

**SOME CHARACTERISTICS OF OCCUPATIONAL INJURIES  
IN THE AUTONOMOUS PROVINCE OF VOJVODINA  
(YUGOSLAVIA) IN THE PERIOD 1975-1977**

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**ABSTRACT**

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Data on occupational injuries in the Autonomous Province of Vojvodina between 1975 and 1977 were taken from the Province Register and, as regards frequency and weight indices, analysed according to I.L.O. formulas.

The results of our study showed a slight trend towards an increase in the number of accidents at work, with the number of accidents at the workplace decreasing and the number of road accidents increasing. The decrease of traumatism at the workplace is due to the introduction of safety measures. However, in the groups of activities where before the increased mechanization of the working processes accidents did not represent a problem (food production, agriculture, etc.) the frequency of traumatism increases.

The data presented show that occupational injuries pose a constant problem which requires close collaboration of the health service, of those concerned with health protection in working organizations, and of social authorities in planning protection measures and legislation for occupational protection.

A diversity of the criteria and definitions of accidents at work in different countries is another insufficiently solved problem which negative consequences affect both the individual and the society on the whole. This problem is current, particularly in the time of great migration of workers.

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The application of modern technology, mechanization and automation and wide use of safety measures have not markedly decreased accidents at work. The problem of occupational traumatism is still present and is a major medical and social problem.

According to Yugoslav legal regulations as an accident at work is regarded any accident occurring at the workplace, on the way from home to the workplace or back, and accidents on business trips. The problem is increasingly present due to the rapid increase in the number of motor vehicles, the accelerated pace of modern living, and the growing new requirements at the workplace and outside it. Solution of the problem is hampered by other existing problems such as obsolete technology, limited working place, insufficient protection, inadequate

skill of workers, failure to observe safety measures, rejecting attitude towards equipment for personal protection, etc. In order to protect the health of workers and employees and the living environment in general, in Yugoslavia registration of accidents at work has been made compulsory. Great attention is paid to the problem of protection, and considerable funds have been invested for the purpose. In Vojvodina, a Register of Accidents at Work and Occupational Diseases has been introduced and is kept by the health service.

Since investigation of accidents at work provides the scientific basis for their prevention, an analysis has been carried out in order to establish certain characteristics of traumatism in Yugoslavia.

#### METHOD

An analysis was made of every accident at work recorded by the Province's Register of Accidents at Work. The data were analysed and coded according to the accepted code system and then computerized according to a previously established programme. Only a part of the obtained results is presented. For the calculation of frequency and weight indices we used the formulas of I.L.O. (International Labour Organization). In order to calculate the realized working hours, an annual average of 1911 hours per employee was taken. The number of days lost was obtained from the statistics of the Public Health Institute.

#### RESULTS AND DISCUSSION

Table 1 shows the number of employees and the number of accidents in Vojvodina from 1975-1977 according to sex. The number of employees of both sexes can be seen to increase, with a slightly higher percent share of female employees. The share of women is smaller in total traumatism than in total employment.

TABLE 1  
Number of employee and number of injured in accidents at work in Vojvodina from 1975-1977 (annual average).

		Year		
		1975	1976	1977
Men	Employees	317 100	326 200	329 330
	Injured	22 726	24 888	26 618
Women	Employees	163 400	170 400	172 404
	Injured	3 756	4 494	3 807

Table 2 presents the number of the injured and killed in Vojvodina. The number of injured persons per 1 000 workers is on the increase, with more injuries among male workers.

TABLE 2  
Number of injured per 1 000 employees and number of killed per 1 000 injured in Vojvodina from 1975–1977.

Year	Sex	Injured		Killed	
		N	per 1 000 employees	N	per 1 000 injured
1975	Men	22 726	71.6	47	2.07
	Women	3 756	22.9	4	1.06
	Total	26 482	55.1	51	1.92
1976	Men	24 888	76.3	54	2.17
	Women	4 494	26.4	3	0.67
	Total	29 382	59.2	57	1.94
1977	Men	26 618	80.8	68	2.55
	Women	3 807	22.1	15	1.31
	Total	30 425	60.6	73	2.40

Frequency and weight indices and the average duration of sick-leave per injured person and employee are presented in Table 3. The frequency index shows a tendency towards a mild increase; especially among men it is higher than is regarded satisfactory (IF < 20). The weight index of traumatism shows an even trend at a level below 1 for both sexes. The average duration of sick-leave per one accident is longer in the case of women and ranges from 24 do 28 days; the

TABLE 3  
Frequency index (FI), weight index (WI) of traumatism and average duration of sick-leave per injured person and per employee in Vojvodina from 1975–1977.

Year	Sex	FI	WI	Average duration of sick-leave (days)	
				per injured person	per employee
1975	Men	37.503	0.929	24.78	1.78
	Women	12.029	0.334	27.77	0.64
	Total	28.840	0.726	25.50	1.39
1976	Men	39.925	0.868	21.73	1.66
	Women	13.801	0.334	24.21	0.64
	Total	30.961	0.684	22.11	1.31
1977	Men	42.29	0.889	21.03	1.70
	Women	11.55	0.331	28.68	0.63
	Total	31.73	0.698	21.99	1.33

average duration of sick-leave per one employee due to work accident was 1.39 days in 1975, i.e. 1.78 days per employed man and 0.64 days per employed woman.

The percentage of workers injured at the workplace decreases while that of workers injured in road accidents increases. As can be seen, there is a bigger percentage share of women in road accidents, especially in those occurring on the way from home to the workplace or back and considerably less on business trips.

The reason for this can only be speculated about. One of the reasons may be the fact that fewer women than men are employed in activities with high risks or increased risk of accidents, and that women are usually employed in jobs that fit better their psychophysical and biological characteristics. However, more women than men are victims of traffic accidents.

Young workers of 20 to 25 years of age account for the highest percentage of the injured. In agriculture, it is mostly persons in the age group of 40 to 45 years that get injured most frequently. This corresponds with the age structure of workers, with older age groups prevailing in agriculture.

Analysis of traumatism according to branches of activity for 1975 shows great differences in accident rates – from 2.3% in crude oil production and processing to 24.9% in metal production and processing. The frequency of accidents in other activities is as follows: in the metal industry 14.8%, shipbuilding 14.8%, wood and timber industry 9.7%, construction 8.9%, food industry 6.4%, transport 6.4%, agriculture 5.4%, textile industry 4.0%, etc. Comparing the data for 1975 with those for 1976 and 1977, one can see that in some branches of activity the accident rate is decreasing, while in others it is rising, as for example, in the wood and timber industry, in food production, agriculture, etc. The number of individuals with accidents at work according to place of occurrence is shown in Table 4.

TABLE 4  
Injured individuals in accidents at work in Vojvodina from 1975–1977 according to place of occurrence of traumatism.

Year	Sex	All injured N	At workplace		On the way to and from work		On business trip	
			N	%	N	%	N	%
1975	Men	22 726	21 000	92.4	1 275	5.6	451	2.0
	Women	3 756	2 999	78.8	713	19.0	47	1.3
	Total	26 482	23 996	90.6	1 988	7.5	498	1.9
1976	Men	24 888	22 352	89.8	1 768	7.1	768	3.1
	Women	4 494	3 431	76.4	1 009	22.5	54	1.2
	Total	29 382	25 783	87.8	2 777	9.5	822	2.8
1977	Men	26 618	23 752	89.2	2 043	7.7	823	3.1
	Women	3 807	2 871	75.4	842	22.1	94	2.5
	Total	30 425	26 623	87.5	2 885	9.5	917	3.0

The rate of accidents at the workplace varies ranging from 80.8% in the printing industry to 97.8% in the non-metal industry. The proportion of accidents on business trips ranges from 0.49% in the non-metal industry to 10.8% in the electrical industry. The highest percentage of road accidents occurring on the way to and from the workplace was registered in the printing industry (16.5%) and the lowest in the non-metal industry (1.7%). In agriculture 91.2% of the accidents were registered at the workplace, 7.3% on the way to and from work, and 1.5% on business trips.

The causes of accidents are divided into 26 groups according to the accepted classification; 15 of the most frequent groups of causes are listed in Table 5. The most frequent causes are in the group "irrational method of work". If badly organized work is added to this, the predominance becomes even more convincing. Fatigue due to overtime work ranks second with 14.6%, followed by ignoring or violating rules with 14.0% (in 1975).

Other causes such as defective machines and equipment, breakdowns in the technological process, faulty electrical equipment, etc., account for a small percentage, but show an upward trend. Lack of protective equipment as the

TABLE 5  
Individuals injured at the workplace in Vojvodina from 1975-1977 according to cause of traumatism.

Cause	Year					
	1975		1976		1977	
	N	%	N	%	N	%
Irrational method of work (72)	8 069	33.6	7 544	31.9	6 751	25.4
Badly organized work (73)	947	4.0	708	3.0	582	2.2
Fatigue due to overtime work or similar (74)	3 514	14.6	2 570	10.9	3 248	12.2
Violation of rules (78)	3 369	14.0	2 918	12.3	2 875	10.8
Crowded worksites (67)	1 167	4.9	1 079	4.6	1 055	4.0
Unsuitable worksite and badly kept premises (65)	777	3.2	879	3.7	763	2.9
Lack of personal safety equipment (70)	699	2.9	873	3.7	528	2.0
Defective hand tools (63)	630	2.6	842	3.6	628	2.4
Lack of safety equipment (69)	466	1.9	357	1.5	252	1.0
Breakdowns of the technological process (62)	411	1.7	584	2.5	672	2.5
Defective transport (68)	292	1.2	743	3.1	525	2.0
Lack of control (75)	249	1.0	462	2.0	1 910	7.2
Defective machines and equipment (61)	228	1.0	423	1.8	499	1.9
Force majeure (71)	183	0.8	123	0.5	128	0.5
Miscellaneous reasons (85)	2 398	10.0	25	12.4	5 478	20.6
Total	23 996	100.0	23 679	100.0	26 621	100.0

cause of traumatism decreased from 1.9% in 1975 to 0.95% in 1977. The frequency of accidents due to crowded worksites also shows a decrease. Rather frequent causes of traumatism are lack of control and defective hand tools. There is still a high frequency of accidents which could be eliminated by means of safety measures. Analysis of the modes of traumatism occurring at workplaces in Vojvodina during the period 1975-1977 presented in Table 6, shows that "striking against or a blow with something" predominate. In 1975, impact was the second most frequent mode of occurrence, followed by fall of object and fall of person, the proportion of which, with slight fluctuations, remains the same during the next period. Exposure to extreme temperatures accounts for 4.8% to 5.0%, followed by overstrain with 4.2% in 1975 and 3.7% in 1977.

TABLE 6  
Individuals injured at the workplace in Vojvodina from 1975-1977 according to mode of traumatism.

Mode of occurrence	Year					
	1975		1976		1977	
	N	%	N	%	N	%
Fall of person	3 159	13.2	3 941	16.6	3 756	14.1
Fall of object	3 312	13.8	2 786	11.8	1 610	6.1
Striking against or a blow with	8 921	37.2	6 879	29.1	9 334	35.2
Impact	3 754	15.7	3 137	13.3	2 795	10.5
Overstrain	1 018	4.2	592	2.5	983	3.7
Exposure to extreme temperatures	1 145	4.8	1 112	4.7	1 343	5.0
Exposure to electricity	96	0.4	45	0.2	32	0.1
Noxious substances and radiation	393	1.6	246	1.0	218	0.8
Other modes	2 198	9.2	4 941	20.9	6 550	24.6
Total	23 996	100.0	23 679	100.0	26 621	100.0

Among the material causes of accidents the most frequent are those listed in the group "miscellaneous", followed by noxious substances and radiation and factors of the working environment. In the period 1975-1977, the most frequent injuries at the workplace were wounds, consequences of exposure to extreme temperatures and other external factors, fractures, dislocations and burns (about 60%) while amputations and enucleation accounted for only 0.39%. The percentage of poisoning was about 0.32% while accidents with multiple injuries were on the decrease despite increasingly frequent injuries in traffic accidents.