

# Socioeconomic Aspects of Traumatic Wrist Ligament Injuries

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## 1 Introduction

Scapholunate ligament injuries are a main cause of instability causing great wrist dysfunction, time off work and cessation or modification of activity [1].

## 2 Material and Methods

It is difficult to obtain precise information about wrist ligament injury patients.

Attempts at information retrieval from insurance companies have been unsuccessful – data is guarded as secrets of state.

The department of statistics at the Belgian National Institute of Disease and Invalidity INAMI does not have precise diagnostic information about wrist pathology. The data consists largely of costs of different services (Chap. 30). We can find the cost of fractures with and without wrist reduction and the cost of fixation, but no information is available on the cost of wrist sprains. This is the same for stabilization of unstable intracarpal lesions.

We were able to collect precise data from the Belgian Database of Work Accidents – FAT [2–5].

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### 3 Incidence of Wrist Injuries

Wrist injuries are quite frequent and represent an important proportion of work accidents. Analysis of data obtained from FAT showed that wrist injuries represent 6.5 % of the 164,951 accidents in 2006 and 5.1 % of the 163,928 accidents in 2007. They occupy sixth place after finger injuries (21 %), knee and leg (9 %), eyes (8 %), hands (7 %) and feet (6.5 %) [4].

Wrist fractures represent more than 25 % of bone and joint injuries of the wrist (27.3 % in 2006 and 25.2 % in 2007) and more than 11 % of all wrist lesions (13.2 % in 2006 and 11.5 % in 2007); ligament lesions (labeled 'dislocations' and sprains) represent about three-fourth of all bone and joint wrist work-accident lesions (72.8 % in 2006 and 74.8 % in 2007). They represent more than one-third of all wrist work-accident lesions grouped together (35.17 % in 2006 and 34.1 % in 2007) (Table 1).

### 4 Wrist Trauma and Disability

About a fourth of wrist work trauma does not cause time off work and activity cessation, irrespective of the nature of the lesion.

The proportion is greater for sprains (34.73%) than for fractures (20.32 %).

### 5 Proportion and Total Time of Temporary Disability

The total time of temporary disability TTD following a work accident involving the wrist is greater in sprains (55.3 % of TTD for ligament lesions and 32.5 % for fractures – 2006 and 2007 together). One out of two fractures will lead to permanent disability (47.1 %), whereas this is true for less than 10 % of ligament lesions (9.94 %) (Table 2).

TTD is greater for fractures or ligament lesions than other wrist lesions. Among patients with wrist fractures and sprains, 71.41 % return to work within a month from the injury, while 89.19 % patients with other wrist lesions return to work within the month.

TTD seems shorter for sprains than for fractures. 81.5 % of wrist sprain patients return to work within a month from the injury, while only 33.9% fracture patients do so. Similarly, 16 % sprain patients return to work within 6 months, while 50 % fracture patients do so.

The proportion of 'long duration TTD' (>6 months) is significantly greater for fractures and sprains than for other lesions. 3.76% patients with bone and joint wrist lesion (fracture or ligament lesion) will have TTD greater than 6 months. This proportion falls to 1.58 % for patients with other wrist lesions.

**Table 1** Distribution of wrist lesions in accidents at the workplace according to the year of occurrence – 2006 and 2007

Year	Nature of the lesion							General total	
	Closed fractures	Open fractures	Unspecified fractures	Dislocations	Sprains	Dislocations and nonspecific sprains	Total fractures, dislocations, and sprains		Other injuries
2006	293	11	1,142	102	2,340	1,420	5,308	5,672	10,980
2007	262	6	687	115	1,814	910	3,794	4,536	8,330
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310

**Table 2** Distribution of wrist lesions in accidents at the work place according to the outcome of the accident – 2006 and 2007

Outcome	Nature of the lesion								
	Closed fractures	Open fractures	Unspecified fractures	Dislocations	Sprains	Nonspecific dislocations and sprains	Total fractures, dislocations, and sprains	Other injuries	General total
No outcome	126	2	360	71	1,416	840	2,815	4,416	7,231
Temporary disability	176	1	604	126	2,339	1,243	4,489	5,214	9,703
Permanent disability	253	14	865	20	399	247	1,798	576	2,374
Mortality	0	0	0	0	0	0	0	2	2
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310

The percentage of long duration TTD accidents (6 months to 1 year) is significantly greater for wrist fractures (4.8 %) than for ligament lesions (1.0 %) and other wrist lesions (0.62 %).

The percentage of work accidents with very long TTD (>1 year) is tiny for fractures (0.37 %) and ligament lesions (<0.10 %) (Table 3).

## 6 Rate of Permanent Disability PD

The majority of work-related wrist sprains recover without economic disability ( $PD=0\%$ ) This is not the case for wrist fractures. Thus, 90.4 % of sprains recover without PD, and 52.9 % fractures do so.

Around 5% of sprains will have a residual permanent disability of 1 to 5 % and 15% of wrist fracture will have the same economic disability. While 25 % of wrist fracture work-accident patients will have a residual permanent disability of 10 %, less than 4 % of sprains will have the same economic disability (Table 4).

## 7 Socioeconomic Profile of the Trauma Patient

### 7.1 Sex Incidence

According to the FAT statistics for the years 2006–2007, it is clear there is male sex predominance (71.10 %) for all wrist lesions grouped together.

There is a marked prevalence of fractures (73.6 %) in men over sprains (67.1 %). Inversely, women have more sprains (32.9 %) than fractures (26.4 %) (Table 5).

## 8 Incidence According to Age of the Patient and Nature of the Lesion

The majority of work-related wrist trauma patients – all lesions included – are in their 30s and 40s (65.7 %). The younger age group 15–24 represents 23.23 % and manual workers over 50 are 11.05 %. In the 25–49 age group, the prevalence of fractures (62.43 %) is almost the same as ligament lesions (66.8 %).

In the 15–24 age group, about 1/4th of lesions are wrist sprains (23.34 %).

In the ‘over 50’ age group, fractures are almost as frequent (43.52 %) as carpal ligament lesions (56.48 %), while in the 25–39 age group, 25 % are fractures while 75 % are sprains. In the young age group, fractures represent only 20.16 %, while sprains 79.84 % (Table 6).

**Table 3** Distribution of wrist lesions in accidents at the workplace according to the duration of temporary disability – 2006 and 2007

Duration of temporary disability	Nature of the lesion							Total fractures, dislocations and sprains	Total fractures, dislocations, and sprains	Other injuries	General total
	Closed fractures	Open fractures	Unspecified fractures	Dislocations	Sprains	Nonspecific dislocations and sprains	Total fractures, dislocations and sprains				
0 days	172	4	536	73	1,470	880	3,135	4,494	7,629		
1–3 days	1	0	16	14	396	165	592	1,213	1,805		
4–30 days	59	1	248	86	1,537	842	2,773	3,396	6,169		
1–6 months	294	11	905	36	630	384	2,260	944	3,204		
6 months–1 year	17	1	98	2	55	25	198	63	261		
More than 1 year	1	0	8	0	4	0	13	9	22		
Unknown	11	0	18	6	62	34	131	89	220		
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310		

**Table 4** Distribution of wrist lesions in accidents at the workplace according to the expected rate of permanent disability – 2006 and 2007

Expected percentage of permanent disability (%)	Nature of the lesion							General total	
	Closed fractures	Open fractures	Unspecified fractures	Dislocations	Sprains	Nonspecific dislocations and sprains	Total fractures, dislocations, and sprains		Other injuries
0	302	3	964	197	3,755	2,083	7,304	9,632	16,936
<5	84	4	361	9	212	134	804	332	1,136
5-10	143	8	391	11	165	96	814	180	994
10-16	19	2	86	0	20	15	142	45	187
16-20	2	0	6	0	1	1	10	4	14
20-36	5	0	14	0	0	1	20	13	33
36-66	0	0	6	0	1	0	7	2	9
66-100	0	0	1	0	0	0	1	0	1
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310

**Table 5** Distribution of wrist lesions in accidents at the workplace according to sex of the patient – 2006 and 2007

Sex	Nature of the lesion								General total
	Closed fractures	Open fractures	Non specified fractures	Dislocations	Sprains	Nonspecified sprains	Total fractures dislocations, and sprains	Other lesions	
Woman	173	4	457	80	1,407	712	2,833	2,741	5,574
Man	382	13	1,372	137	2,745	1,617	6,266	7,464	13,730
Unknown	0	0	0	0	2	1	3	3	6
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310



**Table 6** Distribution of wrist lesions in accidents at the workplace according to age – 2006 and 2007

Age group	Nature of the lesion											
	Closed fractures	Open fractures	Nonspecified fractures		Dislocations		Sprains		Nonspecified Total fractures dislocations, and sprains		Other lesions	General total
15-24	84	1	310	47	1,015	502	1,959	2,527	4,486			
24-49	335	12	1,152	151	2,732	1,594	5,976	6,711	12,687			
Over 50	136	4	367	19	406	233	1,165	970	2,135			
Unknown	0	0	0	0	1	1	2	0	2			
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310			

## 9 Incidence of Sprains and Type of Work

Expectedly, the incidence of wrist injury is higher with manual work than intellectual work. This is confirmed by the 2006–2007 FAT data [4]. In 2006–2007, 83.56 % of work-accident wrist injuries occurred in manual workers. 73.20 % of bone and joint wrist lesions were ligament injuries. During this period, one-third of manual workers wrist lesions were ligamentous (34.30 % cases).

Intellectual workers presented with ligament injuries in 75.67 % of cases.

The typical socioeconomic profile of a work-related wrist injury is a 25–49-year-old manual worker. This cohort includes 594 accidents in 2006 and 437 in 2007 (Table 7).

## 10 Evolution of Unstable Lesions

Upon data analysis, one can only be surprised by the low prevalence of economic permanent disability associated with ligament lesions. As mentioned above, 90.4 % sprains recover with no permanent disability, 5 % have a residual economic disability of 1–5 %, and less than 4 % consolidate with a permanent disability of 5–10 % (Table 4).

In current practice, over 25 % of recent wrist sprains examined in a clinic are unstable lesions (Dautel 1–3 [6]). Even without specific treatment, the majority of these lesions tend to become painless, and sometimes they can stay so for a very long time. Without treatment, evolution towards arthritis is classic [1]. So where do these lesions then figure in the FAT database if 81.5 % of wrist sprains are back to work within 1 month (Table 3), and 90.4 % of sprains recover without permanent disability (Table 4)? It seems that these lesions do not appear at all in the data or are grouped with those that ‘recover’ within 1 month.

Thorough research failed to reveal the management of progressive lesions.

It seems that the FAT data collection ends with return to work. This can explain the lack of correlation between reality and the FAT results of long-term evolution of wrist ligament lesions.

It is up to the practitioner to trace the lesion back to a work accident.

In case of worsening outcome of a declared work accident, it is up to the advisor doctor to reopen the patient file.

**Table 7** Distribution of wrist lesions in accidents at the workplace according to the type of work – 2006 and 2007

Type of work	Nature of the lesion							General total	
	Closed fractures	Open fractures	Nonspecified fractures	Dislocations	Sprains	Nonspecified sprains	Total fractures dislocations, and sprains		
Intellectual	78	3	294	33	764	369	1,541	1,633	3,174
Manual	477	14	1,535	184	3,390	1,961	7,561	8,575	16,136
Total	555	17	1,829	217	4,154	2,330	9,102	10,208	19,310

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