



# Prevalence of isolated hand problems in physiotherapy and rehabilitation centres in Istanbul

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## Research Article

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**Purpose:** This study examined prevalence of isolated hand problems in physiotherapy and rehabilitation patients. **Methods:** Patient files of 21.450 patients (51.14±15.85 years, 14.973 females, 6.477 males) admitted to physiotherapy and rehabilitation program in Istanbul Balat Jewish Hospital, Duygu Hospital and Burcu Physiotherapy Centre between January 2006 and February 2010 were examined. The reason for admission and primary pathology were recorded.

**Results:** Treatment was required due to hand or wrist problems in 665 (3.1%) patients, and due to other pathologies in 20.785 (96.9%) patients. Causes of hand and wrist problems (n=665) were hemiplegic hand in 150 (22.6%), carpal contracture in 124 (18.7%), bilateral carpal tunnel syndrome in 116 (17.4%), hand contracture in 81 (12.2%), De-Quervain in 40 (6.0%), synovitis and tenosynovitis 37 (5.56%), unilateral carpal tunnel syndrome in 17 (2.6%), rheumatoid arthritis of the hand in 17 (2.6%), and Dupuytren's contracture in 10 (1.5%) patients. De Quervain, bilateral carpal tunnel syndrome, synovitis and tenosynovitis and carpal contracture were found to be more frequent in females, while hemiplegic hand and carpal contracture were found to be more frequent in males (p<0.05). **Conclusion:** Hand and wrist problems were seen in very low rates of among our patients as compared to other neuromusculoskeletal problems. The most frequent problems were hemiplegic hand, carpal contracture, carpal tunnel syndrome, and hand contracture. There are differences in the frequency between female and male genders.

**Keywords:** Hand, Physiotherapy, Prevalence, Turkey.

## İstanbul'da fizyoterapi ve rehabilitasyon merkezlerinde izole el problemleri görülme sıklığı

**Amaç:** Çalışma, fizyoterapi ve rehabilitasyon programına alınan hastalarda izole el problemleri sıklığını araştırmak amacıyla gerçekleştirildi. **Yöntem:** İstanbul Balat Musevi Hastanesi, Duygu Hastanesi ve Burcu Fizik Tedavi Merkezi'nde Ocak 2006 ile Şubat 2010 yılları arasında fizyoterapi ve rehabilitasyon programına alınan, 21450 hastanın (51.14±15.85 yıl, 14973 kadın, 6477 erkek) hasta dosyası değerlendirildi. Tedaviye alınma nedeni ve primer patoloji kaydedildi.

**Sonuçlar:** Hastalardan 665'inin (% 3.1) el veya el bileği; 20785'inin (% 96.9) ise diğer patolojiler nedeniyle tedaviye alındığı saptandı. El veya el bileği problemleri nedeniyle tedaviye giren hastaların, 150'si (% 22.6) hemiplejik el, 124'ü (% 18.7) karpal kontraktür, 116'sı (% 17.4) bilateral karpal tünel sendromu, 81'i (% 12.2) el kontraktürü, 40'ı (% 6.0) De-Quervain, 37'si (% 5.56) sinovit ve tenosinovit, 17'si (% 2.6) unilateral karpal tünel sendromu, 17'si (% 2.6) romatoid artrit ve 10'u (% 1.5) Dupuytren kontraktürüydü. De Quervain, bilateral karpal tünel sendromu, sinovit, tenosinovit ve karpal kontraktür görülme sıklığı kadınlarda erkeklerden daha fazlaydı (p<0.05). Hemiplejik el ve karpal kontraktür erkeklerde daha sıkı (p<0.05).

**Tartışma:** Hastalarımızda el ve el bileği problemleri, diğer nöromuskuloskeletal problemlere göre oldukça düşük oranda görülmektedir. En sık görülen problemler, hemiplejik el, karpal kontraktür, karpal tünel sendromu ve el kontraktürüdür. Kadın ve erkeklerde görülme sıklığı farklılık göstermektedir.

**Anahtar kelimeler:** El, Fizyoterapi, Prevalans, Türkiye.

Hand is vital to daily activities and controlled by a rich and complex plexus to conduct this function. It is a unique structure with musculoskeletal components such as nerve-vein wrappings, canals and tunnels, ligaments, tendons and fascia. In addition to these features, hands are one of the most important structure affected by diseases and accidents.<sup>1,2</sup>

Upper extremity injuries constitute 31% of total extremity injuries and approximately one-third of these results in anatomical and functional losses. Similarly, symptoms and indications of degenerative and inflammatory musculoskeletal diseases are frequently prevalent in hands. The hand is also one of the organs most affected by both central and peripheral nerve lesions.<sup>3,4</sup> The proportion of painful patients affecting the hand is estimated to be between 12% and 21%.<sup>5</sup>

Although hands have various functions, they also have many problems. Present study examined hand problems most frequently experienced and included in physiotherapy and rehabilitation programs.

## METHODS

Patient files of 21.450 patients admitted to the physiotherapy and rehabilitation program in Istanbul Balat Jewish Hospital, Duygu Hospital and Burcu Physical Therapy Centre between January 2006 and February 2010 were examined retrospectively. Of these patients, 6.477 were males (30.2%) and 14.973 were females (69.8%) (Table 1).

### Statistical analysis:

The data obtained was analyzed using the SPSS statistical analysis program. Frequency values were established between the male and female patients and the "chi square test" was used to determine significance of the differences between these values.

## RESULTS

The ages were ranged 0-102 years (mean±SD 51.14±15.85 years). The mean age of females was 52.36±15.38 years, and the mean age of the males

was 48.33±16.56 years. The mean age of females were higher than that of males ( $p<0.05$ ) (Table 1). Of 665 (3.1%) patients were referred for treatment due to hand or wrist problems and 20.785 (96.9%) patients were related to other pathologies (Table 1).

Causes of hand and wrist problems (n=665) were hemiplegic hand in 150 (22.6%), carpal contracture in 124 (18.7%), bilateral carpal tunnel syndrome in 116 (17.4%), hand contracture in 81 (12.2%), De-Quervain in 40 (6.0%), synovitis and tenosynovitis 37 (5.56%), unilateral carpal tunnel syndrome in 17 (2.6%), rheumatoid arthritis of the hand 17 (2.6%), and Dupuytren's contracture in 10 (1.5%) patients.

The other pathologies were less frequently seen (<1%): post-traumatic carpal arthrosis (n=9, 1.35%), lesion of ulnar (n=8, 1.20%) and radial (n=3, 0.45%) nerves, trigger finger on the index finger (n=7, 1.05%) trigger finger on the thumb (n=5, 0.75%), trigger finger on the ring finger (n=8, 1.20%), primary arthrosis of the hand (n=6, 0.90%), Guillain-Barré syndrome (n=4, 0.60%), monoplegia (n=4, 0.60%), seronegative rheumatoid arthritis (n=4, 0.60%), reflex sympathetic dystrophy (n=3, 0.45%), median neural transmission problem (n=3, 0.45%), brachial plexus injury (n=2, 0.30%), calcific wrist tendinitis (n=2, 0.30%), muscle strain (n=2, 0.30%), post-traumatic arthrosis of hand (n=6, 0.90%), and inflammatory polyarthropathy (n=1, 0.15%) (Table 2).

**Table 1. Characteristics of the patients.**

	X±SD
<b>Age (years)</b>	
Female	52.36±15.38
Male	48.33±16.56
	<b>n (%)</b>
<b>Gender</b>	
Female	14.973 (69.8)
Male	6.477 (30.2)
<b>Distribution of pathologies</b>	
Hand-wrist pathologies	665 (3.1)
Other pathologies	20.785 (96.9)

**Table 2. The rate of hand and wrist pathologies.**

	n (%)
Hemiplegic hand	150 (22.56)
Carpal contracture	124 (18.65)
Carpal tunnel syndrome-bilateral	116 (17.44)
Hand contracture	81 (12.18)
De quervain	40 (6.02)
Synovitis and tenosynovitis	37 (5.56)
Carpal tunnel syndrome-unilateral	17 (2.56)
Rheumatoid arthritis hand	17 (2.56)
Dupuytren's contracture	10 (1.50)
Post traumatic carpal arthrosis	9 (1.35)
Trigger finger – ring finger	8 (1.20)
Lesion of ulnar nerve	8 (1.20)
Trigger finger – index	7 (1.05)
Primary arthrosis of hand and wrist	6 (0.90)
Trigger Finger – Thumb	5 (0.75)
Guillain-Barré syndrome	4 (0.60)
Monoplegia	4 (0.60)
Seronegative rheumatoid arthritis hand	4 (0.60)
Median neural transmission problem	3 (0.45)
Sudeck's atrophy	3 (0.45)
Lesion of radial nerve	3 (0.45)
Injury of brachial plexus	2 (0.30)
Calcific tendinitis	2 (0.30)
Muscle strain	2 (0.30)
Post traumatic arthrosis of hand	2 (0.30)
Inflammatory polyarthropathy	1 (0.15)

**Table 3. Comparison of hand pathologies by genders.**

	Female n (%)**	Male n (%)**	
De Quervain	31 (7.4)	9 (3.7)	*
Hemiplegic hand	57 (13.6)	93 (37.8)	*
Bilatateral carpal tunnel s.	96 (22.9)	20 (8.1)	*
Hand contracture	40 (9.5)	41 (16.7)	*
Synovitis and tenosynovitis	26 (6.2)	11 (4.5)	*
Carpal contracture	79 (18.9)	45 (18.3)	*

\* p<0.05. s: syndrome. \*\* Rate within group.

Chi-square test was used to compare hand pathologies between genders. Size of the study group and some pathology frequencies were five or below. Those pathologies with a frequency of five or below were excluded from the assessment, and therefore did not affect the statistical analysis. De Quervain, bilateral carpal tunnel syndrome, synovitis and tenosynovitis and carpal contracture was found to be more frequent in females, while hemiplegic hand and carpal contracture was found to be more frequent in males ( $p<0.05$ ) (Table 3).

## DISCUSSION

Most of the patients admitted to physiotherapy and rehabilitation program in our clinic with hand and wrist problems have carpal tunnel syndrome, hand and wrist problems and hemiplegic patients. Apart from these, rates of other injuries, replantations, nerve and tendon injuries etc. are very low.

The prevalence of carpal tunnel syndrome varies widely from one study to another. In the study of Papanicolaou et al. this was reported as 3.72%.<sup>6</sup> In a study of patients who had worked one year or more, Silverstein et al. found a carpal tunnel prevalence of 10.8% in the dominant hand and 6% in the non-dominant hand.<sup>7</sup> Wolf et al. indicated that the carpal tunnel prevalence was between 0.15%-3.5%.<sup>8</sup> Mattioli et al. indicated that, among patients presenting during one year, the frequency of carpal tunnel was four times higher in females (0.17%) than males (0.04%).<sup>9</sup> In our study, 20% of 665 patients treated due to hand and wrist problems, have carpal tunnel syndrome. Comparison of our patients by gender showed that carpal tunnel syndrome was three times higher in females than males.

In studies of the epidemiology of Dupuytren's contracture, the pathology was determined to be more frequent in males than females; in contrast, our study showed that the number of females presenting due to Dupuytren's contracture was twice as much as higher than that of among males.<sup>10-12</sup>

Larsen et al., in a study conducted on the epidemiology of hand injuries among Dutch and

Danish populations, indicated that fractures, surface injuries, and burns constituted most of the patients.<sup>13</sup> Angermann et al., in their study examining the hand and wrist injuries of 13% of the Danish population, established that 42% of the patients involved fractures and 29% had tendon lesions.<sup>14</sup> In our study, almost one third of the 665 patients involved hand and wrist contractures. This finding was similar to those reported by Larsen et al. and Angermann et al.

Akhtar et al. examined the rates of tenosynovitis, a condition that considerably restricts hand functions. They found the one-year application rate as 0.028 and indicated that the general population was at a 2.8% risk during their lifetime, and the frequency rate of tenosynovitis in diabetic patients was 10%.<sup>15</sup> In our study, the rate of synovitis and tenosynovitis within the whole study group was 5.56%, accounting for 4.5% of hand problems in females and 6.2% in males.

In Turkish population, Şahin et al. established that wrist injuries are the most prevalent hand injuries among pediatric patients.<sup>16</sup> In our study, 20% of the patients presented due to wrist problems.

In our study, degenerative conditions resulting from overuse or repetitive traumas were common among females and hand problems resulting from trauma were more frequent in males. This situation was attributed to the requirements of work and social life.

In the patients examined retrospectively, the rates of hand and wrist problems were found to be lower compared to other musculoskeletal problems. This could be related to the fact that centres included in this study are physiotherapy and rehabilitation centres following general patient populations.

It is known that hand surgeons prefer to refer patients to hand therapists; therefore, the lack of hand therapists in the general physiotherapy and rehabilitation centres leads to fewer patient admissions. We also believe that the referral of patients to expert hand therapists and specialized centres could be cost-effective and more appropriate for the patient and public interest in complex patients.

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