

CHARACTERISTICS OF TRAUMATISM IN THE CHOSEN POPULATION OF THE ŚWIĘTOKRZYSKIE PROVINCE IN THE YEARS 2010–2012

CHARAKTERYSTYKA URAZOWOŚCI WYBRANEJ POPULACJI W WOJEWÓDZTWIE ŚWIĘTOKRZYSKIM W LATACH 2010–2012

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ABSTRACT

Introduction. A growth in the incidence of traumas in the young population becomes a current challenge for the public health sector. Etiology of traumas, in which the main role is played by a lifestyle, makes us experience more and more frequent injuries during leisure time at home or outside.

Aim of the study. To assess the traumatic phenomenon in the chosen population of the Świętokrzyskie Province by correlating traumatism with age, gender as well as summer and winter seasons.

Material and methods. The study included the chosen adult population of the Świętokrzyskie Province in the 18–89 age range who in the years 2010–2012 sustained an injury of the locomotory system and reported to the Outpatient Ambulatory Clinic Artimed in Kielce. The research method was based on a diagnostic survey as well as on the analysis of medical documentation. Detailed analysis included the selected injuries of the musculoskeletal system and injuries of the bone fragments of the chest. This selection was dictated by the possibility of a clear diagnosis and treatment of injuries under conditions of the Outpatient Ambulatory Clinic Artimed in Kielce.

Results. In the years 2010–2012, the most common traumas were related to the young people (about 37% of patients). There were no significant differences observed in injury rates between men and women. The summer season was the season with a higher rate of the studied injuries. The most commonly injured areas were ankle and knee joints as well as wrist and hand areas. The dominant type of injuries was the ankle dislocation. The lowest rate of injuries related to the bone fragments of the chest and the elbow joint.

Conclusions. The problem of the incidence of musculoskeletal injuries among the younger population requires a systematic analysis of the epidemiological situation to be able to properly plan and implement preventive measures and organize an expert traumatic assistance.

KEYWORDS: traumatism, epidemiology.

STRESZCZENIE

Wprowadzenie. Rosnąca epidemiologia urazowości młodego społeczeństwa staje się aktualnym wyzwaniem dla sektorów zdrowia publicznego. Etiologia urazowości, w której główną rolę odgrywa styl życia, sprawia, iż co raz częściej urazów doznajemy podczas spędzania czasu wolnego w domu bądź poza nim.

Cel pracy. Ocena zjawiska urazowości wybranej populacji województwa świętokrzyskiego oraz charakterystyka urazowości w poszczególnych grupach wiekowych, w populacji kobiet i mężczyzn oraz w sezonie letnim i zimowym.

Materiał i metody. Badaniem objęto wybraną populację województwa świętokrzyskiego w wieku od 18. do 89. roku życia, która w latach 2010–2012 doznała urazu narządu ruchu i zgłosiła się do Poradni Ambulatoryjnej Przychodni Artimed w Kielcach. W badaniach posłużono się metodą sondażu diagnostycznego oraz techniką analizy dokumentacji medycznej. Szczegółowa analiza obejmowała wybrane urazy narządu ruchu oraz elementów kostnych klatki piersiowej.

Wyniki. W latach 2010–2012 urazowość najczęściej dotyczyła ludzi młodych (około 37% pacjentów). Nie zaobserwowano istotnych różnic w urazowości kobiet i mężczyzn. Sezon letni był sezonem o wyższym wskaźniku badanej urazowości. Do najczęściej kontuzjowanych obszarów należały staw skokowy, staw kolanowy oraz okolica nadgarstka i ręki. Dominującym rodzajem obrażeń były zwichnięcia stawu skokowego. Najniższy wskaźnik urazowości dotyczył elementów kostnych klatki piersiowej oraz stawu łokciowego.

Wnioski. Problem urazowości narządu ruchu wśród młodego społeczeństwa wymaga podejmowania systematycznej analizy sytuacji epidemiologicznej, by móc właściwie planować oraz realizować działania prewencyjne oraz organizować specjalistyczną pomoc pourazową.

SŁOWA KLUCZOWE: urazowość, epidemiologia.

Introduction

The recent years of the 21st century are considered to be the time of a constant progress in many fields of our

life. Intensified processes of urbanization, industrialization, technological development, new inventions change the nature and the way of everyday life. The reason for

a growth in the incidence of traumas is above all the change in behavior and attitudes towards health. The technological and economic progress, the lack of efficient rest, the pursuit of job or carefree behavior of drivers are only a few factors responsible for the increase in the accident rate within the society [1]. Apart from the global traumatism, mentioned above, more and more frequent injuries sustained during leisure time at home or outside are reported [2]. It is estimated that around one fifth of injuries are so called unintended or accidental injuries sustained in everyday life environment [3].

The phenomenon of growing traumatism is forcing the public health sector to undertake actions in order to provide specialized and multidirectional medical assistance in short time after trauma. Acquiring and developing the knowledge of epidemiology in terms of the accident rate seems to be the right way to plan and implement preventive measures and control the traumatism among the younger population.

The assessment of the phenomenon of traumatism in the chosen population of the Świętokrzyskie Province and the description of traumatism in the separate age groups, in the population of women and men in summer and winter seasons.

Material and methods

The research method adopted in this study was based on a diagnostic survey as well as on the analysis of medical documentation. Detailed analysis of the medical documentation of the Outpatient Ambulatory Surgical Clinic Artimed in Kielce in the years 2010–2012 was carried out. The medical documentation related to patients of both sexes in the 18–89 age range, living in the Świętokrzyskie Province, who in the years 2010–2012 sustained an injury and reported to the Outpatient Ambulatory Surgical Clinic Artimed in Kielce. Detailed analysis included the selected injuries of the musculoskeletal system and injuries of the bone fragments of the chest. This selection was dictated by the possibility of a clear diagnosis of injuries related to the skeletal system of the chest and limbs. The injuries were rated as follows:

- Fracture of the rib (ribs) – S22
- Fracture of the shoulder and arm – S42
- Dislocation of the shoulder girdle – S43
- Fracture of the forearm – S52
- Dislocation of the elbow joint – S53
- Fracture of the wrist and hand area – S62
- Dislocation of the wrist and hand area – S63

- Fracture of the shank including ankle – S82
- Dislocation of the knee joint – S83
- Fracture of the foot – S92
- Dislocation of the ankle – S93.

Results

Demographic description of the surveyed population in the Świętokrzyskie Province is presented in **Table 1**. The traumatism over the years 2010–2012 shows a tendency for growth in every age group. The young people are most exposed to injuries. In the year 2012 injuries of the musculoskeletal system and injuries of the bone fragments of the chest were reported in almost 37% of patients in the 18–29 age range and in every fifth patient in the 30–39 age range. There is a clear downward trend in the traumatism of older age groups. In the population of people in the 80–89 age range injuries of the musculoskeletal system and chest accounted for 2% of post-traumatic notifiability.

Table 1. Injuries of the musculoskeletal system and bone fragments of the chest in the separate age ranges

Age	2010		2011		2012	
	N	%	N	%	N	%
18–29	884	36.0	935	36.4	1006	36.7
30–39	449	18.3	546	21.2	555	20.3
40–49	335	13.6	340	13.2	351	12.8
50–59	420	17.1	365	14.2	415	15.1
60–69	231	9.4	222	8.6	254	9.3
70–79	98	4.0	105	4.1	112	4.1
80–89	39	1.6	59	2.3	47	1.7
Total	2456	100.0	2572	100.0	2740	100.0

Source: author's own analysis

The analysis of data related to the types of injuries of the surveyed population in the Świętokrzyskie Province has shown that the most frequent post-traumatic damage in the years 2010–2012 were dislocations (**Table 2**). In over 34% of people they related to an ankle. The other reason for frequent notifiability to an outpatient clinic were dislocations of the radiocarpal joint and hand area, which in the year 2012 were reported in over 14% of the surveyed population. Fractures accounted for a lower percentage of injuries of the surveyed population. In the year 2012 fractures most frequently related to the wrist and hand area bones and were reported in 9% of ambulatory patients. The smallest percentage of injuries, a bit over 1%, were diagnosed within the bone fragments of the chest and the elbow joint (**Table 2**).

Table 2. Types of injuries of the population in the Świętokrzyskie Province

Types of injuries	2010		2011		2012	
	N	%	N	%	N	%
S22	19	0.8	35	1.4	36	1.3
S42	54	2.2	45	1.7	57	2.1
S43	66	2.7	79	3.1	75	2.7
S52	219	8.9	237	9.2	221	8.1
S53	44	1.8	55	2.1	29	1.1
S62	272	11.1	252	9.8	246	9.0
S63	307	12.5	376	14.6	391	14.3
S82	75	3.0	94	3.7	119	4.3
S83	325	13.2	310	12.1	364	13.3
S92	187	7.6	196	7.6	226	8.2
S93	888	36.2	893	34.7	976	35.6
Total	2456	100.0	2572	100.0	2740	100.0

Source: author's own analysis

Over the years of the study no significant differences in traumatism between the population of women and men in the Świętokrzyskie Province were observed. Traumatism related to 49.1% of women and 50.9 % of men. These relations are shown in **Table 3**.

Table 3. Traumatism of the population of women and men in the Świętokrzyskie Province in the years 2010–2012

Gender	2010		2011		2012	
	N	%	N	%	N	%
Female	1184	48.2	1211	47.1	1343	49.1
Male	1272	51.8	1361	52.9	1396	50.9
Total	2456	100.0	2572	100.0	2740	100.0

Source: author's own analysis

Both in the population of women and men dislocations of the ankle constituted the main problem of surveyed traumatism. However, they related more frequently to the group of women. In the year 2012 dislocations of the ankle were diagnosed in 37% of women and in over 34% of men. The second most frequently registered post-traumatic damage was dislocation of the wrist and hand area. In the year 2012 they related to around 13 % of women and 15% of men.

The differences in traumatism trends of women and men are clearly seen among the registered fractures. Fractures of the forearm bones were reported almost three times more often in women than men, and they accounted for around 12% of traumatism in women and for 4% of traumatism in men. Whereas, men nearly two times more often than women reported to an outpatient clinic because of the fracture of the wrist and hand area (**Table 4**).

Damage within the bone fragments of the chest and dislocations of the elbow joint, which related to around 1% of people in each population, may be considered incidental results of traumas among women and men (**Table 4**).

Table 4. Types of injuries of women and men's population

Types of Injuries	2010		2010		2011		2011		2012		2012	
	F		M		F		M		F		M	
	N	%	N	%	N	%	N	%	N	%	N	%
S22	6	0.5	13	1.0	11	0.9	24	1.8	17	1.2	22	1.4
S42	34	2.9	20	1.6	31	2.6	14	1.0	29	2.2	28	2.0
S43	26	2.2	40	3.1	31	2.6	48	3.5	26	1.9	49	3.5
S52	140	11.8	79	6.2	153	12.6	84	6.2	158	11.8	63	4.5
S53	21	1.8	23	1.8	27	2.2	28	2.1	15	1.1	14	1.0
S62	87	7.3	185	14.5	75	6.2	177	13.0	65	5.8	181	13.0
S63	160	13.5	147	11.6	179	14.8	197	14.5	181	13.5	210	15.0
S82	28	2.4	47	3.7	50	4.1	44	3.2	63	4.7	56	4.0
S83	133	11.2	192	15.1	129	10.7	181	13.3	167	12.4	197	14.1
S92	92	7.8	95	7.5	96	7.9	100	7.3	125	9.3	101	7.2
S93	457	38.6	431	33.9	429	35.4	464	34.1	497	37.0	479	34.3
Total	1184	100.0	1272	100.0	1211	100.0	1361	100.0	1343	100.0	1396	100.0

Source: author's own analysis

In the years 2010–2011 the higher traumatism rate was observed in the summer season. However, already in the year 2012 the number of injuries of the adult population was comparable both in summer and winter seasons (**Table 5**). In both seasons the most frequently diagnosed post-traumatic damage was dislocation of the ankle. In the summer season dislocations of the ankle related to nearly 40% of people in each year (**Table 5**).

Table 5. Traumatism of the summer and winter seasons in the years 2010–2012

Season	2010		2011		2012	
	N	%	N	%	N	%
Summer	1279	52.1	1387	53.9	1369	50.0
Winter	1177	47.9	1185	46.1	1371	50.0
Total	2456	100.0	2572	100.0	2740	100.0

Source: author's own analysis

In the winter season dislocations within the knee joint area as well as dislocations of the radiocarpal joint and hand area prevailed, and were related to around 14% and 15% of the surveyed population respectively. In both seasons around 9% of ambulatory patients were treated due to the fractures of wrist and hand bones. Damage of the bone fragments of the chest and dislocations of the elbow joint accounted for around 1% of the diagnosed traumas in each season (**Table 6**).

Table 6. Injuries in the summer and winter seasons in the years 2010–2012

Types of injuries	2010		2010		2011		2011		2012		2012	
	S.		W.		S.		W.		S.		W.	
	N	%	N	%	N	%	N	%	N	%	N	%
S22	12	0.9	7	1.0	13	0.9	22	1.9	18	1.3	18	1.3

S42	28	2.2	26	2.2	20	1.4	25	2.1	21	1.5	36	2.6
S43	22	1.7	44	3.7	37	2.7	42	3.5	35	2.6	40	2.9
S52	100	7.8	119	10.1	116	8.4	121	10.2	95	6.9	126	9.2
S53	20	1.6	22	2.0	28	2.0	27	2.3	14	1.0	15	1.1
S62	141	11.0	131	11.1	133	9.6	119	10.0	128	9.3	118	8.6
S63	153	12.0	154	13.1	175	12.6	201	17.0	181	13.2	210	15.3
S82	37	2.9	38	3.2	42	3.0	52	4.4	53	3.9	66	4.8
S83	157	12.3	168	14.3	181	13.1	129	10.9	169	12.4	195	14.2
S92	109	8.5	78	6.6	117	8.4	79	6.7	131	9.6	95	6.9
S93	500	39.1	385	32.7	525	37.9	368	31.0	524	38.3	452	33.1
Total	1279	100	1177	100	1387	100	1185	100	1369	100	1371	100

Source: author's own analysis

Discussion

The results of conducted research have shown that over the years 2010 – 2012 the surveyed traumatism relate mostly to the young population of the Świętokrzyskie Province. Injuries of the musculoskeletal system constitute one of the major cause of the adult population reporting to the Outpatient Ambulatory Surgical Clinic Artimed in Kielce. Dislocations of the ankle are among the most frequently diagnosed post-traumatic damage. Fractures constitute a smaller percentage of surveyed injuries. In women fractures of the forearm bones prevail while in men fractures of the wrist and hand area bones are most frequently reported. The smallest percentage of injuries accounted for the damage within the bone fragments of the chest and dislocations of the elbow joint. No significant differences in traumatism between the population of women and men and between the summer and winter seasons were revealed.

Garlicki J. in his article describes the problem of a growth in the incidence of traumas in the adult population. The reason for this phenomenon according to the author is the change in lifestyle and showing risk behavior in everyday life [1]. Apart from global traumatism caused by changes in the socio – cultural sphere, injuries sustained in the nearest surroundings are more and more frequently reported. It is estimated that around one fifth of injuries are so called accidental injuries sustained in everyday life environment [3].

The Central Statistical Office (GUS) data from the year 2012 show that in Poland accidents account for nearly 60% of all deaths. In the EHIS study carried out in Poland (EHIS – European Health Interview Survey) the incidence of traumas during the last 12 months was investigated. The study has shown that every 20th Pole sustains an injury, and those injuries are more frequently registered in the group of men than women. It is also documented that most frequently (in over 925 thousand persons) an injury was sustained at home or during leisure time [4]. The GUS survey study of health protection on farms has shown that men two times more often

(8.5%) required post-traumatic assistance in a stable medical institution than women (4.1%) [5]. Citing the GUS once again, it needs to be emphasized that the external injuries most frequently relate to the population of people in the 15–50 age range, similarly to the situation among the population of the Świętokrzyskie Province [6].

According to the European Statistical Office (Eurostat) in the year 2012 up to 153 thousand people died of sustained trauma, which accounted for 3% of the total mortality. Higher rates of post-traumatic mortality characterized more often the group of men (3.7%) than women (2.4%) [7].

The EHIS study carried out in the years 2006–2010 within the population of EU member countries has shown that traumatism sustained at home, at school or during physical activities relates to around 3.5% of the population, among such countries as Greece, Poland or Cyprus. The high traumatism rate, around 7.5% related to Slovakia, Czech Republic and Slovenia, in which it amounted to 8%. The study has also revealed that there is no significant difference in traumatism between the population of women and men, however it is more frequently observed in the group of men. According to the EHIS study, injuries sustained during everyday activities at home or outside demonstrate a tendency for growth in the 15 – 34 age range groups. This study revealed the high traumatism rate in people at the age of 75 or more, which characterized Poland and some other countries [4].

According to the WHO data, the external injuries are the cause of 5 million deaths yearly and account for 9% of the mortality all over the world [8, 9]. The fact that traumas most frequently relate to people in the productive age who are socially and vocationally active is an alarming phenomenon. The young men are a group which is especially prone to traumas. By the way, it should be emphasized that traumas are also the cause of different types of disabilities both permanent and temporary [8, 9, 10, 11].

Similar research, describing the traumatism in the adult population, was carried out in the year 2006 in one of the departments of the 6. Military Hospital in Dęblin. The results of this research showed the similar layout of traumas among the population in the separate age groups, i.e. high frequency of the incidence of traumas in the young people group and a very small number of injuries among people over 80 years of age [12].

As the analysis of own research shows dislocations of the ankle were the most frequent post-traumatic damage in the surveyed population. The authors of other studies show the strong correlation between the ankle joint injuries and the physical activity. They point out that the ankle joint contusions most frequently re-

late to the young people who display different forms of physical activity. It is estimated that acute ankle joint injuries relate to the group of young sportsmen in the 10–30% range [13,14]. According to some researchers, the ankle joint injuries in western countries relate to 1 out of 10.000 inhabitants, whereas among active people these indicators are higher [15].

Own research has shown that the smallest percentage of diagnosed traumas, a bit more than 1%, related to the damage within the bone fragments of the chest and the elbow joint. As the specialist literature states, the chest injuries and the multiorgan trauma often overlap, while the multiplicity of accompanying complications constitutes a potential life threat. According to the statistical data, the chest injuries account for 1,6–16% of all body injuries. The low incidence of the chest and the elbow joint damage presented in the study results mainly from the limited diagnostic and medical capacities of the Outpatient Ambulatory Surgical Clinic Artimed in Kielce. Due to the nature of accompanying complications, the chest injuries required specialist in-hospital medical treatment [16, 17].

On account of the complexity of trauma and the specificity of the structure, the elbow joint damage belongs to the injuries requiring in-hospital care in the rescue unit [1]. According to Lasanianos N. and Garnavos Ch. [18] the elbow dislocations, which are registered with a similar frequency in the population of both women and men, constitute the second most common trauma of big joints [19].

Conclusions

1. Young men who are socially and vocationally active are a group which is especially prone to traumas.
2. Gender of the respondents as well as seasons of the year do not influence the traumatism rates.
3. It is advisable to intensify preventive measures based on knowledge and the results of current research in order to create prophylactic programs directed to the social groups which are most exposed to traumatism.

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