# Stroke rehabilitation in low resource countries: time to provide an organised service

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## ABSTRACT

**Introduction:** Stroke is one of the leading causes of death and disability in low- and middle-income countries (LMICs). The proven efficacy for rehabilitation interventions in improving stroke outcomes in LMICs supports the need to strengthen the rehabilitation workforce. Low-cost physical rehabilitation interventions requiring minimal resources, self-rehabilitation, tele-rehabilitation and involvement of family and other carers can be a solution and improve functional outcomes.

**Method:** A literature search using the terms Stroke and Rehabilitation were carried out by the Chief Librarian at St. Richard's Hospital, the University Hospital Sussex. Four databases, namely Ovid Medline, EMBASE, CINAHL and Ebsco CINAHL, were searched using appropriate subject headings and free text terms such as stroke and rehabilitation . We used free text terms to look for concepts synonymous with rehabilitation in LMICs. We did not search for individual countries or continents/sub-continents.

**Results:** Relevant results from 2015 to current were included. Twenty articles were finally chosen which included the most relevant and useful information for the purpose of this article.

**Conclusion:** Populations in LMICs are exposed to health systems which do not include rehabilitation services. In addition, there are personal barriers to accessing quality stroke rehabilitation that could improve stroke survival and functional outcomes. Although there have been some improvements in the development of stroke rehabilitation in some LMICs, further investment is required to ensure that LMICs continue to receive the best quality rehabilitation services. There are measures that can be put in place to reduce these deficiencies. Collaboration between LMICs and developed countries has been growing but this needs to be extended, especially in training doctors in Rehabilitation Medicine and upskilling therapists. The World Health Organisation Rehabilitation 2030 is an action plan to scale up rehabilitation so that countries, especially LMICs, can be better prepared to address the evolving rehabilitation needs of populations by 2030.

**Keywords:** rehabilitation, stroke rehabilitation, physical and rehabilitation medicine, low- and middle-income countries.

## Introduction

Stroke is one of the leading causes of death and disability in low- and middle-income countries (LMICs).[1] The proven efficacy for rehabilitation interventions in improving stroke outcomes in LMICs supports the need to strengthen the rehabilitation workforce.[2] Low-cost physical rehabilitation interventions requiring minimal resources, self-rehabilitation, tele-rehabilitation and involvement of family and other carers can be a solution and improve functional outcomes.[1]

A literature search using the terms Stroke and Rehabilitation were carried out by the Chief Librarian at St. Richard's Hospital, the University Hospital Sussex. Four databases, namely Ovid Medline, EMBASE, CINAHL and Ebsco CINAHL, were searched using appropriate subject headings and free text terms such as stroke and rehabilitation. We used free text terms to look for concepts synonymous with rehabilitation in LMICs. We did not search for individual countries or continents/ sub-continents. Relevant results from 2015 to current were included. Twenty articles were finally chosen which included the most relevant and useful information for the purpose of this article.

I present the findings and discussions under the following headings and a conclusion at the end of the article.

## Rehabilitation and Multidisciplinary Team (MDT) nature of rehabilitation delivery

Rehabilitation is a pathway to active change by which a person who has become disabled acquires the skills needed for optimum physical, psychological, and social function. It is a process of assessment, and management by which the individual, family and carers are supported to achieve optimal physical, cognitive, social and psychological function, participation in society and improvement in quality of living.[1,3,4] The National Health Service (NHS) in the United Kingdom defines rehabilitation as a process of adjustment and recovery from injury, illness or disease. Effective rehabilitation requires input from the patient, family, and friends as well as treatment from the specialist healthcare team.

The core function of an MDT is to bring together a group of healthcare professionals from different fields (Physiotherapy, Occupational therapy, Speech and language therapy, clinical psychology, orthotists, and Medical Doctors) with training in Rehabilitation Medicine in order to formulate and support with an appropriate holistic treatment plan. MDT meetings, to set or review treatment goals, need to be held regularly to ensure satisfactory progress is being made. Rehabilitation is central to Universal Health Coverage and access should be considered a human right.

## Stroke in Low and Middle income countries (LMICs)-challenges to rehabilitation

Expanding access to rehabilitation services in LMICs requires overcoming barriers at macrosystemic, professional, and community levels.[6] Whereas in higher income countries the incidence is falling[7] stroke is the second leading cause of global disability with 87% of stroke-related disability occurring in LMICs.[8] Stroke is a huge public health burden worldwide with substantial treatment, rehabilitation and social costs. Developing countries lack data, resources, policies and structures to deal with this burden.

The urgent need for improvements in access to coordinated stroke rehabilitation in LMICs is clear. The greatest needs are in countries with the least rehabilitation infrastructure,[5] where service development, guidelines, and research are lacking. The global burden of stroke is highest, and rising, in LMICs.[1]

A meta-analysis concluded that an MDT with supported early discharge reduces length of hospital stay, increases independence for survivors of mild-to-moderate stroke.[9] However, in most LMICs, patients are discharged from hospital without post-discharge professional support and to prevent falls, contractures, pressure ulcers, depression and consequences of swallowing difficulties.

## Personal experience

Establishing effective MDTs in LMICs can be challenging. The traditional organ-based disease doctor-centred approach still dominates in some countries. It is assumed that the doctor knows best, will act in the patient's best interest, and can dictate the relationship. This model does not involve working members of an MDT. The Lead Doctor might see himself/herself superior to other team members and not realising that a shared experience with other MDT members is a better approach.

The importance of the rehabilitation medicine specialty is not well-recognised in some LMICs. The health professional may perceive it as inferior to organ-based medicine. The public attitude tends to focus on medical and surgical specialties which generate a good income for

doctors and hospitals.

Governments need to demonstrate publicly that rehabilitation provides good long-term outcomes enabling people to return to the community and hence participate in that community and possibly gainful employment so benefitting local and national economies.

In some cases (e.g., spinal injuries) patients may require longer stays in the rehabilitation unit to achieve their goals. Most patients cannot afford the cost of rehabilitation and insurance companies do not usually pay for rehabilitation for stroke.

A number of patients need a prolonged rehabilitation process to be continued in the community. In most developing countries, patients are discharged from acute stroke care with the expectation that families undertake their ongoing care without adequate advice.

Some private providers of rehabilitation use some techniques and equipment that are not fully evidence-based. For example, some private clinics use expensive "repetitive transcranial magnetic stimulation" (rTCMS) therapy for stroke sufferers. These and other such remedies cannot replace a hands-on and effective rehabilitation programme via an MDT approach which is more evidenced based for better patients' outcome post stroke.[9]

## WHO-Rehabilitation 2030

In 2017 the World Health Organisation (WHO) launched Rehabilitation 2030[10]- a call for action to scale up rehabilitation so countries can be prepared to address the increasing needs of populations up to 2030.

The WHO recommends that after a stroke, a patient should have access to rehabilitation specialists (physiotherapists, occupational therapists, and speech and language therapists). Successful implementation of the WHO's plan to scale up rehabilitation services will require political, professional, economic, and sociocultural issues to be addressed.

## Action plan and suggestions

The following points are suggested to inform an action plan to improve rehabilitation service in LMICs. Raising awareness among public and healthcare professionals is a first step to show the importance of rehabilitation. New stroke rehabilitation service models should be tested with associated education and information systems.

The provision of a structured stroke rehabilitation in a defined hospital unit is strongly advised. This will act as a base for the MDT where education and skills training for patients, caregivers, and community health workers is carried out. This can be progressed through face-to-face contact, use of well-illustrated pamphlets, and small teaching sessions. Sharing experiences by patients who have undergone successful rehabilitation is a valuable exercise.

Setting patient-centred and personalised SMART (Specific, Measurable, Achievable, Relevant, Time bound) goals should be reviewed regularly to measure progress and enhance motivation to continue the process of rehabilitation.

Using home-based equipment requires appropriate supervision by therapists or trained community health

**Table 1. WHO initiatives to strengthen the health system by integrating rehabilitation needs[10]**

- Increase the multidisciplinary rehabilitation workforce.
- Develop and implement financing and procurement policies that ensure assistive devices and products are available to all who need them, and ensure adequate training about their use.
- Integrate rehabilitation into health system policy and practice and also into and between primary, secondary, and tertiary levels of the health system.
- Ensure both community-based and hospital-based rehabilitation services are available.
- Ensure financial resources are allocated to rehabilitation services.
- Where health insurance exists or is to be made available, ensure that it covers rehabilitation services.
- Expand the use of affordable technologies and devices (e.g. wheelchairs, orthotics) and ensure adequate training in their use.
- Expand research programmes and develop good practice guidelines.
- Ensure hospitals include specialised rehabilitation units for inpatients with complex needs.

workers. Tele-rehabilitation might be worth exploration at a later stage in some LMICs but extra funding would be needed. Workshops involving community health workers, caregivers, and patients are worth consideration.

## Needs and role of community health workers and field workers [5,11,12]

Developing community health workers to continue rehabilitation programmes is a most important aspect of rehabilitation services in LMICs. Transfer of more roles to community health workers is practical. These health workers should be educated and supported to provide surveillance and referrals to hospital rehabilitation units as well as provision of social support, enabling self-help groups, networking with families, health centres and other agencies.

Strategies to motivate community health workers in the provision of good quality services should include training, options for career progression, accreditation, regulation, and licensing by a regulating body. Recognition of the importance of acquired skills further incentivizes health workers. Family members and caregivers of people with stroke are valuable as therapy extenders, assisting patients with mobility, wheelchair activities, balance and self-care, and speech and language. As the population ages, families increasingly have to provide broad support for older family members who culturally and traditionally are respected members of the family in LMICs.

The minimum requirements for establishing a Rehabilitation Unit are:[13]

- A geographical unit within a hospital with a Therapy gymnasium, MDT room, occupational therapy kitchen, an activities room, wheel chair bay.
- If space allows a one bed room facility through which complex stroke cases may be discharged to see how well they are likely to cope at home.
- Doctor with interest in stroke rehabilitation.
- Physiotherapists, occupational therapists, Nurses, Healthcare Assistants, cleaners to cover morning, twilight, and night shifts.
- A community Early Supported Discharge (ESD) team to provide care in the community.

## Conclusions

There is evidence for the value of rehabilitation interventions post-stroke in developing countries. The introduction of organized, structured rehabilitation post stroke services into LMICs is imperative. This will improve physical and psychological outcomes and help with reintegration and participation of stroke survivors in their communities.

With a higher burden of stroke and stroke-related morbidity and mortality, residents of LMICs face multiple health systems and personal barriers to accessing quality stroke rehabilitation that could improve survival and functional outcomes. Rehabilitation services need to be developed and integrated into current physical medicine services to provide seamless care.

Measures should be put in place to close the gap of the inadequate services currently available in LMICs. These must include the expansion of training opportunities, and upskilling general physicians and doctors interested in Rehabilitation Medicine. The training of therapists needs to be enhanced and community rehabilitation healthcare workers should be trained in the local stroke rehabilitation units thence to continue rehabilitation in the community. It is essential to implement cost-effective and low-resourced systems of acute stroke care, community-based rehabilitation and group rehabilitation sessions, using, where possible, tele-rehabilitation programmes, and task-shifting rehabilitation programmes to lower-level healthcare workers and/or informal family caregivers.[1,11]

Governments in LMICs must be involved in prioritising stroke rehabilitation services as a crucial component for achieving the World Health Organisation's Rehabilitation 2030 Action Plan. Stroke rehabilitation in LMICs has the potential to lead to better survival and outcomes with less stroke-related disability and improved national economic productivity.

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