

Analysis of sustained injuries among children in Wieluń District

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Summary:

Introduction. Injuries have been a global problem of medicine since the beginning of mankind. This particularly refers to the youngest individuals.

Aim of the work. The aim of this study was to analyze the injuries sustained in children, based on data from the Hospital Emergency Department at SP ZOZ Wieluń healthcare facility, which made it possible to find out more about this problem.

Material and methods. This analysis is based on data from medical records of the emergency service, surgical outpatient unit and emergency unit.

Results. The data were introduced into a spreadsheet and analysed quantitatively with correlations.

Discussion. A detailed analysis leads to a very important conclusion, i.e. the highest percentage of injuries among children occurred at school and at home, at places where in fact children should be taken care of by adults. **Conclusions.** Finding out more about the problem of injuries in children within a given area will enable individuals and institutions involved in the treatment and prevention to take targeted actions to improve the situation and reduce injury rates among children.

Key words: children, injuries in children, injuries.

Introduction

Injuries in children are one of the greatest problems of developed countries. Therefore, they cause more deaths in children than all other paediatric diseases in total. The data recorded by the Police Headquarters show that about 500 children are killed on the spot and nearly 10,000 are injured each year only in road accidents in Poland. Analyzing the data in terms of trimodal distribution of the time of death after injury shows that 50% of children are killed on the spot, while the overall number of deaths due to injuries caused during road events is 800

- 1,000 cases per year [6,12]. These figures are equivalent to the annual loss of population of 3-4 medium-sized schools.

It should be remembered that statistically, one fatal accident corresponds to dozens of new disabled individuals, hundreds of occupied hospital beds, several thousand visits to the admissions units and several months of inability to learn, which entails absenteeism of children's guardians at work. Taking into account a more detailed analysis, injuries usually result from: being hit by a car, knocking down of a cyclist and,

subsequently, injuries sustained by a passenger of the car involved in the accident. This group represents approximately 60% of all causes of injuries in children.

Others are due to falls from heights (trees, window, furniture), 25-30% of cases. We cannot forget those 10-15% of children who sustained injury at home. In this group burns, crushing and poisonings dominated. Therefore, knowledge of the circumstances and causes of injuries among children in a given area is an important element that makes it possible to create targeted prevention programs. Continuous decrease in the number of births should be a significant stimulus to actions aimed at reducing injury rates among children [1,3-5,10,14].

The statistics presented above led the authors to conduct a study on the number and characteristics of injuries that occurred in children in Wieluń city and district (province Łódź). In the commune of Wieluń there are the following schools: 12 primary schools, 4 lower secondary schools and 11 upper secondary schools. The calculations of the District Office of Wieluń, Faculty of Education, Culture, Sport and Tourism show that the total number of children living in this area is 14,376, out of whom 12,049 are children who receive their education at schools. Others are children of preschool age [9].

Aim of the work

The aim of this study was to analyze the following data: age and gender of children who sustained injuries, analysis of the location of injury, mechanism of injury, injury type and the range of activities performed by a witness on the spot.

Material and methods

The analysis of sustained injuries was based on data from the Independent Public Health Care Facility in Wieluń and Hospital Emergency Unit that operates at the hospital. Data collection was performed by entering codes in specially prepared cards from Surgery and Injury Outpatient Unit, admission area of the Hospital Emergency Unit, and cards used by Medical Rescue Teams while dealing with cases outside the hospital.

Results

The analysis of data from the Surgery and Injury Outpatient Unit included 1,652 cases seeking help. Out of the total number of admitted children, the largest group were boys, who constituted 1,048 cases. The remaining 604 cases were girls. When it comes to age, injuries dominated in the group of 14 year-olds (177 cases) and 16 year-olds (171 cases). The group of children at the age of 15, 12 and 13 years was similarly numerous (respectively 157, 152 and 149 cases). In all the described cases, blunt injury was the most popular (78.27%) in both boys and girls. Penetrating injuries constituted only 21.07% of all reports to the clinic. Particularly noteworthy is the analysis of the place and circumstances of injury, since in most cases the injury took place at home (33.72%) and school (33.17%), where children remain under adult supervision.

Public places (cinemas, swimming pools, shopping centres, etc.) and the street represented respectively 12.17% and 11.02% of cases. The mechanism that caused the highest number of injuries among children was one-level fall (1035 cases). Taking into account the location of the injury, which usually was secured in the clinic, the largest group were wounds of the upper limbs, followed by fractures of the upper limbs. The last element analysed by the authors was hypothetical determination of days on which the child should be excused from classes at the school with particular emphasis on physical education lessons. The obtained result amounts to a considerable number of 70 years.

The Hospital Emergency Unit has three medical rescue teams. Two of them work at the same unit, while the other one works at a sub-station located 23 km from Hospital Emergency Unit base. In the analysed group, these teams usually (75%) administered aid in the field to injured boys. The largest group among boys and girls were adolescents at the age of 18 (25.42%), 17 (22.03%) and 16 (11.56%) years. Other age groups constituted around 3% of all interventions. The team which reacted most often (61.86%) in all events was a resuscitation ambulance. It intervened most often in events which occurred in the streets of Wieluń (60.17%), while the second site of events was home (26.27%). In public places, injuries in children occurred in 8.17%.

The mechanism of injury causing 53.39% of all injuries was a communication event and, in 21.19% a fall. The foregoing material draws attention to the number of individuals that were under the influence of alcohol during the events, which could be a direct cause of their occurrence. This group included 15% of all children. The activities carried out by a medical rescue team on site were mostly the introduction of intravenous access (33.91%), dressing of the wound (23.56%) and immobilization of fracture (17.83%). In connection with injuries and accompanying pain, the teams administered mostly: Pyralginum inj. 1 g/2 ml (23.81%), Tramadoli hydrochloridum inj. 50 mg/ml (14.29%) and NaCl 0.9% 500 ml (14.20%). Other administered drugs included anti-oedematous medicines and sedatives in 2.5%. Most injuries were classified according to the code S 00, according to ICD - 10, as: S01, S09 in 39.59%. Other codes are associated with fractures of the upper and lower limbs.

After being provided with first aid, 68.64% of the injured children were referred and admitted to the paediatric surgery department. The remaining number of children was directed straight to the outpatient surgery and injury unit (21.19%), where after having the injury secured, they were referred for treatment in a regional outpatient facility. A small number of children remained in the observation unit for further diagnostics (8.47%), and 1.69% of children were sent to intensive medical care unit.

Like in the case of teams providing help in the field, in the emergency department most admissions concerned boys at the age of 18 years (60%), 17 years and 16 years (21.62%). Other age groups accounted for approximately 5% of cases. More than a half of children (57.43%) was transported by an emergency ambulance to the department, and about 42% reached hospital using their own transport (brought by the parents). The dominating injury in the children transported to the site was a blunt injury, both in boys and girls. Most of the injuries occurred in the street (35.81%) and at home (20.27%) as a result of a fall and road traffic injury - 39.86% and 37.84%, respectively. Many injuries resulted from violence against children (9.56%).

Very important for the authors was the information concerning the presence of a witness and the fact whether he/she provided first aid. Unfortunately, in almost a half (47.97%) of all data collected, there was no information on the presence of a witness. According to the available analyses, in 25% of cases a witness was present during the occurrence of an injury, and in 27.03% the witness was absent. The steps taken by casual witnesses included attempts to stop bleeding (9.46%) and placing the injured person in a safe position (4.73% of cases). Children who were provided with help in the emergency department were intoxicated in 10.81% of cases, which was found on the basis of breath smell and observation of their behaviour. In most cases, injuries of the head and fractures in the upper limbs were diagnosed, dressed and treated (S00 - 38%, S01 - 29%).

Discussion

In the presented material, a group of children from Wieluń district was analyzed. The age of children who sustained various injuries ranged from 1 day to 18 years. The collected data and the analysis showed that injuries were most frequent in the population of boys. This was true both for surgery and injury outpatient unit, emergency unit and medical rescue teams. The age group which was admitted, diagnosed and treated most frequently were 17- and 18-year-olds, who in most cases were provided help in connection with head injury. Only the surgery and injury outpatient unit treated usually injuries of the limbs, and then wounds and fractures. The described injuries resulted most often from a single-level fall or road traffic accident. One very important problem observed in the study was the fact that most injuries took place at home and at school, i.e. places where the child should be the safest and remains under supervision of parents or other adults.

Another observation was a very small number of cases in which witnesses provided first aid at the scene. In merely 10% of situations, a witness provided help to the child in the form of bleeding control. This indicates little knowledge of our society on the principles of providing first aid. It was observed that in about 15% of cases, the child was under the influence of alcohol

while sustaining injury, which could be the direct cause of its occurrence.

Conclusions

According to the WHO's (World Health Organization), the promotion of security is a complex process of coordinated action at different administrative levels. It begins with local activities followed by regional, national and international actions. Those involved in the promotion of safety are not only people associated with the medical environment, but also different types of communities, workplaces, schools and NGOs. Their activities include all efforts, jointly established and implemented to modify structures, the environment and human attitudes related to security in a particular manner. In Western countries, various prevention programs targeted at selected groups, types of accidents,

communities and age groups have been implemented in recent years. International experience shows that mono-disciplinary programs are not very effective. The need to integrate the activities of institutions involved in the promotion of safety at various administrative levels and regions was also demonstrated.

Only "massive" actions will result in the reduction of injury rates among children. However, one must bear in mind a very important fact, namely various specifics of injuries in particular regions of the country. Therefore, when taking any measures to improve general safety, one should know the situation in the area. This will enable creation of prevention programs with a wide range of possible implementation options. Effective policy in this area should be based on a wide scope of different preventive measures consistently applied in a coordinated manner for a long time. [2,7-8,11-13].

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