

Chair and Department of Epidemiology, Skubiszewski Medical University of Lublin

IRENA DOROTA KARWAT, PAWEŁ KALINOWSKI

*The analysis of the causative factors and types of traumas
in disabled inhabitants of rural areas in Poland*

In Poland traumas, accidents and intoxications are one of the main medical as well as social problems of the end of the previous and in the current century. Together with the civilization progress, in the past 30 years there has been constantly increasing the number of traumas in the Polish population. The position of Poland among European countries is high as far as the number of accidents, the severity of trauma and death rates are concerned. According to the studies carried out by the Main Statistical Office in Poland it can be concluded that trauma is the second reason of disability after diseases and concerns about 11% of the disabled persons. It should be underlined that for many years the subjects of traffic accidents have been inhabitants of urban regions in comparison with the rural population, and nowadays these proportions are similar. The progress in such domains as mechanization in agriculture, chemistry, apart from obvious advantages, is a serious threat to health and lives of their users. Traumas are a problem of the public health and therefore, in its solving there should take part such specialists as doctors, teachers, social workers, policemen, playing grounds designers, architects, scientists working in the field of work safety.

From the available epidemiological data it can be concluded that accidents and intoxications are the third cause of death in the Polish population (about 10%). They concern mainly people aged 5–39 years. It should be noted that mortality of infants and adolescents aged 5–19 caused by trauma comprises 57% of death cases in this age group. In the past 20 years there has been carefully studied the phenomenon of excessive mortality of men caused by trauma and intoxications. They are mainly young men aged 25–34, whose mortality rates are seven times higher due to this reason than those of women in the same age group. Every fourth death due to external trauma and intoxication was the after-effect of traffic accidents. The accidents are characterized by high death rates in Poland – 12 deaths per 100 accidents in comparison with the countries of the European Union – 3.5 deaths per 100 accidents (5).

Work in private farms is characterized by some distinctions which are characteristic of this environment. However, so far no definite criteria have been given for classification of some types of traumas, that is what types of trauma could be treated as professional trauma in farmers and which not. There are numerous causes of accidents and intoxications in the rural population. They can be divided into accidents typically connected with carried out work in the farm, that is household, maintenance of animals, farming, falls, accidents in the farmyard, traffic accidents and other unfortunate accidents: jumps into the water, use of firearms, accidents caused by aggression often treated as criminal incidents. Intoxications are caused mainly by accidental or suicidal drinking of chemical substances used in agriculture.

MATERIAL AND METHODS

In the paper there are presented main results of the studies on the group of the disabled persons proceeding from four research programmes. The first group consisting of 1,666 persons were the disabled included in the programme of target studies. The examinations were carried out in 1987 in two regions of Poland, that is in a rural area (Lublin voivodeship) and in an industrialized area (Katowice voivodeship). The second group comprised 1,491 disabled persons separated from the studied population in the nationwide survey of the state of health of the rural population. This study was carried out in whole Poland in 1990 by the employees of Agricultural Medicine Institute. The third group are 334 persons from four communities of the Lublin voivodeship (Dubienka, Goraj, Ostrówek and Wojciechów). The fourth group consisting of 362 disabled were persons included in the prophylactic examination in a rural area of prevention and therapy – Ostrówek community in the Lublin voivodeship. The studies were carried out by the means of Medical examination sheet (physical examination and medical history), Environmental study sheet, The disabled persons sheet. Those were the research tools elaborated especially for the needs of every study. By means of statistical methods the data were analyzed statistically.

RESULTS

There were presented only selected results of the studies from numerous analyzed medical and social characteristics of the disabled persons in all study programs. In the four studied populations of the disabled there differed the percentage of people who underwent trauma, which sequels required medical intervention. The nature of the trauma being the causal factor of the disability was diverse depending on the place of residence, gender, age, level of education as well as type of occupation of the examined persons.

In Table 1 there is presented the structure of the disabled according to gender and frequency of traumatic accidents. In all the studied populations women outnumbered men, however, men were more often subjected to trauma. In the following studies there increased the number of people who underwent trauma as a result of traffic accidents.

Table 1. Structure of disabled persons participating in four investigation programmes by gender and types of traumas

Type of study		Gender		Accidents		Total
		men	women	yes	no	
Target study in two regions of Poland (agricultural and industrialized) – 1988	N	670	996	621	1045	1666
	%W	40.2	59.8	37.3	62.7	100.0
	%K	40.0	45.7	49.5	40.2	43.3
Nationwide survey of the health status of the inhabitants of the rural areas – 1990	N	712	779	432	1059	1491
	%W	47.8	52.2	28.9	71.1	100.0
	%K	42.5	35.8	34.5	40.7	38.7
Selected four communities of the Lublin voivodeship – 1999	N	144	190	88	246	334
	%W	43.1	56.9	26.4	73.6	100.0
	%K	8.7	8.7	7.1	9.5	8.7
Prophylactic examination of the health status of one community of the Lublin voivodeship – 2000	N	147	215	112	250	362
	%W	40.6	59.4	31.0	69.0	100.0
	%K	8.8	9.8	8.9	9.6	9.3
Total	N	1673	2180	1253	2600	3853
	%W	43.4	56.6	32.5	67.5	100.0

In the target studies there should be underlined the fact that traumas were the cause of the disability of different numbers of people – from 5.0% to 36.8% of the studied populations. This reason of

handicap almost twice as often concerned the inhabitants of the rural areas (16.5%) than countryside residents living in highly industrialized regions (8.5%). Among all the studied groups of the disabled in this population, the number of people after post-traumatic amputations of the upper or lower limb (19 persons – 1.1%). The reasons of trauma were: crushes, incompetence in operating simple agricultural and other machines, electrocution, traffic accidents and accidents at work in industrial plants (4). Among the disabled in the nationwide survey the countryside residents not working in agriculture were more often subjected to trauma (51.7%) than farmers (48.3%). Twice as often they were men (66.9%) than women (33.1%). The majority of people in every research programme (from 52.0% to 64.9%) were legal invalids, that is the group of invalidity or the degree of disability was stated. In Table 2 there is presented information on the location of the underwent trauma in the body, according to gender and type of occupation on the basis of the representative nationwide survey. From the analysis of the presented data it can be concluded that apart from burns and electrocution, all other types of trauma significantly more often affected men.

Table 2. Types of trauma by types of disability, gender and occupation

Location of trauma		Men	Wom.	Agric.	Non-agr.	Total
Trauma of pelvis and lower limbs	N	94	45	61	78	139
	%W	67.6	32.4	43.8	56.2	
	%K	32.5	31.5	29.2	34.9	32.2
Trauma of shoulder girdle and upper limbs	N	77	23	42	58	100
	%W	77.0	23.0	42.0	58.0	
	%K	26.6	16.1	20.1	26.0	23.1
Head and neck trauma	N	58	26	35	49	84
	%W	69.0	30.9	41.6	58.3	
	%K	20.1	18.2	16.7	21.9	19.4
Multiple site trauma, multiple organ trauma, general contusions	N	40	23	39	24	63
	%W	63.5	36.5	62.0	38.0	
	%K	13.8	16.1	18.6	10.7	14.5
Thoracic trauma	N	38	11	28	21	49
	%W	77.5	22.5	57.2	42.8	
	%K	13.1	0.8	13.3	9.4	11.4
Burns, electrocutions, and other	N	9	15	15	9	24
	%W	37.5	62.5	62.5	37.5	
	%K	0.3	10.5	7.2	4.0	5.5
Spine injuries	N	12	4	13	3	16
	%W	75.0	25.0	81.3	18.7	
	%K	0.4	0.3	6.2	1.3	3.7
Not specified	N	5	4	7	2	9
	%W	55.5	44.4	77.7	22.2	
	%K	0.2	0.3	3.3	0.8	2.1
Total *	N	289	143	209	223	432
	%W,C	66.9	33.1	48.3	51.7	
	%K	100.0	100.0	100.0	100.0	100.0

* The total number of the disabled is higher than the number of the studied persons as 44 persons underwent trauma more than once in the past

Among the causes of trauma there were distinguished the following groups: 1. falls from heights, 2. incompetence in operating machines, 3. slips and falls, 4. traffic accidents, 5. trauma caused by farm animals, 6. Intoxications, 7. electrocution, burns caused by boiling water and chemical substances, frostbites, fights, lightning electrocution as well as war trauma. The persons after spine injuries comprise a relatively small group (3.7%) in comparison with the patients examined after other types of trauma, however their medical and social problems are complex, mostly more complicated and often specific. The circumstances of these traumas are mainly falls from heights and traffic accidents.

From the analysis of the data presented in Table 3 it can be concluded that most often the place of accident were farmyard and household. In the second place it was the field during farming, including use of beasts of burden and machines. In the prophylactic examinations carried out in 2000 the number of persons who underwent traffic accidents almost doubled in comparison with previous studies.

Table 3. Traumas by place and types of accidents – investigation in one administrative district in the Lublin voivodship

	Place of trauma				Total
	field	farmyard and household	road	other	
Fall from height	6	20	-	-	26
Operating machines and devices	11	14	3	-	28
Traffic accidents	-	-	17	-	17
Blows and crushes	5	8	-	-	13
Farm animals	4	10	-	-	14
Burns and electrocution	2	8	-	-	10
Slips and falls	4	7	-	-	11
Intoxications	3	4	-	4	11
Other	-	-	-	2	2
Total*, **	30 (35)	60 (71)	18 (20)	5 (6)	112 (132)

* The total number of the disabled is higher than the number of the studies persons as 30 persons underwent trauma more than once in the past

** In the brackets there is given the number of persons who underwent trauma in the specified place

The analysis of the results of the studies on trauma and its sequels shows that among the inhabitants of the rural areas there appear diverse reasons and types of trauma. They depend on the occupation, age, level of education as well as degree of mechanization in the farm and the household. In the presented paper such data are not analyzed.

DISCUSSION

On the basis of the own material and research of other authors it can be concluded that the majority of traumas occurs in the farmyard, followed by the fields. From the analysis of the own data it results that men are more often subjected to trauma than women. Similar results were obtained by Karski and Muniak (3, 6). According to Godlewski (2), the treated men after trauma in the farm comprised 92.0% of the general studied population. Such data are also published by the Agricultural Social Insurance Fund and Social Insurance Institution. In the countryside there are also noted increasing numbers of traffic accidents and traumas. It is connected not only with a high number of motor vehicles

in the roads, mainly expressways, but also with the lack of mass health promotion and prophylaxis in this field. Due to trauma and accidents many inhabitants of the rural areas become disabled, as trauma in agriculture is often severe and its sequels irreversible. Long-standing and permanent disability concerns about 40% of the injured (7). Many researchers underline that in the coming decades the issues of the motion system are one of the main threats for the health status not only of our society, but worldwide population, as well. The seriousness of this problem is emphasized by the fact that on January 13th, 2000 the Secretary General of the United Nations and World Health Organization declared the decade 2000–2010, the decade of “bones and articulations” (1). Among the reasons of the dysfunction of the motion system there predominate: diseases of the articulations, trauma, genetic malformations and neoplasms.

CONCLUSIONS

1. On the basis of the analysed results of studies of the individual groups of the disabled persons it was stated that traumas were the second group among the causes of the disability.

2. The health problems connected with undergone trauma significantly more often concerned men than women.

3. The extent of disability caused by trauma in all the studied populations ranged from 5.0% to 36.8%. About 30% of the patients underwent more than one trauma.

4. From the analyses it results that types of trauma characteristic of farmers are: multiple site trauma and general contusions, thoracic trauma, burns and electrocutions as well as spine injuries. Non-farmers more often underwent such trauma as pelvic and lower limbs trauma, upper limbs trauma and head trauma.

5. In the years 1988–2000 there was observed first a decrease followed by the increase in the number of persons who were subjected to trauma. The largest group of the injured parties comprised the persons examined in 1988 (37.3%). In the following studies the percentage of the total number was lower, that is 28.9% in 1990, and 26.4% in 1999. In 2000 this group comprised 31.0%. From the total number of 3,853 examined persons 1,253 underwent trauma, that is 32.5%.

REFERENCES

1. Garlicki J. et al.: Epidemiologia urazów jako problem III tysiąclecia. Nowa Medycyna, <http://WWW.borgis.pl/ortopedia/07.html> 2002.
2. Godlewski P.: Urazowość wśród rolników w gospodarstwach rodzinnych Lubelszczyzny. In: Choroby zawodowe i parazawodowe w rolnictwie, J. Zagórski (ed.), IMW, Lublin 2000.
3. Karski J. B.: Promocja zdrowia a wypadki, urazy i zatrucia. In: Promocja zdrowia, J. B. Karski, (ed.), 120, Wyd. IGNIS, Warszawa 1999.
4. Karwat I. D.: Ocena stopnia realizacji potrzeb w zakresie rehabilitacji medycznej, społecznej i zawodowej osób niepełnosprawnych ze środowiska wiejskiego, z dysfunkcjami narządów ruchu. Raport końcowy. IMW, Lublin 1990.
5. Majcher P. et al.: Zasady wczesnej rehabilitacji medycznej pacjentów po urazach kręgosłupa bez uszkodzenia OUN. In: Niepełnosprawność i rehabilitacja osób dorosłych jako problem medyczny i społeczny w Polsce, I. D. Karwat. (ed.), Wyd. Liber, 1, 419, Lublin 2002.

6. M u n i a k J.: Analiza rodzaju i skutków medycznych urazów odniesionych przez rolników hospitalizowanych hospitalizowanych powodu wypadków przy pracy na roli w latach 1980–1984 w Szpitalu Zespołu Opieki Zdrowotnej w Zakopanem. Zdr. Publ., 101, 579, 1990.
7. S k w a r c z A., K a r w a t I. D.: Urazowość jako przyczyna niepełnosprawności u rolników. In: Rehabilitacja narządów ruchu w środowisku wiejskim, M. Latański, I. D. Karwat, A. Kosiniak-Kamysz (ed.), IMW, Lublin 1994.

SUMMARY

Traumas, accidents and intoxications are one of the main medical as well as social problems of the end of the previous and the present century. The number of accidents in the rural areas has been rising for the past 20 years. Little or lack of knowledge on protection of the own health against traumas, accidents and intoxications, as well as incidents such as electrocution or drowning, is a considerable problem. The study comprised 3,853 disabled persons and was carried out on the basis of physical examination (File of medical examination, File of environmental studies, File of the disabled). There were carried out statistical analyses concerning relationships of age, gender, employment, level of education and health state. The results of the studies conducted in the years 1987–2000 testify to the fact that among numerous reasons of trauma, there predominate falls, accidents connected with operating machines and appliances, mainly electric, road accidents, blows and crushes, contact with farm animals as well as electrocution and resulting burns. The most common sequels of accidents is trauma to lower extremities, upper extremities, head, thorax, spine, multiple trauma and general contusion.

Analiza przyczyn i rodzajów przebytych urazów wśród niepełnosprawnych mieszkańców wsi w Polsce

Urazy, wypadki i zatrucia są obecnie jednym z głównych problemów medycznych, a także społecznych. Polska wśród krajów europejskich zajmuje wysokie miejsce, jeśli chodzi o liczbę wypadków, stopień ciężkości urazów oraz liczbę zgonów z powodu ich następstw. Od około dwudziestu lat wzrasta liczba wypadków na wsi. Zagrożenia zdrowia i życia w tym zakresie wpływają głównie z nieodpowiedniego korzystania z osiągnięć określanych postępem cywilizacji (mechanizacja rolnictwa, motoryzacja, elektromechanika), nieumiejętnego posługiwania się prostymi narzędziami rolniczymi i innymi, małych umiejętności w zakresie obsługi zwierząt hodowlanych i braku wiedzy na temat poruszania się po drogach, szczególnie szybkiego ruchu. Dużym problemem jest brak lub niewielka wiedza wśród mieszkańców na temat ochrony zdrowia przed urazami, wypadkami i zatruciami, a także nieszczęśliwymi wypadkami, jak rażenia prądem, utonięcia. Badania przeprowadzono łącznie na grupie 3853 osób niepełnosprawnych, opierając się na badaniach podmiotowych i przedmiotowych (Karty badań lekarskich, Karty badań środowiskowych, Karty dla osób niepełnosprawnych). Przeprowadzono analizy statystyczne m.in. pod względem zależności dotyczących wieku, płci, rodzaju zatrudnienia, poziomu wykształcenia, stanu zdrowia. Z przeprowadzonych badań na przestrzeni lat 1987–2000 wynika, że wśród wielu przyczyn urazów dominują upadki z wysokości, prace związane z obsługą maszyn i urządzeń, głównie elektrycznych, wypadki komunikacyjne, uderzenia i przygniecenia, kontakt ze zwierzętami hodowlanymi oraz oparzenia i rażenia prądem. Najczęściej skutkami wypadków są urazy kończyn dolnych, kończyn górnych, głowy, klatki piersiowej, kręgosłupa, urazy wielomiejscowe i ogólne potłuczenia.