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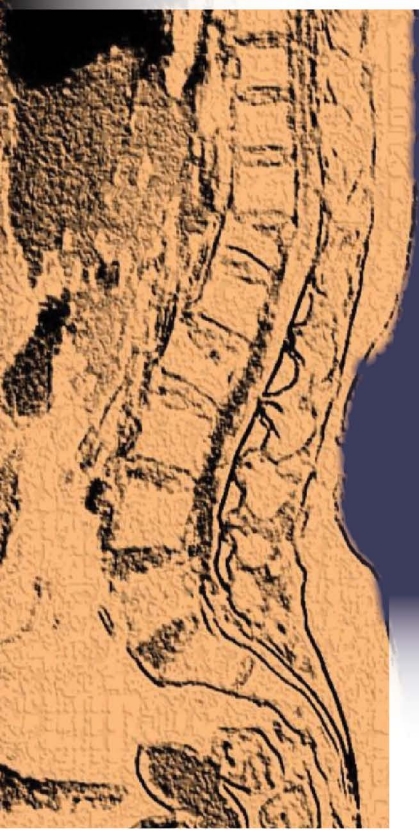
Management of Spinal Cord Injury *by* Physiotherapist

Site to Settlement





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4

Medical Science Dimensions

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INTRODUCTION

Medical science has following three dimensions:

- Preventive medicine
- Curative medicine
- Rehabilitation medicine.

Preventive Medicine

Preventive medicine or preventive healthcare or prophylaxis measures, consists of taking measures to prevent the disease or damage (injury) rather than curing or treating their symptoms. The preventive medicine with public health methods which works at the level of population health and curative medicine works at individual health.

- *Primary prevention:* Methods to avoid occurrence of disease (Population and community-based health promotions)
  - Vaccination: Polio, Smallpox, Tuberculosis, Measles, Mumps, Influenza, etc. Mass vaccination in a particular province, provides eradication of the viruses from that province and the disease (e.g. Pulse polio program)
  - Sanitation: Clean surroundings
  - Hygiene: Personal—Body bath, hand washing, clean clothes
  - Intake: Clean air, water, food
  - Nutritive diet: Balanced (amount and ingredients) nutritive diet with timings
  - Habits: Balance between activities and rest with a sound sleep
  - Bad habits: Avoid smoking, alcohol, narcotic drugs
  - Mind control over anger, quarreling

  - Regular exercises and practising pranayama and yoga to keep the body and brain fit and fine
  - Occupational hazards: Safety steps to avoid occupational injuries (e.g. safety harnessing belt for a worker on electric pole to avoid fall and SCI)
  - Traffic rules observance to prevent accidental injuries
  - Polypill for prevention of disease, e.g. cardiovascular diseases
  - Education about potent threat to health.
- *Secondary prevention:* Method to diagnose the existing disease at an early stage and to do early intervention, e.g. cerebral palsy
- *Tertiary prevention:* Methods to reduce negative impact of the existing disease on functions and to reduce disease related complications.

Curative Medicine and Palliative Care

It is a healthcare discipline, oriented towards seeking cure of the existing disease. Palliative care concentrates on reducing the severity of the disease symptoms, e.g. pain.

Rehabilitation Medicine

'Re' means 'again.' Rehabilitation is a general term used to help reach to a former state of health or life and living in surroundings. After the natural or man-made disaster, there is widespread loss. There is a personal loss to the human body, there is infrastructure damage, e.g. houses, shops, schools, roads, drainage, food and water supply, electricity, communication network, TV and entertainment gadgets.

Rehabilitation process in general, is the restoration of infrastructure with restoration of disabled person's functions and to bring back that damaged province to a previous or worth living situation.

Rehabilitation medicine is a combined and coordinated team work of patient, family and friends, medical, physical medicine, social, NGO and the efforts to reach the highest possible level of functional ability to lead a quality of life (QoL) for a disabled person to the physical, mental, vocational, social and spiritual well-being. Once the recovery and restoration has reached to plateau, the disabled/differently-abled person is taught and trained to maximize with the abilities and disabilities and to retrain the person to "return to living" and to involve, integrate the person in the family, society and to the work place by rehabilitation medicine.

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This branch uses the available Rehab-medicine resources to reduce and limit the impairments and disabilities, maximize the person's potential, minimize the sufferings and promote the person's adjustments with the irremediable conditions, back to the previous state of living or a meaningful living with an altered lifestyle.

HISTORY OF PHYSICAL AND REHABILITATION MEDICINE

All the professions have evolved from the primitive functioning. A "Dai" who used to do delivery is now done by the gynecologist. "Bone-setters" who were treating fracture is now done by the Orthopedic surgeon. "Munim" who maintained account is now done by Chartered Accountant. Physiotherapy (PT) has also evolved from primitive functioning. Physical means for healing have been in practice since the prehistoric time. Since the beginning of time, people have used physical agents for healing like water, heat, cold, soft tissue manipulations, exercises, heliotherapy (sun rays). Written accounts of use of physical techniques for healing can be traced as far back as the writings of Hippocrates in 460 BC. After development of orthopedics in 18th century, gymnastic was developed to treat the disabling condition, later it was known as Physiotherapy.

The Swedish word "physical therapy" means the one who is involved in gymnastics for those who are ill. In 1813, Ling founded "Royal Central Institute of Gymnastics". In 1887, PTs were given registration by Sweden's National Board of Health and Welfare. In 1894, four nurses in UK formed "Chartered Society of Physiotherapy". Schools of Physiotherapy were started in 1913 in New Zealand, in 1918 at Reed's Army Hospital in Washington DC. The first OT school was established at KEM Hospital, Mumbai in 1951, with the efforts of Kamala Nimbkar. The first PT school was started with the help of WHO in 1952 at KEM Hospital, Mumbai. In 1921, American Physical Therapy Association (APTA) was established. In 1953, Indian Association of Physiotherapy was established.

It was not until after World War I and II, to understand the necessity for more advanced treatment and rehabilitation for disabled. The public become more aware of the rehabilitation efforts due to the substantial numbers of debilitating war injuries plus the thousands of individuals disabled by a poliomyelitis epidemic. The realization

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of polio in the person of US President Franklin D Roosevelt, who had regained his capacity to return to public life after physical therapy at Georgia Warm Springs, USA.

The education in physical therapy started in the form of 3 months training program to 1 year program, to a 2 years diploma then the 3 years degree to 3 years plus 6 months internship to a present 4 years and 6 months of internship. Bachelor and Master in physical therapy, Doctorate in physical therapy and PhD in physical therapy are the present era programs.

Philosophy of Rehabilitation Medicine

"Self with Ethical aspects and Human rights"

Access to rehabilitation is a basic human right guaranteed by: (1) United Nations (1993); (2) European year for people with disability (2003); (3) 58th resolution of World Health Assembly (2005); (4) Persons with disability Act PWD, India (1995); (5) Many nations have anti-discriminative legislation.

The use of all means aimed at reducing the impact of disabling conditions and enabling the person with disabilities to achieve optimal social integration (Physical and Rehabilitation Medicine-WHO 1988). Mohandas Karamchand Gandhi (Bapu-Mahatma Gandhi), Father of the Nation (India), a freedom fighter, gave many life philosophies. One of them is "Self-sufficiency—Independence" (Fig. 1).

Rehabilitation professionals use this principle very well and make the disabled-dependent person "Self-sufficient" in communication,

Rehabilitation medicine means to make the disabled "independent" and "self sufficient" in all aspects of life



Fig. 1: Gandhian philosophy of vocational self-sufficiency

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mobility, feeding, self-care, earning or learning for a life with liberty and pursuit of happiness).

Basic philosophy of rehabilitation is the "acceptance" of the disability by the person, set the goals and then efforts by patients, supported by Rehab professionals so as with a "Hope" to reach to a "Satisfying -Productive" post-injury "Independent and Self-sufficient" lifestyle.

Patient's thinking is harnessed and is motivated to achieve the Goal of "Independent, Interdependent and Integrated" human being in the family and the society.

A person with the impairment has the same basic rights and needs as any other person in the society. The rights, needs and cultural diversity of the family and support system are always considered. Patient's customized program is designed to maximize the individual's activities and participation in the environment, outside the hospital/rehab setup. All efforts by the rehab team members are directed towards making the disabled person "Self-sufficient" and independent in the activities of daily living (ADL) with physical, mental, vocational, social and spiritual independence.

Need of Rehabilitation

The disabled person, due to disease or damage, loses his or her functions. After the recovery phase is over, the person is on rehabilitation process and with his available potentials, is made independent in the day-to-day activities. If not, some other person will have to take care for his personal and professional (earning) needs. The person becomes a burden to the family, society and the nation at large. To avoid these issues and to give independent and meaningful life, rehabilitation of disabled persons is needed and it is a right of the person.

Principles of Rehabilitation Medicine

The rehab process is unique in a sense that along with, medical and therapeutic measures many other aspects like psychology, sociology, vocational, educational and also patients, care taker, NGO are involved and integrated to take the disabled person to the desired destination of "Non-dependent" living.

Many "natural physical agents" are used in the treatment and management of rehab process: (1) Heat, (2) Cold, (3) Light, (4) Sun

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Fig. 2: Rehabilitation medicine team

rays, (5) Electricity, (6) Tailor-made designed therapeutic exercises, (7) Supportive and assistive Orthotic devices, (8) Human help, (9) Mind of a patient, (10) Team work in harmony.

Patient's thinking is harnessed and is motivated to achieve the goal of an independent human of the family and society. Patient is the active achiever of the goals and not the passive recipient of the rehab program.

Rehabilitation Medicine Team (Fig. 2)

Physical medicine and rehabilitation needs a well-coordinated team approach. The team members include: patient, care giver, family and friends, orthopedic surgeon, physical therapist, occupational therapist, speech pathologist and audiologist, orthotic and prosthetic engineer, rehab nurse, medical social worker, vocational counsellor, clinical psychologist, psychiatrist, neurologist, urologist, non-government organization (NGO).

IMPAIRMENT-DISABILITY-HANDICAP

International Classification of Disease (ICD) (Etiology > Pathology > Manifestations)

ICD provides a valuable and relevant means for studying the health experience and underlying cause concept is additionally helpful.

International Classification of Impairment, Disability, Handicap (ICIDH-1980 by WHO) Disease/Damage > Impairment > Disability > Handicap.

IMPAIRMENT (I code) any loss or abnormality of physiological, psychological, anatomical structures or functions, e.g. loss of a finger,

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loss of conduction of an impulse, loss of certain chemicals in brain leading to parkinsonism. Not all impairment lead to disability, e.g. loss of pinna of an ear would not lead to hearing loss but merely loss in cosmetic appearance. Impairment need not become handicap. Person can overcome impairment and can function fully (Impairment represents disturbance at organ level).

DISABILITY (D code) any restriction or loss of ability to perform an activity within the range considered normal for a person, resulting from an impairment, e.g. difficulty in walking after lower limb amputation. To be considered disabled, a person is not able to perform day to day activities normal for his age, sex and physique (Disability represent disturbance at the person level).

HANDICAP (H code) a disadvantage for a given individual in his/her social context, resulting from impairment or disability that limits or prevents from fulfillment of a role that is normal for that individual of his age, sex and physique. Many Socioeconomic factors like family background, financial status, living-learning earning, architectural set up, play a role in determining the handicap (Handicaps represent interactions-adaptations at social and surrounding level).

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Management of Spinal Cord Injury *by* Physiotherapist

Salient Features

- A patient-focused book
- Presents the scenario from "Site to Settlement" of spinal cord injury (SCI) patients
- Deals with the learning and understanding of rehabilitation process in general patients and that of SCI patients in particular
- Includes various physiotherapy rehabilitation topics along with the rehabilitation process of SCI patients
- Provides for medical and surgical management of spinal cord injury followed by various rehabilitation processes and programs
- Useful for all the rehabilitation students, including final year B Physio/MPT/BOT/BPO and rehabilitation professionals as well.



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ISBN 978-93-5270-269-5