

## SPECIAL REPORT

## REHABILITATION MEDICINE IN CROATIA – SOURCES AND PRACTICE

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**Sources of rehabilitation medicine, the need for rehabilitation and its practice in Croatia were studied, based on available data. The study revealed that current practice has advanced since the country's independence, but that there are many shortcomings; adequate care is not provided to all who could benefit from it, and there is wastage of resources.**

*Key words:* sources of rehabilitation medicine, structure, process, outcome, need, rehabilitation care.

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Croatia is a small country in Central Eastern Europe, with an area of 56,538 km<sup>2</sup> and a population of approximately 4.5 million, 80% of whom are Roman Catholic Croats. Until 1918 it was part of the Austro-Hungarian Empire, then from 1918 to 1941 part of the Kingdom of Yugoslavia, and after the Second World War a socialist republic within Federative Yugoslavia, until 1991 when it declared its independence. This declaration was followed by a war that lasted until 1995. Since its independence it has been a country in transition from a one-party system to a parliamentary democracy and from controlled to free-market economy.

Rehabilitation medicine in Croatia derives from 3 sources: orthopaedics, balneology and physical medicine. The first orthopaedic department in the country (Zagreb, 1908) provided, from its establishment, physiotherapy and assistive devices, and added vocational training in 1915 (1). In 1961, an institute for prosthetic rehabilitation of amputees was opened within this department and is still the only facility for the rehabilitation of this complex impairment. Spas in Croatia, called “*toplice*”, with thermal mineral water springs and favourable climatic conditions, used from Roman times, flourished during the Austro-Hungarian Empire in the 19th century and gradually enlarged.

Modalities of physical medicine were added to complement natural factors. Based on the experience of spas, an institute for physical medicine was opened in Zagreb in 1928, and in 1938 the central station for rheumatology began functioning within it, thus initiating strong ties between physical medicine and rheumatology and establishing the priority given to physical therapy and diseases of the musculoskeletal system within rehabilitation medicine. The trend was further enhanced when, in 1992, the institute for balneology and climatology and the institute for rehabilitation of rheumatic patients of the University Medical Centre in Zagreb united to form the teaching department for rheumatic diseases and rehabilitation. Thus, rehabilitation medicine at the university level has been in the hands of physicians focusing their activities on rheumatology rather than on rehabilitation. Consequently, the education of medical students focused on musculoskeletal conditions and physical medicine. The specialty of rehabilitation medicine appeared in the mid-1950s, when the first physicians completed their specialization lasting 4 years and ending with an examination. They became known as physiatrists and organized themselves in the Croatian Society for Physical Medicine and Rehabilitation, which in 2005 changed its name to Croatian Society of Physical and Rehabilitation Medicine.

Morbidity and mortality in Croatia are similar to those in other European countries, diseases of the circulatory system accounting for 50% of deaths, with stroke the most frequent such disease in elderly people (2). Stroke is also the most common cause of long-term impairment in the country (3). Its incidence was increasing, and in 1988 was 234/100,000, with a case fatality rate of 30% (4). Consequently, nearly 9000 new stroke survivors may be expected annually, with 70% of these in need of inpatient rehabilitation. There are probably 3600 head injuries annually, with 700 (25% of the survivors) left with brain impairment, 10% of these in coma. A total of 100 individuals survive spinal cord injuries (SCI) per year and require rehabilitation (5). Approximately 1000 major amputations of dysvascular lower limbs are performed annually, 75% in men with a mean age of 61 years; 65% of the amputated may be

expected to survive surgery per year and 70% of the survivors may be rehabilitated prosthetically, i.e. 400 (6). The prevalence of rheumatoid arthritis is 4% (7) and that of osteoarthritis 11% (8). The need for rehabilitation in patients who, following other diseases, injuries and congenital malformations, may be left with impairments, has to be added to the figures above, but data necessary for its estimation are not available. Since many of the conditions leading to disability are age-related, it may be expected that the need for rehabilitation will increase due to population ageing in the country (9).

Structural elements of rehabilitation medicine are impressive. In 2003 there were 1972 beds for inpatient rehabilitation, of these 239 in teaching and 1633 in special hospitals for medical rehabilitation (SHMRs), which are former spas with the majority of their beds not used for rehabilitation (Table I). This means 0.42 rehabilitation beds per 1000 inhabitants; an abundance, since the minimum required standard is 0.10/1000. However, there is only one specialized facility for rehabilitation of stroke and facilities for other complex impairments are geographically dispersed, without interaction or co-ordination of activities between them and no co-operation in education or research (Table I). Two teaching and 20 general hospitals have units for Physical medicine and Rehabilitation (PRM) that provide consultative services to other departments, maintain polyclinics for patients with musculoskeletal conditions and deliver physical therapy and kinesiotherapy to their patients. However, since these ambulatory services are city-centred and institution-based they are not accessible to those living in rural areas or on islands. There are no provisions for community-based rehabilitation. In 2003 there were 225 practising physiatrists in Croatia (10), i.e. 4.76 per 100,000 inhabitants, the

highest ratio in Europe. At the same time there were 1600 physiotherapists and a disproportionately small number of occupational and speech therapists working in rehabilitation medicine. The majority of nurses have only on-job training in rehabilitation nursing. Process elements also show shortcomings. Stroke survivors are referred from acute care to rehabilitation departments of teaching hospitals or to various SHMRs; in the majority of these settings (excepting 2 that are able to admit only slightly more than 20% of stroke survivors) they cannot receive adequate treatment because of the absence of occupational, speech and other cognitive therapists. Patients after amputation of lower limbs are discharged home or referred to a SHMR for stump healing and initial walking exercises. The institute for prosthetic rehabilitation admits 550 patients annually, 300 for the first prosthesis, but patients reach the institute late, 38% of them with contractures of the neighbouring joints and 27% using wheelchairs (11). Patients with SCI are not brought directly from the site of accident to the SCI centre, which admits 200 patients annually, half of them new cases, but are first admitted to traumatology and transferred to the centre 14 days after operative stabilization of the vertebral column. Patients with traumatic brain injury (TBI), although mostly due to closed head trauma, spend 10–20 days in acute care hospitals and are then transferred to the TBI centre, which admits 150 new patients annually, including those in coma, and 50 recurrent ones. Twenty to 30% of patients with TBI are referred to SHMRs that lack the required competence, while beds in the centre are not fully occupied. Since in most facilities there are no occupational and speech therapists, therapeutic activities are performed by nurses and physiotherapists, nurses teaching basic activities of daily living (ADL), sphincter control and skin hygiene, physiotherapists administering various physical modalities and exercises to an equal extent. Extended ADL are taught only to patients with complex impairments. The absence of therapists other than physiotherapists compromises the interdisciplinary approach, which is applied in a few facilities only. Outcome elements also leave much to be desired. Most settings of rehabilitation medicine use a variety of updated functional assessment and outcome measurements, but there is a dearth of reports relating experiences in using them. Also, there is insufficient follow-up and, consequently, no information on long-term outcome.

Rehabilitation medicine services provided are financed, as all other healthcare in the country, by statutory health insurance administered by the Croatian Institute for Health Insurance (CIHI). Inpatient care is covered only for beds contracted by the CIHI for a specifically defined care; other non-contracted beds may be marketed to private insurance schemes. Admission to contracted beds is regulated and paid for according to the CIHI rulebook, which defines 3 categories of patients. These categories are not based on sound professional criteria and for the majority of beds make no distinction in terms of equipment and staff available or to the effectiveness of the treatment programme and do not consider the patient's potential for rehabilitation. This leads to referral to institutions that are

Table I. Facilities for inpatient rehabilitation in Croatia

Rehabilitation beds*	Beds (n)	Occupancy rate (%)
Ten special hospitals for medical rehabilitation	1633	60–70
Six teaching hospitals	239	90
Total		1972
Facilities for rehabilitation of complex impairments <sup>†</sup>		
Institute for rehabilitation and orthopaedic devices, Zagreb	40 <sup>‡</sup>	75
Centre for rehabilitation of TBI, Krapinske Toplice	80 <sup>§</sup>	75
Centre for rehabilitation of SCI, Varaždinske Toplice	48	90 <sup>¶</sup>
Department for neurological rehabilitation, Krapinske Toplice	80 <sup>#</sup>	75

\*Beds contracted by Croatian Institute for Health Insurance for inpatient rehabilitation.

<sup>†</sup>Number of beds is included in the total number of beds.

<sup>‡</sup>For lower limb amputees only.

<sup>§</sup>65 for adults, 15 for children.

<sup>¶</sup>Only 80% occupied by spinal cord injury patients.

<sup>#</sup>60% occupied by patients after stroke.

TBI: traumatic brain injury.

SCI: spinal cord injury.

not appropriate to the needs of the patient and does not correctly define patients or treatment provided.

In spite of the mentioned shortcomings, PRM in Croatia has advanced considerably since 1992 (12), particularly due to the impact of the 1991–95 war (13). Facilities have been expanded and upgraded, new equipment purchased, available rehabilitation professionals further educated, conduct of outcome measurements initiated, teamwork introduced and practice improved; rehabilitation physicians became involved with teaching medical students in Split and Osijek. However, although often individually excellent, facilities are unevenly distributed, insufficient in their availability for all types of impairment and show large differences in equipment and staffing; many have a surplus of bed capacity. As a consequence, rehabilitation medicine in Croatia is not yet appropriate to need, does not provide adequate care to all who could benefit from it, and leads to a wastage of resources. We hope that rehabilitation medicine in Croatia will undergo necessary organizational reform and will advance further. In the effort to reach this goal, the profession could benefit from the advice of European experts, particularly from the UEMS' (Union Européenne des Médecines Spécialistes) board of PRM.

#### REFERENCES

1. Belicza B. Beginnings of professional and institutional orthopedics on the territory of Yugoslavia. *Acta Orthop Jugosl* 1988; 19: 7–14.
2. Tomek-Roksandić S, Tomić B, Čulig J. Leading cause of death in the category of circulatory diseases in elderly persons in Zagreb and Croatia. *Medix* 2001; 36: 33–36 (in Croatian).
3. Kadojić D. Epidemiology of stroke. *Acta Clin Croat* 2002; 41 (suppl 3): 11 (in Croatian).
4. Barac B. Epidemiological investigations of cerebrovascular diseases in Croatia. *Liječ Vjes* 1999; 31:121–126 (in Croatian).
5. Moslavac S, Džidić I. Rehabilitation of persons with spinal cord injuries in Croatia. *Fiz Med Rehab* 2004; 21(suppl 1): 34 (in Croatian).
6. Jelić M, Kovač I. Rehabilitation of persons with amputation of limbs. In: Bobinac-Georgievski A, Domljan Z, Martinović-Vlahović R, Ivanišević G, eds. *Physical medicine and rehabilitation in Croatia*. Zagreb: Naklada Frank; 2000, p. 123–141 (in Croatian).
7. Jajić I, Jajić Z, Vlak T. Some epidemiological features of rheumatoid arthritis in Croatia. *Period Biol* 1990; 92 (suppl 2): 17 (abstract).
8. Kopjar B, Čurković B, Grazio S, Vlak T. Evidence based medicine: recommendations for the pharmacological treatment of osteoarthrotic patients. *Medix* 2004; 13: 121–126 (in Croatian).
9. Roksandić-Tomek S, Budak A. Health status and the use of health services by the elderly in Zagreb, Croatia. *Croat Med J* 1997; 38: 183–190.
10. Sekelj-Kauzlarić K, Bagat M, Kauzlarić N. An overview of the situation of the profession in Croatia and some countries in Europe. *Fiz Med Rehab* 2004; (suppl 1): 77 (in Croatian).
11. Kauzlarić N, Sekelj-Kauzlarić K, Jelić M. Experience in prosthetic supply of patients with lower limb amputation in Croatia. *Prosth Orth Intl* 2002; 26: 93–100.
12. Eldar R, Bobinac-Georgievski A, Susak Z. Rehabilitation of the war casualties in Croatia 1992: a situation analysis. *Croat Med J* 1993; 21–26.
13. Bakran Ž, Bobinac-Georgievski A, Džidić I, Jelić M, Eldar R. Medical rehabilitation in Croatia-impact of the 1991–1995 war. *Croat Med J* 2001; 42: 556–564.