over the last 5–10 years occurred in children aged 0 to 4 years [9]. The incidence of type 1 diabetes in children living in eastern and central Poland has increased 1.5 times. The greatest growth in the incidence was observed in children aged 10–14. A significantly higher percentage was found among children living in cities than in rural areas [10,11].

In the discussed time period, the incidence of diabetes among children and adolescents is increasing and amounts to 19.1/10,000 in 2017 to 20.7/10,000 in 2022 (Figure 1).

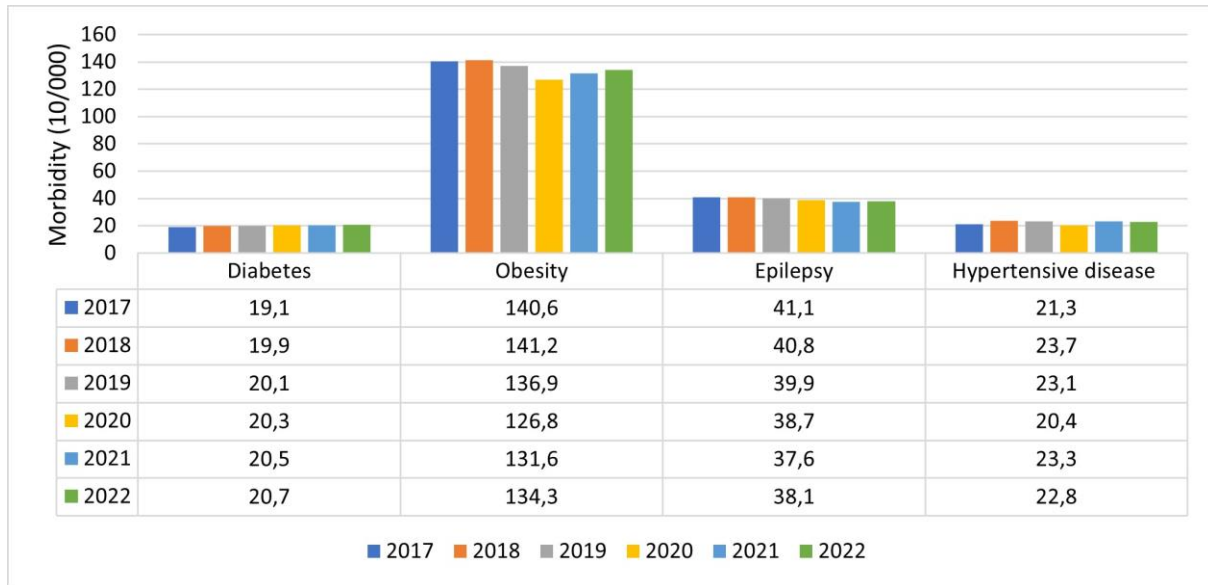


Fig. 1. Morbidity of children and adolescents aged 0–18 years with selected chronic diseases in 2017–2022 in Poland (incidence rate per 10.00); author's own compilation based on data from the National Institute of Public Health – National Institute of Hygiene in Warsaw.

Obesity

The prevalence of obesity in the population of children and adolescents is epidemic in almost all regions of the world [12]. In the light of the current state of knowledge, obesity is a chronic disease requiring medical treatment, which recurs if treated incorrectly. It is a highly heterogeneous clinical problem, characterized by different etiologies in individual clinical situations. The etiology of overweight and obesity is multifactorial. The factors that influence its development include:

- genetic factors, i.e. slow metabolic rate, imbalance of neural systems in the hypothalamus, which are closely related to the control of hunger and satiety
- environmental factors, including an excessive food supply from an early age, irregular consumption of too large portions at meal times, as well as snacking
- other factors, such as reduced physical activity, stress and emotional disorders, low birth weight, and some medications.

The problem of overweight and obesity in Poland is systematically growing. This is primarily due to the fact that both in Poland and around the world there has been a change in the diet and lifestyle of many children. There is wide availability of highly processed ready-made meals, which are often high in calories. Undoubtedly, the lack of exercise among children and adolescents also contributes to the increase in the incidence of overweight and obesity [13]. According to research conducted by the Institute of Mother and Child among children aged 10–15, the percentage of overweight boys and girls is 18.5%, and obesity is 12.7%. The study was conducted as part of

the WHO European Childhood Obesity Surveillance Initiative. According to the HBSC (Health Behavior School-aged Children) study, overweight and obesity are becoming a civilization disease. In Poland, each year there will be 400,000 overweight children, including 80,000 obese children. According to forecasts, there will be 1.3 million overweight children in Europe each year, including 300,000 obese children [14].

The regions where obesity and overweight are most prevalent are the American and European regions [15]. According to the prediction of Wang et al. [16], as many as 46–47% of American adults will be overweight or obese by 2030. The prevalence of obesity and overweight varies depending on the ethnic or socioeconomic group. Mexican-Americans and African-American women are at particular risk of overweight and obesity, with the projected prevalence of obesity by 2030 being 61.4% and 66.3%, respectively.

Nonetheless, obesity and overweight do not only affect adults. Current data on the incidence of obesity indicate that this phenomenon is also occurring progressively more often in children and adolescents, especially in developing countries such as China, Albania, and Brazil. In these countries, the number of overweight or obese children is growing 30% faster than in developed countries. Rising rates of childhood obesity are particularly concerning because childhood obesity increases the likelihood of adult obesity and is closely related to the risk of developing cardiovascular disease, which may still be present despite the normalization of body weight in a person with childhood obesity. The highest rates of obesity and overweight (increasingly among children) are



observed in the USA and New Zealand. It is estimated that in the USA over the last 30 years, the average child's body weight has risen by about 5 kg. Currently, one third of children and adolescents in the United States of America are overweight or obese. The incidence of overweight and obesity grows with age. In the United States of America, increased body weight was recorded in 22.8% of preschool-age children (2–5 years), of whom 8.4% are obese, 34.2% of school-age children (6–11 years), of whom 7.7% are obese and 34.5% of adolescents (12–19 years old), of whom 20.5% are obese [17,18].

In Poland, the incidence of obesity among children and adolescents in 2017–2022, aged 0 to 18 years, is variable and amounts to 126.8/10,000 in 2020 (the lowest incidence) and 141.2/10,000 in 2018 (the highest incidence; Figure 1).

Epilepsy

Epilepsy is one of the most common neurological diseases. Epilepsy is a chronic brain disease. It manifests itself with the occurrence of spontaneous, recurrent epileptic seizures, which result from abnormal, excessive bioelectric activity of nerve cells (neurons) in the brain [19]. The appearance and course of a seizure depend on the location and size of the area of the brain where the abnormal bioelectric discharges occur. Not every seizure event is a seizure. Some children, especially younger ones, may experience single seizures (e.g. during fever, poisoning) and conditions such as fainting, apnea attacks, and night terrors. Epilepsy in children and adolescents may be associated with co-morbidities, including motor impairments, learning difficulties, behavioral problems and mental health problems. The British Child and Adolescent Mental Health Study found that > 25% of children with epilepsy aged 5 to 14 years had emotional, behavioral and relationship difficulties compared to 9% of control children and 11% of children with diabetes. This number increased to 56% in the case of children with epilepsy and concomitant neurological problems. Epilepsy is the most common chronic disease of the nervous system – it occurs in approximately 0.5–1% of school-age children and adolescents. It is a social problem owing to its high incidence, chronic nature, long-term treatment and very frequent stigmatization of people with epilepsy. There are approximately 50–70 million people suffering from it in the world, most of them in developing countries. It is estimated that 6 million people in Europe suffer from epilepsy, and approximately 400,000 new cases are diagnosed every year (one new diagnosis almost every minute), and the costs of caring for and treating patients with epilepsy within the European Union amount to 20 trillion EUR per year [20,21].

There are many causes of epilepsy, which can be divided into three groups:

- brain damage during fetal life (e.g. brain development defects), at birth and in later years of life as a result of: brain hypoxia, inflammation (e.g. meningitis, toxoplasmosis, cytomegalovirus), skull injuries, brain tumors, metabolic disorders (so-called symptomatic epilepsy – structural/metabolic)
- genetic factors – a congenital predisposition to epileptic seizures, which may occur in the child and often in other family members
- epilepsy of an unknown cause – in approximately half of people with epilepsy, despite tests, the cause cannot be determined [22].

The incidence of epilepsy in children and adolescents in 2017–2022, aged 0 to 18 years, decreased from 2017 (41.1/10,000) to 2021 (37.6/10,000). In 2022, this number was 38.1/10,000 (Figure 1).

Hypertension

The incidence of hypertension changes with age. Based on the results of representative population studies, it is estimated that this disease affects 3–5% of children and adolescents aged 0 to 18 years. Other studies report that the frequency of diagnosing hypertension in teenagers aged 14–18 years is similar to the prevalence of hypertension in young adults and is approximately 10–13%. Secondary hypertension occurs more often in younger children, before the pubertal period [23]. The incidence of primary hypertension grows rapidly during puberty and mainly affects boys. During this period, hypertension is diagnosed 3–4 times more often in boys than in girls. Due to the increment in the incidence of overweight and obesity in children and adolescents, the incidence of hypertension is also rising, which accounts for approximately 50% of all hypertension diagnoses in children [24].

Arterial hypertension in adolescents and adults is characterized by certain differences in its pathogenesis, diagnosis and therapy. The diagnosis of a chronic disease such as hypertension in young people, along with the decision to initiate and select pharmacotherapy, requires a precise assessment of both the blood pressure values themselves and a careful assessment of the probability of secondary causes of hypertension, as well as the assessment and correction of risk factors and organ complications affecting the patient's prognosis [23].

Arterial hypertension in young people is not a rare phenomenon and effects on average every eighth person. With unfavorable forecasts regarding the prevalence of unhealthy lifestyles, overweight and obesity, it can be expected that this percentage will grow in the coming decades. A higher blood pressure in young people significantly raises the risk of



complications and is associated with abnormalities in cardiac, vascular and brain imaging, also increasing the likelihood of cardiovascular events in middle age. The diagnosis of hypertension, diagnostics, and the initiation of treatment in young people are often delayed [25].

In the discussed time period, the incidence of hypertensive disease among children and adolescents is variable and ranges from 20.4/10,000 in 2020 (the lowest incidence) to 23.7/10,000 in 2018 (the highest incidence; Figure 1).

Health determinants are all factors that dictate the condition of our body, both physical and mental. These factors, in combination with each other or individually, have a positive or negative impact on the health of individuals and entire communities. Health determinants can be considered universal. Regardless of gender, race, age, religion, origin, income, level of education, or even place of residence, the factors influencing the level of health are the same. They only differ in the strength with which they affect a specific person. According to the World Health Organization, factors determining health can usually be divided into three groups: the social and economic environment, the physical environment, as well as individual characteristics and behaviors of the individual. The length and quality of society's life are mainly influenced by four factors: lifestyle (type and amount of food consumed, stimulants, physical activity), biological factors (genetics, gender, age, congenital features), environmental factors (social, economic, natural), and health care (treatment, rehabilitation, health promotion, as well as availability, quality and its organization). Health care has the smallest impact on human health (10%). Second place is taken by biological (20%) and environmental (20%) factors.

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The broadly understood lifestyle has the largest, as much as 50%, impact on an individual's health. It is a set of ordinary, everyday decisions, activities, habits and activities typical of a given individual. Lifestyle includes many factors, such as nutrition, physical activity, and drugs [26].

CONCLUSIONS

The number of new cases of chronic diseases detected in children is systematically growing not only in European countries. Researchers see several reasons for this phenomenon:

- progress in medical sciences that allows low birth weight newborns to be kept alive; the diagnosis and treatment of developmental defects in the fetus; the early detection of genetic defects (e.g. cystic fibrosis)
- the increasing effectiveness of therapy in various diseases (e.g. cancer)
- a higher frequency of specific health problems (including obesity) in the population of children and adolescents.

Chronic disease causes a number of changes in the life of the child and family, which have psychological consequences and disturb or significantly hinder the child's functioning and development. First of all, the disease causes physical suffering related to both its symptoms (e.g. pain, itching, immobility, etc.) and the method of treatment (e.g. surgery, injections, dialysis, drugs that affect well-being, etc.). A previously quite freely functioning child becomes dependent on institutions providing medical care for him/her – doctors and nurses, periodic hospital stays or visits to clinics.

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