

PIOTR KSIĄŻEK, JOLANTA HERDA

Wypadki, urazy i zatrucia w populacji dzieci i młodzieży

Accidents, injuries and intoxications in population of children and adolescents

Streszczenie

Troska o zdrowie dzieci i młodzieży zdaniem znaczących w obszarze zdrowia publicznego organizacji międzynarodowych, tj. WHO oraz UNICEF, powinna być istotnym elementem polityki zdrowotnej wszystkich państw. Zgodnie z terminologią światową, jako wypadek traktuje się zdarzenie, które może, lecz nie musi, prowadzić do powstania urazu.

W Polsce i na świecie urazy są główną przyczyną zgonów dzieci, dla przykładu w grupie wiekowej 10-14 lat stanowią 47%, a w wieku 15-19 lat – 65% ogółu zgonów.

Urazy i zatrucia w pierwszej grupie wiekowej charakteryzują się tym, że podstawową przyczyną zgonów są następstwa wypadków komunikacyjnych i utonięć. Dzieci w wieku wczesnoszkolnym narażone są na potrącenia przez samochód i wypadki rowerowe.

W populacji młodzieży w wieku 15-19 lat można zaobserwować zjawisko największego obciążenia ryzykiem zgonu z powodu urazu. Główną przyczyną zgonów z powodu urazów i zatruc są następstwa upadków i wypadków komunikacyjnych. Godnym podkreślenia jest fakt narastającej częstości zgonów z powodu samobójstw.

Badania nad zachowaniami zdrowotnymi młodzieży szkolnej – HBSC dowiodły, że częstość urazów wymagających i nie wymagających pomocy medycznej zależy od płci, wieku oraz miejsca zamieszkania osoby poszkodowanej. Istnieje związek między częstością urazów a sytuacją rodzinną, szkolną, stylem życia, samooceną zdrowia oraz wybranymi czynnikami określającymi zdrowie psychiczne uczniów.

Sledząc czynniki wpływające na powstawanie urazów wśród dzieci i młodzieży można zaobserwować pewne związki pomiędzy statusem ekonomiczno-gospodarczym kraju a częstością oraz umiERALNOŚCIĄ z ich powodów – dla porównania zestawienie wskaźników epidemiologicznych w zakresie urazów wśród krajów bogatych oraz rozwijających się. Raport Innocenti przedstawił m.in. ranking 26 najbogatszych krajów świata wg współczynnika zgonów z powodu urazów wśród dzieci między 1 a 14 rokiem życia. Z ujętych w nim danych wynika, że gdyby wszystkie państwa miały taki sam współczynnik jaki posiada Szwecja (najniższy – 5,2 zgonów/100 000 dzieci), można byłoby zapobiec 12 000 zgonów rocznie.

Na podstawie „Programu Poprawy Opieki Medycznej w Środowisku Nauczania i Wychowania”, opracowanego i wdrożonego do realizacji przez Lubelskie Centrum Zdrowia Publicznego, można powiedzieć, że odsetek uczniów, którzy ulegli urazom w szkole na przestrzeni omawianych lat, systematycznie wzrasta. Urazy w badanej grupie uczniów dotyczyły przede wszystkim złamań, zwichnięć i skręceń kończyn dolnych oraz górnych, a także urazów głowy. Jeśli chodzi o miejsca, w których najczęściej dochodziło do wystąpienia urazów, były to: boisko szkolne oraz sala gimnastyczna.

Wiele państw podjęło różnorodne działania profilaktyczne w zakresie występowania urazów w populacji dzieci i młodzieży. Jest to duże wyzwanie dla społeczeństw, gdyż wymaga znajomości złożonych czynników predysponujących do ich powstania oraz zaangażowania się wielu środowisk, w taki sposób aby wspólnie dążyć do obniżenia częstości urazów i ich dalszych następstw.

Słowa kluczowe: wypadek, uraz, zatrucie, uczniowie, zachowania zdrowotne.

Summary

According to recognized organizations in the field of public health, namely WHO and UNICEF, protection of children's and adolescents' health should be regarded as a key issue in the health policy of every country. In medical terminology, an accident is an event which can, but does not have to lead to an injury.

In Poland and all over the world, injuries are the main cause of death of children, e.g.: for children aged 10 to 14 years – 47%, and for those aged 15 to 19 years – 65% of deaths are caused by injuries.

Injuries caused by road accidents and drowning are the main cause of death in the younger group. School-aged children are often at risk of road accidents or bike accidents.

In the population of adolescents, aged 15 to 19 years, the highest risk of death as a result of an injury is observed. The main cause of death as a result of an injury and intoxication are falls and road accidents. It is also worth noting that in this age group we observe a rising number of suicides.

Research on health behaviour of school children and adolescents – HBSC clearly proves that the frequency of injuries which require and do not require medical help depends on sex, age and place of residence of an injured person. There is also a relation between the frequency of injuries and family and school situation, lifestyle, self-esteem and several factors describing mental health of students.

Analysis of factors influencing occurrence of injuries among children and adolescents, allowed for noting the relationship between economic and welfare state of the country and injuries death rate – as confirmed by listing of epidemiological factors connected with injuries in wealthy and developing countries. Raport Innocenti presents a list of 26 wealthiest countries according to death rate resulting from injuries among children aged 1 to 14 years. The data in Raport Innocenti indicate, that if other countries had the same index as Sweden (the lowest -5.2 deaths/100.000 children), we would be able to prevent 12000 deaths yearly.

Basing on the "Programme of Improvement of Medical Care in the Educational and Upbringing Environment" developed and introduced by the Centre of Public Health in Lublin, it should be said that the percentage of students who sustained injuries at school in the past years eases systematically. Injuries in the examined group of school-children were related mainly to fractures, luxations and sprains of lower and upper limbs, or head injuries. Accidents which caused injuries most often took place in school sports field or gym.

Many countries undertake various prophylactic actions to prevent injuries among children and adolescents. It is a great challenge for the society, since it requires knowledge of different complex factors leading to an injury, as well as engaging many different institutions in order to reduce the frequency of injuries, and, in case of occurring injury, effective hospitalization leading to lower death rate.

Key words: accident, injury, intoxication, student, health behaviour.

According to some significant international organisations of public health, i.e. WHO and UNICEF, the concern about children and teenagers' health should be relevant feature of health policy of all countries.

In Poland and in the world injuries are the main reason of children's death, e.g. in the age group of 10-14-years-old bodily traumas account for 47%, whereas at the age of 15 up to 19-years-old – 65% of the general number of deaths. It is the primary reason of mortality in the age span of 1-44-years-old, which may surpass the mortality rate indices due to circulatory disorders and cancers [1]. In general, injuries caused by accidents account for bigger and bigger health, social and economic problem, mainly in developed countries, which is entailed by high medical rehabilitation costs of the accident victims. In Poland the number of demises caused by injuries and intoxications is approximately 28,000 yearly, which is equal to vanishing of any small city [2].

It seems to be quite difficult to estimate a general frequency of injuries among children and teenagers since the data, which can be disposed, are mainly information concerning the most serious cases. Even though, it seems to be reasonable to state that gentle injuries may include high costs of treatment and indirect social costs resulting from permanent or periodic disability. The research concerning the health condition of Polish population, conducted in 1996 implies that in the 1990s, in Poland 2600 people on average died because of injuries at the age of 0-19-years; due to this reason approx. 120,000 people were referred to hospitals, whereas 900,000 required help in ambulatory conditions [3]. Another research of this kind, conducted in 2004, still points out that injuries account for the third, main reason of deaths, while in general structure transport accidents are prevailing.

In the appendix to strategic goal no. 3 of National Health Program for years from 2007 up to 2015 entitled "*reduction of the number of injuries caused by accidents and limitation their consequences*" we can find a description of the age group of 11-15-years-old where one in four teenagers required medical help due to injury, whereas one in three sustained injury not demanding such help. Realisation of GAMBIT programme is very important for improvement of the situation concerning traffic accidents [2,4].

Referring to the age groups of 5-14-years-old and 15-19-years-old, the main epidemiological conclusions should be indicated, namely in the first age group (5-14-years-old) [5]:

- On average, yearly 12 children in 100,000 die of injuries and in the aftermath of accidents, whereas 76 times more are in hospital on that account,
- Mortality index is 2,4 times higher than the one in Sweden, which means that by reducing mortality to the Swedish level, **it could have been possible to avoid 58% of demises in this group of children in 1900-1998**,
- The main reason for deaths is the aftermath of traffic accidents and drowning.
- Children at the early school age are exposed to car and bicycle accidents.

In the second group (15-19-years-old) [5]:

- On average, approximately 44 young people in 100,000 die due to injuries being the aftermath of accidents, whereas 27 times more people are referred to hospital on that account,

- Mortality index is, approximately, 1,9 times higher than in Sweden, which implies that by reducing that mortality to the Swedish level, **it could have been possible to avoid 39% of deaths in this age group in 1900 up to 1998**,
- The main reason of demises are the aftermaths of transfer accidents, drowning and suicides,
- Particularly alarming phenomenon is recently increasing **frequency of deaths due to suicides**,
- Both in statistics of deaths and hospitality of teenagers, accidents of non intentional character play an essential role.

For comparison, in another research conducted by the Institute of Mother and Child on the turn of February and March 2005, concerning teenagers in the final stage of growing up (i.e.16-18-years-old), it was observed that boys more frequently than girls sustained injuries during the last 12 months, and who in turn required medical help of doctor or nurse – 20,5% of 16-year-olds and 21,4% of 18-year-old boys; and also 17,2% of 16-year-olds and 19,4% of 18-years-old girls [6].

The fact of increased frequency of injuries parallel with occupational accidents in households, is also worth mentioning. Speaking about the age of population it would definitely be the range above 10-years of age, speaking about the place of residence of people sustaining injuries, it would definitely be the countryside [5].

In the situation being discussed the rise of injuries connected with seasonality, resulting, on one hand, from intensification of field work in certain months and the participation of children in field work, and on the other hand, a lack of care on the part of adults during intensive field work is also observed.

Epidemiologic data describing the problem of injuries and intoxications make us think, first of all, of multi-sectorial activities aiming at the improvement of the health situation in this field.

Bearing in mind an essential role of prophylaxis and health promotion, it is worth pointing out to the need of launching the following programmes, with reference to different types of injuries:

- Prevention programmes which would aim at the safety of traffic by teaching children of first classes of the primary school on traffic regulations together with the theory of crossing the street and safe behaviour; popularisation of the use of crash helmets and other protective elements: reflections, fastening of the safety belts while driving,
- Programmes which would prevent drowning – exact marking of lidos, with clear marking of the dangerous ones, presence of life guards in designated lidos ,
- Programmes indicating negative relationship between alcohol consumption and drug abuse and the frequency of injuries,
- Actions directed at promotion of sport and safe participation in Physical Education classes at schools, both in groups of younger children and teenagers,
- Co-ordinated actions aiming at optimization of preventive care of pupils, inter alia through aiming to improve the conditions and equipment of schools and technical condition of objects, systematic supervision in this field.

With reference to the latest actions, in 2000 a special web site was created by the Ministry of Education – “Safe School” – it includes basic information and legal acts concerning safety and hygiene, it facilitates addressing questions or raising issues in the field of work safety which appear at schools.

In the group of younger children the actions should be aimed at ensuring safe conditions for entertainment, for older – proper conditions for doing sports at school and outside. Provision of security appropriate for a discipline, especially in case of contractual sports.

In the situation of doing sports outside school, there should be an optimal trainer’s care, taking into account general psychophysical condition of a child.

Moreover, the need for following actions should be emphasized:

- Consolidation of cooperation in school environment being the habitat, as concerns pupils’ safety at school and outside it. Expanding the teachers’ knowledge in the field of prophylaxis and promotion of health together with health education of pupils,
- Systematic actions aiming at educating the society in the field of basic rules of first aid so that in serious accidents there would always be people capable to offer first aid to the injured person in order to minimize negative aftermaths of accidents.

Basic strategies of preventing accidents and their aftermaths comprise: monitoring of this phenomenon, legislative changes, new technologies and education of the society. Nowadays, specialists widely underline the need for both preventing injuries and promotion of safety.

Preventing refers to visible physical changes in the environment and behavioural changes, whereas the term **promotion** applies to the process of reaching these changes through campaigns and actions aimed at the society [7]. These two terms should not be associated with each other since the first applies to the prevention of negative events, whereas the latter one applies to the strengthening of positive elements – health, safety. International efforts aiming to define the promotion of safety were crowned with the draft definition given by WHO: *“promotion of safety is the process initiated on local, nationwide and international level by units, communities, governments and the others, as well as companies and non-governmental organisations in order to reach and sustain the state of safety. This process embraces all efforts that were reached together to modify structures, environment (physical, social, economic...), as well as attitudes and behaviours connected with safety”*.

Injuries were considered as a special health problem and the field of actions initiated by European Community, which was reflected in the decision of European Parliament and Council of Europe in 1999, accepting the programme of actions in the field of prevention of injuries in the context of public health tasks.

Prevention of injuries is also the subject of activity to many non-governmental organisations, especially those representing consumers’ rights.

In Poland, actions aimed at the prevention of injuries were comprised in National Health Programme for 2007-2015, both in strategic and operational objectives [2].

Prevention of injuries is a challenge and huge effort for all of us, requiring multi-segment actions, therefore the observed in the recent years initiatives seem right in order

to make safety the subject of common responsibility of governments, organisations and the whole society.

HBSC’s (Health Behaviour in School) research conducted every four years concerning health behaviour of children and school teenagers, pointed out to the relationship between those behaviours and incidence of injuries. Questionnaire interviews in this field in 1998 imply that every fourth pupil (24,1%) at the age of 11-, 13- and 15-years claimed that during the last 12 months they sustained at least one injury requiring medical help (hospitalisation, ambulatory assistance of doctor or nurse). In general, 425 students sustained any injury requiring or not requiring medical aid at the age group of 11- and 13-years. Moreover, some pupils have an inclination to repetitive injuries [1].

Frequency of injuries requiring and not requiring medical help depends on sex, age and place of residence of the injured. Boys are at higher risk of sustaining injuries that girls, whereas city-dwellers are at higher risk of injuries than countrymen. Injuries more often happen to older teenagers (13- and 15-year-olds) than 11-year-olds.

Table 1 presents students at the age of 11-, 13- and 15-years who sustained injury during the last 12 months according to their sex, age and place of residence [1].

TABLE 1. The proportion of 11-, 13- and 15-year-old pupils who sustained injury during the last 12 months.

	Injuries requiring medical aid (N=4861)		Injuries not requiring medical aid (N=3225)	
	Number	%	Number	%
Total	1171	24.1	1008	31.3
Boys	688	28.6	524	34.6
Girls	493	19.7	484	28.3
11-year-olds	317	19.5	441	27.1
13-year-olds	434	27.2	567	35.5
15-year-olds	420	25.7	-	-
City	848	24.9	742	32.7
Countryside	323	22.3	266	27.8

Taking into account the place in which most often children would sustain an injury, it was mainly school (26%), one’s own or somebody else’s house (25%) and street (road). Sport sites are also dangerous places. This situation is presented on Table 2 – places, where injuries happened to the pupils at the age of 11-, 13- and 15-years, index for 1000 students [1].

TABLE 2. The location of injury in 11-, 13- and 15-year-old pupils (index for 1000 of pupils).

	House	School	Street/Road	Sport site	Other places
Total	60	62	33	44	38
Boys	67	74	45	52	46
Girls	54	51	22	36	31
11-year-olds	50	51	20	33	36
13-year-olds	63	82	37	44	43
15-year-olds	68	54	43	54	37
City	51	67	39	43	44
Country	82	50	20	46	25

The relationship between frequency of injuries and family context, school situation, lifestyle, health self-esteem and some indices of psychological health of pupils were observed. An increased risk of injuries can also be observed among people inclined to aggression and auto destructive actions and on the other hand among people who are shy and rejected by peers.

For presenting the discussed relationship, some percentage data will be presented stating the degree of sustaining injuries by pupils at the age of 13- and 15-years [1]:

- General frequency of the injuries incidence – 24.1%;
- 43.2% of sustaining injuries among the pupils who got drunk more often than 10 times in their lives,
- 35.8% of pupils smoking cigarettes everyday,
- 51.2% among pupils who used anabolic steroids 3 or more times in their lives,
- 50% among pupils who abused inhalation-drugs 10 or more times in their lives,
- 37.1% among those unsatisfied with their lives,
- 38.9% of those feeling helplessness permanently.

The proved relationship between behaviour, family context and school situation, psychological health and frequency of injuries among the population of teenagers and distinctness of particular injuries, should be taken into consideration in preventive actions.

Innocenti Report, aiming to monitor the achievements of industrial countries in the field of satisfying children's needs, focuses on children's demises caused by body injuries. The first one included ranking of 26 richest countries according to the death rate caused by injuries among children, between the first and fourteenth year of age. In every industrial country injuries became the root cause of children's mortality. Formulated together according to all reasons, every year in OECD countries the injuries cause death to more than 20,000 children at the age of 1-14 years. The analysis of deaths caused by body injuries in industrialised countries has an important message for developing countries. Frequency of demises due to traffic accidents is far 5 times higher in Africa than in countries of European Union and 7 times higher than in India or in the USA. If all industrial countries had the same mortality rates of children dying due to injuries, just like the leading country – Sweden, it would be possible to prevent 12,000 demises of children yearly on average [8].

Below a table illustrating deaths caused by injuries in European Union and Central and West Europe will be presented.

If we wanted to compare data concerning injuries and demises of children residing in developing countries together with developed countries, some differences should be confirmed. Innocenti Reports focus their attention on problems of children in industrial countries. UNICEF by contrast realizes that 98% of deaths among children due to body injuries take place in developing countries. Statistical data from this region point out not only to bigger number of children but also higher risk factors. Per every 100,000 children who were born in OECD countries, less than 200 will die of body injuries before fifteenth year of age, in the developing world the respective number is 1000 [8].

Rich countries have recently faced another threat, in comparison to poor countries. In large part of contemporary developed countries parents are more and more aware

TABLE 3. Innocenti Report – injury-related deaths among children in selected countries.

Country	Children's death rate
Sweden	5.2
Great Britain	6.1
Italy	6.1
Holland	6.6
Greece	7.6
Denmark	8.1
Spain	8.1
Finland	8.2
Germany	8.3
Ireland	8.3
France	9.1
Belgium	9.2
Austria	9.3
Hungary	10.8
Slovenia	11.6
Slovakia	11.6
The Czech Republic	12.0
Poland	13.4
Portugal	17.8
Bulgaria	17.9
Lithuania	29.2
Romania	32.1
Estonia	33.2
Latvia	38.4

of danger of the surrounding world their children live in. Parents seem to protect their children too much in order to develop decent risk rate. Children overprotected by their parents become independent much later than their age mates from the previous epoch. Most of them are simply not aware of dangers of outer world. It can be implied that when they reach the level of independence, they will not possess most essential skills, in terms of danger evaluation and taking bigger responsibility for their lives. To exemplify this fact, the observations of the Company of Prevention of Accidents of the United Kingdom confirmed the surge in the number of children drowning in ponds, rivers and lakes, from year to year by 50%. Trying to explain the problem one of the spokesman of the Company said that such an unsettling surge of drowning is partly caused by "*inconsiderable level of estimation of risk among children. Today parents protect their children too much not allowing them to develop decent risk rate*" [9].

Threats to children's safety are more and more expressive and some organisations dealing with safety of children believe that parents are opting for overprotection – at the expense of child's freedom in increasing child's independent actions and taking such risk which is an integral part of the process of growing up.

Developed and launched by, inter alia the Centre of Public Health of Lublin, "Programme of Improvement of Medical Care in Educational and Background Environment" illustrates the situation applying to the incidence of injuries in school environment. Let us observe the data illustrating injuries in the population of children and teenagers: the number of injuries in school year 2003/04 totals 5,000 (1.5% of all students in Lublin Province); in 2004/05 – 5,200 (1.55%); in 2005/06 – 8,200 (2.27%), whereas in 2006/07 it was on the level of 7,700 (2.2%) of students [10].

Given the above data, it should be said that the percentage of students who sustained injuries at school in the past years keeps rising.

Injuries in the studied groups of children and school teenagers applied mainly to fractures, twists and dislocations of lower and upper limbs, as well as skull injuries.

As far as the places are concerned, those where most often accidents leading to injuries occurred were: school playground, gym hall and they were strictly connected with Physical Education classes. For a couple of years with reference to all types of school there is an obligation of reporting the data describing accidents on the school premises, with the usage of EN-6 form.

The real scale of tragedies of children's injuries should be measured both in respect of the number and the gravity – asking not only how many families face this problem but also how seriously? We should not treat injuries which children and teenagers do sustain as figures illustrating the statistics but try to look at them as an example of indescribable grief and suffering connected with child's death – and this cannot be measured any longer.

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Informacje o Autorach

Dr hab. n. med. prof. nadzw. UM PIOTR KSIĄŻEK – kierownik, lek. med. JOLANTA HERDA – asystent, Katedra Zdrowia Publicznego Uniwersytetu Medycznego w Lublinie, z-ca dyrektora, Lubelskie Centrum Zdrowia Publicznego w Lublinie.

Adres do korespondencji

Katedra Zdrowia Publicznego
Uniwersytet Medyczny w Lublinie
ul. Chodźki 1, 20-093 Lublin