RESEARCH MONOGRAPH

CASE STUDY

Physiotherapy Department

&

Limb Center

Assessing TMSS Health Intervention

TMSS Health Research Foundation (THRF)

A Wing of
TMSS Grand Health Sector

TMSS, Bogura, Bangladesh

Janaury, 2026

Research Monograph

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2026


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৬ষ্ঠ তলা


কৃত্রিম অঙ্গ সংযোজন এন্ড ব্রেস ফিটিং কেন্দ্র
GENERAL WORKSHOP
টিএমএসএস

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CASE STUDIES

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ABBREVIATIONS

ADL – Activities of Daily Living

AI – Assistive Intervention

BDT – Bangladeshi Taka

CBR – Community Based Rehabilitation

CSR – Corporate Social Responsibility

DALY – Disability Adjusted Life Year

GDP – Gross Domestic Product

ICF – International Classification of Functioning, Disability and Health

LMIC – Low and Middle Income Country

NGO – Non-Governmental Organization

NCD – Non-Communicable Disease

OPD – Outpatient Department

PHC – Primary Health Care

PWD – Persons with Disabilities

PT – Physiotherapy

RHC – Rehabilitation Health Center

SDG – Sustainable Development Goals

THRF – TMSS Health Research Foundation

TGHS – TMSS Grand Health Sector

TMSS – Thengamara Mohila Sabuj Sangha

UN – United Nations

UNCRPD – United Nations Convention on the Rights of Persons with Disabilities

WHO – World Health Organization

Glossary

Assistive Devices: Equipment such as prosthetic limbs, orthotic supports, crutches, or wheelchairs designed to improve mobility and independence for individuals with physical impairments.

Community-Based Rehabilitation (CBR): A development strategy within community development aimed at rehabilitation, equalization of opportunities, and social inclusion of persons with disabilities.

Disability: According to the WHO framework, disability refers to impairments, activity limitations, and participation restrictions affecting individuals' interactions with their environment.

Orthotics: External devices used to support, align, prevent, or correct deformities of limbs or the spine.

Physiotherapy: A healthcare profession that focuses on restoring movement and function through physical rehabilitation, exercise therapy, and manual therapy.

Prosthetics: Artificial devices designed to replace missing body parts, particularly limbs.

Rehabilitation: A set of interventions designed to optimize functioning and reduce disability in individuals with health conditions.

Functional Independence: The ability of individuals to perform daily activities without external assistance.

Inclusive Health Care: Health services that are accessible and equitable for all populations, including persons with disabilities.

Mobility Impairment: A physical condition that limits a person's ability to move freely and perform daily tasks.

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Executive Summary

The provision of rehabilitation services remains a major challenge in many low- and middle-income countries, including Bangladesh. Limited access to physiotherapy services, shortage of trained professionals, and the high cost of prosthetic and orthotic devices have left many individuals with disabilities without adequate treatment and rehabilitation. In this context, the initiative of TMSS Health Research Foundation (THRF), under the TMSS Grand Health Sector (TGHS), represents an important institutional effort to address these gaps through community-oriented health interventions.

This research monograph presents a case study assessing the impact of the TMSS Physiotherapy and Limb Center on the lives of patients and communities. The center was established with the objective of providing affordable physiotherapy, prosthetic limb services, and rehabilitation support to individuals suffering from physical disabilities, injuries, and chronic musculoskeletal conditions. The initiative aligns with national and global commitments toward inclusive health care and the achievement of the Sustainable Development Goals, particularly those related to good health, reduced inequalities, and inclusive societies.

The study explores how the center contributes to improving mobility, functional independence, and social inclusion among patients. Evidence collected through qualitative observations, patient narratives, and institutional records indicates that the center has significantly improved access to rehabilitation services for economically disadvantaged populations. Many patients who previously experienced limited mobility or complete physical dependency have regained the ability to perform daily activities and participate in economic and social life.

The availability of prosthetic limbs and orthotic support services has also played a critical role in restoring mobility among amputees and individuals affected by congenital disabilities or accidents. These services not only improve physical functionality but also enhance psychological well-being and social confidence among patients. Access to assistive devices allows beneficiaries to return to work, education, and community engagement.

Another significant contribution of the center lies in community awareness and early intervention. Through outreach programs and community engagement initiatives, the center promotes awareness about rehabilitation services, disability rights, and the importance of early physiotherapy treatment. Such initiatives help reduce stigma associated with disability and encourage families to seek medical support at an early stage.

From a policy perspective, the TMSS model demonstrates how non-governmental organizations can complement national health systems by delivering specialized rehabilitation services at the community level. The integration of physiotherapy services with social support and community awareness programs creates a holistic approach to disability management.

However, the study also identifies several challenges, including limited funding, shortages of specialized rehabilitation professionals, and increasing demand for services. Addressing these challenges will require stronger collaboration between government agencies, development partners, and civil society organizations.

Overall, the findings of this case study highlight the transformative impact of physiotherapy and prosthetic rehabilitation services in improving the quality of life of persons with disabilities. The

experience of the TMSS Physiotherapy and Limb Center provides valuable lessons for expanding community-based rehabilitation programs across Bangladesh and similar contexts.

Impact of Physiotherapy and Limb Center

The TMSS Physiotherapy and Limb Center has emerged as an important institutional intervention aimed at addressing the rehabilitation needs of individuals with physical disabilities and mobility impairments. The impact of the center can be analyzed from several dimensions including physical health improvement, social inclusion, economic empowerment, and community awareness.

One of the most significant impacts of the center is the improvement in physical mobility and functional independence among patients. Physiotherapy treatment plays a critical role in restoring movement, reducing pain, and strengthening muscles. Patients suffering from stroke, spinal cord injuries, orthopedic trauma, and chronic musculoskeletal disorders have benefited from structured rehabilitation programs. Regular physiotherapy sessions help patients regain mobility and improve their ability to perform activities of daily living.

Another important impact is the provision of prosthetic and orthotic devices. Individuals who have lost limbs due to accidents, disease, or congenital conditions often face severe physical and psychological challenges. The availability of prosthetic limbs enables patients to regain mobility and independence. Orthotic supports help correct deformities and provide structural support for weakened limbs. These services significantly reduce disability and promote physical rehabilitation.

Beyond physical recovery, the center also contributes to psychological well-being and social reintegration. Disability often leads to social exclusion, stigma, and loss of self-confidence. Rehabilitation services provided by the center help restore dignity and confidence among patients. Many beneficiaries reported improved self-esteem after receiving treatment and assistive devices.

Economic empowerment is another key dimension of the center's impact. When individuals regain mobility and independence, they are more capable of participating in productive activities. Several beneficiaries of prosthetic limb services have been able to return to work or start small businesses. This not only improves their financial condition but also reduces dependency on family members.

The center also contributes to community awareness about disability and rehabilitation. Through outreach activities, community meetings, and health awareness programs, the institution educates communities about the importance of early rehabilitation and inclusive social attitudes. Such initiatives help reduce stigma associated with disability and encourage families to seek professional support.

Furthermore, the center plays an important role in supporting national and international commitments related to disability inclusion. Bangladesh is a signatory to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which emphasizes equal access to healthcare and rehabilitation services. The work of the TMSS Physiotherapy and Limb Center aligns with these commitments by promoting accessible and inclusive healthcare services.

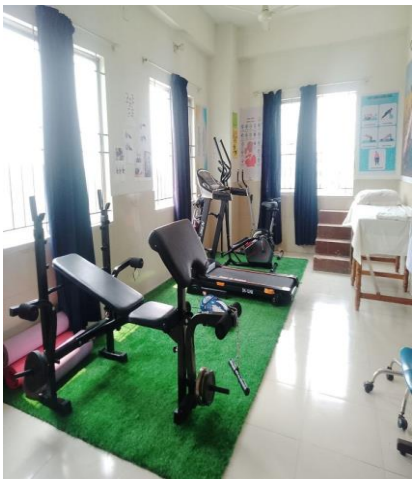
Despite these achievements, the growing demand for rehabilitation services highlights the need for expansion of such facilities. Many rural areas in Bangladesh still lack access to physiotherapy and prosthetic services. Strengthening institutional capacity, training rehabilitation professionals, and increasing financial support will be necessary to sustain and expand the impact of such initiatives.

TMSS Physiotherapy and Rehabilitation Center (TPRC)

Introduction

TMSS Physiotherapy and Rehabilitation Center: An Overview

Physiotherapy is widely recognized as an essential component of comprehensive health systems, particularly in contexts where the burden of chronic disease, disability, and musculoskeletal and neurological disorders is increasing. The discipline is grounded in evidence-based practice and aims to optimize movement, restore functional capacity, and enhance overall physical well-being. In Bangladesh, rapid demographic transitions, increased life expectancy, and the growing prevalence of non-communicable diseases and injuries have intensified demand for accessible and specialized rehabilitation services. In response to these emerging needs, the TMSS Physiotherapy and Rehabilitation Center (TPRC), established in 2008, represents a strategic institutional initiative designed to strengthen rehabilitation capacity within the national health landscape. Through nine specialized service branches and a team of trained physiotherapists and medical technologists, the center delivers patient-centered, multidisciplinary rehabilitation care that contributes to disability prevention, functional recovery and improved quality of life.



Objective

The primary objective of TPRC is to provide equitable, evidence-based physiotherapy and rehabilitation services across all age groups and clinical conditions. It aims to deliver standardized, high-quality care while promoting community awareness of pain management, disability prevention, and functional restoration. The center also seeks to strengthen rehabilitation systems through specialized services and continuous professional development.

Goal

The central goal of TPRC is to promote long-term physical independence and sustainable functional mobility among patients. It focuses on restoring physical function, reducing pain, and preventing complications through early, evidence-informed interventions. The center also emphasizes patient empowerment to enhance participation in daily, occupational, and social life.

Tailored Approach

Customized therapy plans based on patient's unique needs and goals.

Collaborative Care

Patients actively involved in developing their treatment strategies.

Continuous Evaluation

Regular assessments to monitor progress and adjust plans as required.

Specialized Care

Highly trained professionals providing personalized treatment plans.

Collaborative Approach

Work closely with other healthcare providers for comprehensive care.

Continuous Learning

Stay up-to-date with the latest advancements in physiotherapy.

Target Population

TPRC serves individuals with orthopedic conditions, neurological disorders, and post-surgical rehabilitation needs. The center supports women requiring prenatal, postnatal, and pelvic floor rehabilitation, as well as children with developmental and congenital conditions. Elderly individuals with mobility limitations, chronic pain, and fall-related risks are key beneficiaries of its services. It also caters to athletes, burn survivors, Hajj pilgrims, and critically ill patients requiring specialized rehabilitation and respiratory care.

Impact

The TMSS Physiotherapy and Rehabilitation Center has demonstrated substantial clinical, social, and community-level impact. Clinically, the center contributes to the reduction of disability burden, chronic pain, and functional limitations through the application of advanced therapeutic modalities, including manual therapy, electrotherapy, therapeutic exercise, mobilization techniques, laser therapy, and technology-assisted rehabilitation. These interventions are aligned with international best practices and are reinforced through multidisciplinary collaboration with physicians, surgeons, neurologists, gynecologists, pediatricians, and other healthcare professionals to ensure holistic and coordinated care. Socially, the services provided by TPRC enhance individual quality of life by improving mobility, independence, and capacity for productive participation in family and community life. From a public health perspective, the center contributes to cost reduction by preventing complications, minimizing long-term disability, and decreasing hospital readmissions. At the community level, its emphasis on health education and preventive practices promotes active lifestyles, ergonomic behaviors, injury prevention, and self-care, thereby strengthening collective awareness of the long-term value of physiotherapy and rehabilitation.

Conclusion

Physiotherapy occupies a critical role in contemporary healthcare systems by promoting functional independence, reducing disability, and improving population-level well-being. The TMSS Physiotherapy and Rehabilitation Center provides a structured and specialized institutional platform that addresses the evolving rehabilitation needs of Bangladesh through evidence-based practice, patient-centered service delivery, and multidisciplinary collaboration. The center's impact is reflected in improved mobility, reduced functional impairment, and enhanced quality of life among the population it serves across its nine specialized branches. As Bangladesh continues to confront shifting health and demographic challenges, sustained investment in physiotherapy and rehabilitation services remains essential. Within this context, TPRC stands as a model for integrated rehabilitation care and a significant contributor to national health system strengthening and human development.

Table: Physiotherapy Patient Scenario: At A Glance

Year	Numbers
2023	6195
2024	11654
2025	19798
Total	

Source: Internal Document, 2025

Case Study:01

Restoring Function and Reclaiming Dignity through Physiotherapy Rehabilitation

Abstract:

This case study presents an academically structured analysis of the rehabilitation journey of ***Mr. Amzad Hossain Bulbul, a 63-year-old*** retired NGO worker from rural Bogura, Bangladesh, following a traumatic lower limb injury sustained in a road accident. The study explores his physical, emotional and social challenges during recovery and examines the evidence-based physiotherapy interventions provided by TMSS Physiotherapy & Rehabilitation Center. Findings highlight the restorative potential of physiotherapy not only on physical mobility but also on psychological well-being, dignity, and community reintegration. The case further illustrates the role of rural rehabilitation centers in strengthening community health systems and improving functional outcomes for older adults.

Key words: TMSS, Physiotherapy, Community reintegration, Traffic, Accident.

Introduction

Musculoskeletal trauma is a leading cause of disability among older adults in Bangladesh, particularly in rural areas where access to rehabilitation services remains limited. Physiotherapy plays a crucial role in restoring function, preventing long-term complications, and improving quality of life after injury. This case study examines the comprehensive rehabilitation of Mr. Amzad Hossain Bulbul, whose life was significantly disrupted by a road traffic accident. The study adopts a qualitative and analytical lens to explore his physical limitations, psycho-social struggles, and eventual recovery through structured physiotherapy.

Background

Mr. Bulbul resided in *Kutubpur* village of *Shariakandi Upazila* a community characterized by close social ties and reliance on agriculture. Despite living with extended family, he valued personal independence and maintained an active lifestyle. Before the accident, he regularly walked to the mosque, engaged in community discussions, and participated in household decision-making. His identity as a former NGO worker earned him social respect, and autonomy formed a central component of his self-worth. The injury significantly altered these dynamics, posing profound implications for his physical and emotional well-being.

Nature of Injury and Immediate Consequences

On January 10, 2024, a collision between his auto-rickshaw and another vehicle caused direct trauma to his left leg. Emergency services were provided in one Hospital at Bogura town focused primarily on stabilizing the injury and ruling out fractures. Although no fractures were detected, he was placed on one month of strict bed rest. After immobilization, he experienced severe weakness, inability to stand or walk unassisted, sharp pain on knee flexion, and difficulty climbing stairs or using a toilet. Psychologically, he suffered frustration, loss of dignity, avoidance of social interactions, and growing dependency conditions that exacerbated his sense of vulnerability.

Decision-Making and Transition to Physiotherapy

When weeks of rest and medication produced no functional improvement, a relative recommended seeking rehabilitation services at TMSS Physiotherapy & Rehabilitation Center. During his initial evaluation, Physiotherapists measured joint mobility, assessed gait, examined posture, and evaluated pain intensity. Clinical findings indicated severe functional impairment: pain scored at 8/10, restricted knee and ankle mobility, significant muscle weakness, and inability to walk without support. Importantly, the assessment included patient–centered communication addressing his fears, expectations, and desire to regain independence.

Rehabilitation Process and Evidence-Based Interventions

Rehabilitation was initiated using a phased, evidence-based approach:

Pain Reduction and Inflammation Control

Early sessions focused on pain modulation through manual therapy, Interferential Therapy (IFT), gentle joint mobilization, and isometric exercises. These interventions reduced pain and swelling, enabling gradual restoration of mobility.

Restoring Mobility and Strength

As symptoms subsided, sessions progressed to active exercises targeting flexibility, coordination, and strength. Besides, step training, balance improvement, gait re-education, and progressive strengthening exercises were introduced. Additionally, Mr. Bulbul has been advised for home-based exercises to reinforce the clinic-based progress.

Functional and Task-Oriented Training

Physiotherapists emphasized culturally relevant goals; walking to the mosque independently, climbing steps confidently, and using household facilities without assistance. Such meaningful milestones enhanced motivation and contributed to sustained engagement in rehabilitation.

Patient Perspective and Psycho-social Transformation

After two months of structured therapy, Mr. Bulbul achieved substantial functional improvements that includes independent walking beyond 200 meters, stair-climbing without support, full squatting, and near-normal strength. Pain had reduced to negligible levels. Yet, the most profound change occurred in his emotional recovery. He reported restored confidence, renewed social participation, and regained dignity. His narrative reflects the holistic value of physiotherapy: “I live again.”

Organizational Perspective and System-Level Implications

TPRC has played a crucial role by providing affordable, accessible and high-quality rehabilitation. The case underscores the importance of integrating physiotherapy into mainstream healthcare and highlights physiotherapy’s cost-effectiveness in preventing disability, reducing caregiver burden, and promoting social reintegration. TMSS staff emphasized the need for expanded rural rehabilitation services and continuous community awareness to address the growing burden of injury and age-related impairments.

Community Impact and Broader Significance

As Mr. Bulbul improved, community members became curious about his recovery. His transformation inspired several villagers to seek physiotherapy for their own ailments, thereby contributing to improved community health literacy. The case demonstrates how individual recovery can generate community-level awareness, challenge misconceptions about physiotherapy, and promote evidence-based treatment pathways.

Conclusion

This academic case study highlights the transformative power of physiotherapy in restoring function, reducing disability, and improving psycho-social well-being among older adults in rural Bangladesh. Recovery of Mr. Amzad Hossain Bulbul demonstrates that physiotherapy is not solely a clinical intervention but a pathway to reclaiming dignity, independence, and community engagement. His journey underscores the critical role of rehabilitation services, such as those provided by TMSS, in strengthening rural health systems and enhancing quality of life.

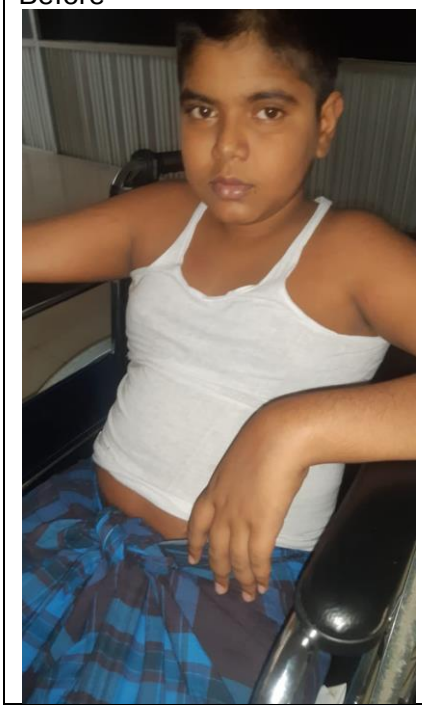
Case Study:02

Sajid's Inspiring Rehabilitation Story: From Complete Paralysis to Cycling Again

Abstract:

This case study documents the remarkable recovery of Sajid, a 14-year-old student from Sherpur in Bogura District, whose sudden onset of transverse myelitis rapidly progressed to quadriplegia. His complex journey through multiple healthcare facilities, the development of severe pressure ulcers, surgical interventions, and intensive neurological rehabilitation illustrates the transformative potential of structured, evidence-based physiotherapy. Sajid's return to school, cycling, and recreational activities after complete motor and sensory loss represents the restoration of physical function, psycho-social identity, and family hope made possible through persistent, compassionate, and expert-guided rehabilitation at TMSS Medical College Hospital.

Key words: TMSS Medical College, Transverse myelitis, Physical Function, Physiotherapy

Before	After 60 sessions	After 90 sessions
		

Onset: When Play Turns into Crisis

Sajid, an energetic adolescent from Bogura, was known for his love of cycling and fishing along the Karatoa River. Born of two school teachers' house, he enjoyed a nurturing and academically supportive environment. His symptoms began as mild neck pain during routine play discomfort he initially ignored. Later that evening, the pain persisted during prayers at the local mosque, prompting him to seek help.

As weakness rapidly developed in his arms and legs, his parents initially misinterpreted his symptoms as attempts to avoid school work an understandable reaction given the sudden onset, absence of visible injury, and limited awareness of conditions such as transverse myelitis. By the time the seriousness of his condition became evident, Sajid's neurological deterioration had progressed substantially.

Medical Journey: Navigating Multiple Facilities

Sajid's pathway through the healthcare system evolved into a challenging succession of referrals. The local hospital quickly recognized the complexity of his condition and referred him onward. Subsequent evaluation at *Shaheed Ziaur Rahman Medical College*, Bogura revealed worrying findings, yet his deterioration continued to outpace diagnostic clarity.

A comprehensive neurological assessment, including MRI, was finally conducted at TMSS Medical College Hospital, where he received a definitive diagnosis of transverse myelitis an inflammatory disorder of the spinal cord capable of causing severe motor, sensory, and autonomic dysfunction. Given the urgent nature of his condition, he was referred to the National Institute of Neuro Sciences in Dhaka for specialized management. Before stabilization could be achieved, his condition was deteriorated further, resulting in transfer to Bangladesh *Shishu Hospital* for intensive care. By this time, Sajid had lost all voluntary movement and sensation.

His movement across five healthcare institutions imposed emotional, physical, and financial burdens on the family and exposed systemic challenges such as fragmented referral pathways, inconsistent communication, and gaps in coordinated care.

Preventable Crisis: Iatrogenic Injury

During his ICU stay, a significant pressure ulcer developed within six days; a complication was noticed not by clinical staff but by Sajid's mother. Given his immobility, sensory loss, and critical illness, pressure ulcer prevention protocols should have been rigorously implemented. The rapid progression of the ulcer indicated lapses in essential ICU practices such as repositioning schedules, skin surveillance, and use of pressure-relieving surfaces. The ulcer later became infected, requiring two surgical interventions and significantly delaying rehabilitation.

Family's Overwhelming Burden: Psychological and Financial Crisis

The emotional toll on Sajid's parents was immense. Witnessing their healthy and lively son become fully dependent created profound distress, guilt, and fear. The relentless demands of caregiving—turning him every two hours, feeding slowly to prevent aspiration, and managing bathing and hygiene occurred alongside their professional responsibilities as teachers. Financial strain deepened with expenditures exceeding five lakh taka for hospitalizations, surgeries, physiotherapy, and travel between Bogura and Dhaka.

Despite these overwhelming challenges, the family remained committed advocates for their son's recovery.

Turning Point: Engaged with TMSS Physiotherapy & Rehabilitation Center

After returning home briefly from Dhaka without meaningful improvement, the family sought continued care at TMSS Medical College Hospital the institution that had provided the initial accurate diagnosis. The decision reflected the need for continuity, proximity, affordability, and, most importantly, specialized rehabilitative care.

TPRC implemented an integrated management plan addressing neurological rehabilitation and pressure ulcer recovery. Following wound stabilization and surgical management, Sajid began intensive twice-daily physiotherapy adhering to evidence-based protocols.

Comprehensive Neurological Rehabilitation

Rehabilitation incorporated multiple specialized components as like

- **Manual Therapy**: Joint mobilization, soft tissue techniques, and sensory stimulation to preserve mobility and support neural recovery.
- **Electrotherapy**: Russian stimulation to target deeper muscle activation and Faradic stimulation for neuromuscular re-education.
- **Gait and Balance Training**: Gradual progression from supported standing to parallel bar walking, followed by complex tasks such as navigating obstacles, stairs, and uneven terrain.

This multimodal approach effectively prevented severe muscle atrophy, enhanced neural recovery, and re-established functional mobility.

Remarkable Recovery: Three Months into Transformation

Within three months, Sajid regained the ability to walk, cycle, attend school, and participate in recreational activities outcomes that far exceeded typical expectations for transverse myelitis recovery. His improvement reflects the combined impact of early, intensive rehabilitation, strong neuroplastic potential in adolescence, and exceptional family support.

Lessons revealed

Pressure ulcer prevention remains a critical quality-of-care gap, reflecting weaknesses in clinical protocols, workforce capacity, and accountability despite being largely preventable. Access to timely and specialized rehabilitation, particularly physiotherapy, is essential for improving recovery trajectories and preventing secondary complications, yet remains insufficiently integrated into routine care. Fragmented service delivery and weak referral and communication systems undermine effective care coordination for complex neurological conditions. High out-of-pocket expenditures for prolonged and specialized care expose households to severe financial hardship, underscoring the need for stronger financial protection mechanisms. Enhancing public awareness of early neurological warning signs is vital to promote timely care-seeking, reduce delays, and improve long-term health outcomes.

Conclusion: Reclaiming Adolescence

Sajid's journey exemplifies the restorative power of coordinated medical and rehabilitative care. His recovery highlights how comprehensive physiotherapy, family dedication, and timely intervention can transform even the most devastating diagnoses. Today, his return to school, cycling, and everyday activities symbolizes more than physical recovery it reflects renewed identity, independence, and hope.

His life-story serves as both a model of successful rehabilitation and a call to strengthen healthcare systems so that preventable complications are avoided and more children can reclaim their futures with dignity and support.

Case Study:3

Golap Banu's Journey: From Traditional Healing to Evidence-Based Physiotherapy

Abstract

This case study examines the clinical, cultural, and systemic dimensions of the health-seeking journey of *Ms. Golap Banu*, a 54-year-old rural school teacher who experienced *Acute Cervical Radiculopathy*. Initially managed through traditional healing practices rooted in local belief systems, her worsening symptoms led to biomedical diagnosis and referral to physiotherapy at the TMSS Physiotherapy and Rehabilitation Center. Her successful recovery not only restored functional independence but also transformed her into a community health advocate promoting evidence-based physiotherapy. This case underscores how culturally informed patient experiences shape treatment pathways, illustrating the potential for synergistic integration between traditional health beliefs and modern rehabilitation services in rural Bangladesh.

Key words: Cervical radiculopathy, Traditional healing, Physiotherapy, Rural healthcare, Musculoskeletal disorders, Bangladesh, Patient advocacy.

During Treatment	Release Day
	

Introduction

Musculoskeletal disorders constitute a significant yet under-recognized burden across rural Bangladesh, where cultural interpretations of pain and disability frequently influence health-seeking patterns. Cervical radiculopathy typically caused by intervertebral disc pathology or degenerative changes presents with characteristic neck pain radiating to the upper limb. Despite the availability of biomedical approaches, rural population often initially rely on traditional healers because of easy accessibility, cultural familiarity, less costing and perceived trust.

This case study presents the clinical trajectory of Ms. Golap Banu, whose journey from traditional healing to evidence-based physiotherapy highlights the intersection of cultural belief systems, diagnostic accuracy, and rehabilitative care. Her experience illustrates broader systemic challenges and opportunities in rural health, including the potential role of recovered patients as community health advocates.

Background

Ms. Golap Banu, a 54-year-old widow and primary school teacher from Doripara village of Gabtoli Upazila in Bogura District, represents the resilience characteristic as many rural Bangladeshi women. After the death of her husband 15 years earlier, she single-handedly raised two children despite financial hardship and the social vulnerabilities associated with widowhood. Her dedication to education resulted in her son becoming an Intern Doctor, that an exceptional achievement within rural socio-economic constraints.

As a teacher, her occupational role requires continuous use of the cervical spine writing on boards, supervising children, prolonged neck flexion which increases susceptibility to cervical musculoskeletal issues. Her social status as an educator also positions her as a respected figure in community health communication networks. Thus, her personal health journey carries broader implications for community-level health literacy.

Clinical Onset and Symptom Progression

Her condition began abruptly one morning with severe neck pain radiating down the left arm, forearm, and hand. The distribution of symptoms indicated cervical nerve root involvement, consistent with cervical radiculopathy. Such presentations usually arise from disc herniation, foraminal stenosis, or degenerative cervical spondylosis, causing neuropathic pain along dermatomal pathways.

The progressive intensification of pain suggested worsening neural compression and prompted a search for immediate relief. However, instead of biomedical treatment, the initial response was shaped by local cultural perceptions of musculoskeletal illness.

Cultural Interpretation: *"Hat Hota/Dabana Utha*[1]*"*

Her neighbors and relatives interpreted her symptoms as ***"Hat Hota/Dabana Utha***"; a widely held rural belief referring to a perceived displacement of the shoulder joint. While physiologically inaccurate, the concept reflects an intuitive community explanation of pain associated with upper limb dysfunction.

Following this interpretation, a traditional female healer was invited to provide oil massage therapy. Such practices are deeply entrenched in South Asian folk medicine and often deliver short-term relief through enhanced circulation, muscle relaxation, and psychological reassurance.

Although Ms. Banu initially experienced mild improvement, the underlying pathology remained untreated. Within days, symptoms worsened significantly, culminating in excruciating pain that exceeded the capacity of traditional modalities. This marked a turning point toward bio-medical intervention.

Bio-medical Diagnosis and Emergency Medical Management

Recognizing the severity of her condition, her family sought treatment from an orthopedic specialist. Clinical examination combined with MRI of the spine the diagnostic gold standard confirmed nerve root compression consistent with cervical radiculopathy. The MRI findings necessitated immediate medical management, likely including anti-inflammatory agents, analgesics, neuropathic pain medications, and instructions regarding cervical support and postural modification.

Crucially, the orthopedic physician acknowledged that sustained recovery would require specialized rehabilitation. Consequently, Ms. Banu was referred to the TMSS Physiotherapy and Rehabilitation Center for intensive physiotherapy reflecting a growing recognition in Bangladesh of physiotherapy's central role in managing musculoskeletal disorders.

[1] In Bangla, it is called in 'Hand Dislocation'.

Physiotherapy Intervention: Evidence-Based Clinical Rehabilitation

At the TMSS center, she underwent a structured two-week physiotherapy program integrating manual therapy, electrotherapy, and therapeutic exercise three pillars of evidence-based rehabilitation for cervical radiculopathy.

Manual Therapy

- **Techniques included:**

Cervical joint mobilization to enhance segmental mobility and reduce mechanical nerve compression. Soft tissue mobilization targeting muscle tension, trigger points, and myofascial tightness. Neural mobilization to improve the gliding ability of irritated nerve roots and reduce neural mechano-sensitivity.

Manual therapy, unlike traditional massage, is guided by anatomical precision, clinical assessment, and biomechanical understanding.

- **Electrotherapy**

Pain modulation and inflammation reduction were addressed through the Use of Transcutaneous electrical nerve stimulation (TENS), Interferential current therapy and Therapeutic ultrasound. These modalities helped reduce spasm, control neuropathic pain, and support tissue healing.

- **Therapeutic Exercise**

Exercises addressed long-term correction and functional restoration: Deep cervical flexor strengthening, Scapular stabilization, Thoracic extension exercises, Cervical range-of-motion training and functional tasks resembling teaching activities. Besides, exercise-based rehabilitation is widely regarded as the most important component for preventing recurrence and ensuring sustainable recovery.

Outcomes: Clinical, Cognitive, and Social Transformation

The response to physiotherapy was remarkable. Within two weeks, Ms. Banu achieved complete resolution of neck and arm pain, restoration of upper limb function, full return to her teaching responsibilities and independence in daily activities

- **Cognitive Shifting**

She developed a clear understanding of the scientific and therapeutic value of physiotherapy, distinguishing it from traditional massage. This shift in knowledge is particularly important in contexts where musculoskeletal pain is commonly attributed to folk explanations.

Emergence as a Community Health Advocate

Her positive experience motivated her to refer multiple individuals suffering from neck and back pain to the TMSS physiotherapy center. As a trusted community figure, her recommendations carry substantial influence. Such patient-led advocacy creates through Informal but effective health education networks, Culturally sensitive pathways to modern care and Earlier intervention for community members

She has thus become a bridge between cultural norms and bio-medical rehabilitation, demonstrating the social multiplier effect of successful treatment.

Lessons for Health Systems and Community Health

- **Integrating Traditional and Modern Healthcare**

Ms. Banu's experience illustrates that traditional healers are often the first point of care not because of medical superiority but due to accessibility, trust, and cultural embeddedness. Instead of viewing traditional and bio-medical systems as oppositional, her case indicates the value of creating complementary referral relationships.

This case highlights physiotherapy's essential role in preventing chronic disability, reducing reliance on opioids or inappropriate medications, restoring function cost-effectively and supporting socio-economic participation.

Conclusion

The case of *Ms. Golap Banu* demonstrates how a single episode of cervical radiculopathy can illuminate broader themes in rural health: the tension and potential harmony between traditional beliefs and evidence-based care, the transformative power of physiotherapy, and the critical role of patient education in shaping community health behaviors.

Her journey from severe pain to complete recovery and subsequently to informal health advocacy exemplifies how clinical success can ripple outward, influencing health-seeking behavior across an entire community. As Bangladesh continues to strengthen rural healthcare systems, stories like hers represent powerful evidence that investing in rehabilitation services, patient education, and culturally sensitive care pathways can produce far reaching social and health benefits.

Case Study-4

Story of Mahinur Rahman Pramanik:
Recovery from Bell's Palsy through Physiotherapeutic Approach

Abstract:

This case study examines the sudden onset, psycho-social disruption, and full functional recovery of Mahinur Rahman Pramanik, a 50-year-old livestock farmer from Bogura District, Bangladesh, who developed acute facial paralysis due to Bell's palsy in October 2025. The study presents his clinical presentation, emotional challenges, diagnostic pathway, and therapeutic progress under the care of TMSS Physiotherapy & Rehabilitation Center [TPRC]. The findings highlight the importance of early neurological rehabilitation, patient-centered physiotherapy, and culturally sensitive communication in restoring facial function, psychological well-being, and social identity in rural health contexts.

Introduction

Bell's palsy is a form of acute lower motor neuron facial nerve paralysis resulting in unilateral facial weakness. Its sudden onset often leads to fear, misinterpretation, and social withdrawal, particularly in rural settings where misconceptions about paralysis persist. Early physiotherapy plays a critical role in improving facial muscle activity, neuromuscular re-education, and functional recovery. This case study analyzes the rehabilitation journey of Mr. Mahinur Rahman Pramanik at TMSS Physiotherapy & Rehabilitation Center, using an academic lens to assess clinical, psychological, and social dimensions.

Background

Before his illness, Mahinur lived a stable and productive life. Having worked a decade in Malaysia, he returned home in 2022 to establish a livestock farm in Talora village under Shibgonj Upazila, Bogura district. His business provided financial security, social respect, and personal fulfillment. Daily activities such as praying at dawn, managing livestock, interacting with neighbors, and spending time with his family contributed to a structured lifestyle grounded in dignity and routine. His identity was closely tied to his work ethic and social participation, making the sudden paralysis particularly disruptive.

Onset of Illness: Clinical and Emotional Impact

On October 10, 2025, Mahinur experienced sudden unilateral facial weakness during his morning ablution. Water leaked from the left side of his mouth, and his face appeared drooped and asymmetrical a distressing and unfamiliar sight. Fearing a stroke, he checked limb movement, which remained intact. This uncertainty triggered both medical anxiety and culturally rooted fear of supernatural affliction. His emotional experience became as significant as the physical symptoms, reflecting the profound psychological effect of facial deformity.

4. Medical Consultation and Diagnostic Confirmation

Prompt medical attention led him to a neurologist at Bogura Popular Diagnostic Centre, where he was diagnosed with Bell's palsy. The neurologist reassured him that the condition was temporary and treatable, emphasizing the importance of early physiotherapy for restoring nerve function and preventing long-term complications. This consultation marked the shift from uncertainty to structured medical direction, allowing him to engage in an evidence-based recovery pathway.

Rehabilitation at TMSS Physiotherapy & Rehabilitation Center

Upon arrival at TMSS, a comprehensive assessment was conducted, evaluating facial symmetry, eye closure, lip control, speech, oral seal, and functional abilities such as eating and drinking. Mahinur expressed frustration with leakage of food and water due to impaired oral competence. The physiotherapy team explained the rehabilitation plan using clear, empathetic communication, reducing his anxiety and increasing treatment adherence.

- **Treatment Interventions**

Rehabilitation sessions were scheduled daily for three weeks that included; Facial electrical stimulation for muscle activation, Neuromuscular re-education to improve voluntary control, Manual facilitation techniques to enhance symmetry, Mirror therapy to support visual feedback and Oral-motor training for improved eating and drinking control.

- **Progress and Clinical Milestones**

During the first week, visible improvement was minimal, which momentarily reduced his confidence. However, therapists provided continuous reassurance about the gradual nature of neurological recovery. In the second week, subtle improvements emerged: partial lip movement, improved eye closure, and reduced drooling. By the third week, Mahinur regained near-complete facial symmetry and functional control. He could smile naturally a milestone symbolic of both clinical and emotional recovery.

Patient Perspective: Restoring Identity and Confidence

Mahinur described his recovery as:

> "I thought my face would never return to normal. I stopped going out. But after therapy, I feel like myself again. Now I can smile without thinking. It feels like getting my life back."

His narrative highlights that facial recovery is not merely physical but deeply connected to identity, dignity and social interaction. Overcoming embarrassment allowed him to reintegrate into family life, business activities and religious gatherings.

Organizational Perspective: The Role of TMSS in Neurological Rehabilitation

From the institutional standpoint, the TMSS Physiotherapy & Rehabilitation Center provided accessible, evidence-based care to a rural patient population often lacking specialized neurological services. Early assessment, professional communication, and structured therapy contributed to rapid recovery. The case underscores the essential role of physiotherapy in preventing chronic facial dysfunction, reducing social stigma, and supporting mental well-being.

Broader Significance and Rural Health Implications

Mahinur's recovery had community-level effects. His visible improvement encouraged others experiencing nerve-related or facial disorders to seek physiotherapy rather than relying solely on medication or folk explanations. The case reflects how individual rehabilitation outcomes can enhance community health literacy and reshape local perceptions of modern rehabilitative care.

Conclusion

Present case study demonstrates the clinical, emotional, and social dimensions of Bell's palsy rehabilitation in a rural Bangladeshi context. Through timely intervention, structured physiotherapy, and patient-centered care, Mr. Mahinur Rahman Pramanik achieved full functional recovery within three weeks. His journey highlights the transformative power of rehabilitation in restoring facial function, psychological resilience, and social identity. The TMSS Physiotherapy & Rehabilitation Center played a crucial role in enabling this outcome, reaffirming the importance of accessible neurological rehabilitation services in rural healthcare systems.

Case Study-5

Story of Jomela Begum : A Journey of Resilience- Overcoming Frozen Shoulder through Physiotherapy

Abstract:

This case study presents the recovery journey of Jomela Begum, a 50-year-old woman from Bogura, Bangladesh, who developed severe right-sided frozen shoulder (adhesive capsulitis). Her condition progressively affected household activities, caregiving responsibilities, sleep, emotional well-being, and independence. After limited relief from medication, she received specialized physiotherapy at TMSS Medical College & Rafatullah Community Hospital. A one-month program combining pain management, manual therapy, therapeutic exercises, and home-based exercises resulted in substantial improvement in pain, shoulder movement, sleep, and daily functioning. Her recovery highlights the importance of health awareness, timely medical consultation, appropriate physiotherapy, patient compliance, and family support. The case demonstrates how evidence-based rehabilitation can restore physical function, dignity, and independence.

Keywords: Frozen Shoulder; Adhesive Capsulitis; Physiotherapy; Rehabilitation; Women's Health; Health Awareness; Patient Compliance; Family Support.

The Context of a Dedicated Life

Jomela Begum is a 50-year-old ordinary housewife residing in Fulbari, a locality in Bogura Sadar Upazila. After her husband passed away three years ago, she has been living with her elder son's family. She has two sons, and her elder son has two daughters—one aged 5 years and the other 3 years.

Jomela Begum is an educated and conscious woman. Although she did not receive formal higher education, she completed her secondary education. After her husband's death, she was emotionally devastated, but gradually found herself again in the love and care of her granddaughters. Her family belongs to the middle-class, and her son works in a private organization.

Jomela Begum's Daily Lifestyle and Activities

Family Responsibilities and Caring for Granddaughters
Jomela Begum's day begins at 5 AM. After offering Fajr prayers, she enters the kitchen. Both her elder son and daughter-in-law are working professionals. Therefore, most of the household chores and especially caring for the granddaughters fall upon Jomela's shoulders.

Every morning, she wakes up her granddaughters, helps them brush their teeth, and washes their faces. She takes the little girls to the bathroom and gives them baths. Then she prepares them for school and playgroup. Feeding them is a major challenge—especially the 3-year-old child who doesn't eat easily. Jomela has to use various tricks, tell stories, carry her in her lap, and walk around to feed her.
After the children return from school at noon, she feeds them again and puts them to rest. In the afternoon, she plays with them and helps with their studies. In the evening, she bathes them again, feeds them dinner, and puts them to sleep—all these tasks are Jomela Begum's responsibility.

Besides caring for her granddaughters, Jomela has to participate in other household tasks. She helps her daughter-in-law with cooking in the morning and afternoon. Often, she completes the cooking by herself. Cutting vegetables, grinding spices, cooking fish and meat—she is skilled in all these tasks.
Sweeping the house, washing clothes, hanging them to dry, folding, and organizing them—all these tasks are also part of her routine. Particularly hanging clothes at heights, taking down items from high cupboards to tie her hair—such tasks require her to repeatedly raise her arms upward.

Social and Religious Activities

Jomela Begum is a religious woman. She regularly performs five daily prayers. Every Friday, she participates in women's religious gatherings at the local mosque. She maintains good relations with her neighbors. She comes forward to help anyone in distress.
At least twice a month, she visits her younger son's house for a few days. This travel and participation in work there are also part of her physical exertion.
Onset of Disease and Initial Symptoms

First Experience of Pain

Three months ago, one morning, Jomela Begum was hanging clothes on the line in the veranda to dry. Suddenly, she felt a pulling sensation in her right shoulder. Initially, she thought perhaps she had overexerted herself. But the next day, when she raised her arm to tie her hair, she felt pain in the same spot again. For the first few days, she didn't pay much attention to it. She thought it was an age-related issue and would heal with a little rest. But instead of subsiding, the pain gradually increased.
Pain Intensification and Impact on Daily Activities
Within two weeks, the pain reached such a level that Jomela began experiencing difficulty performing her normal tasks. It hurt to lift her granddaughter. It hurt to reach for high shelves. Even combing her hair became painful.

While working in the kitchen, whenever she tried to hold or lift something with her right hand, she experienced sharp pain in her shoulder. Even when she tried to work with her left hand, not all tasks could be done left-handed. Consequently, her work capacity began to decline.
She also started having problems caring for her granddaughters. Carrying small children in her lap, pouring water from a mug from above while bathing them—she experienced severe pain during all these activities.
First Medical Consultation and Increasing Complications

Orthopedic Consultation

When the pain became unbearable, family members took Jomela to a local orthopedic doctor. After examining her shoulder, the doctor diagnosed "Frozen Shoulder" or "Adhesive Capsulitis."
The doctor explained that in this disease, the capsule surrounding the shoulder joint becomes stiff and inflamed. This causes pain and reduces movement. The doctor prescribed pain-relieving and anti-inflammatory medications for two weeks.

Temporary Relief from Medication and Recurrence of Pain
After taking the medication for the first few days, Jomela experienced slight relief. The pain reduced somewhat. But this was not enough for her to perform her normal activities. She still couldn't move her arm fully.
After the two-week medication course ended, the pain began to increase again. This time, the situation became even worse. She was experiencing pain not only while working but also during rest.
Nocturnal Pain and Sleep Disturbance
The most distressing became the nighttime pain. Jomela was always accustomed to sleeping on her right side. But now, whenever she lay on her right side, severe pain would wake her up. Even trying to sleep on her left side or on her back provided no comfort.
At night, pain would wake her up, and she would writhe in agony. After one night, two nights passed this way, but after three consecutive nights of improper sleep, she broke down mentally.
Deterioration of Physical and Mental Health

Mental Stress and Depression

Insomnia and continuous pain began to deeply affect Jomela's mental health. She, who always worked cheerfully for everyone in the family, now became depressed. Her appetite decreased. Throughout the day, she felt uncomfortable.
When her granddaughters wanted to climb into her lap, she couldn't do it. This made her sad. She would think, "I am in this house to care for my granddaughters. Now if I cannot properly care for them, what is my worth?"

Physical Disability and Work Interruption

Along with pain, her shoulder movement gradually began to decrease. She couldn't raise her arm upward. She couldn't take it backward. Even while wearing a saree, she had problems arranging the pleats.
Kitchen work almost stopped. Her daughter-in-law had to manage everything alone. This created an uncomfortable situation in the family. Although no one said anything, Jomela still felt guilty.
Advice from People Around
When neighbors saw Jomela's condition, they began offering various advice. Many suggested traditional herbal treatment. Some suggested oil massage, some suggested traditional or kobiraji treatment. Some said, "It's an age-related issue; it will heal on its own." But she consciously avoided such practices. This decision reflects her awareness regarding evidence-based medical care and her trust in formal healthcare systems. Her health-seeking behavior improved as symptoms worsened, leading her to consult qualified orthopedic professionals.
Her awareness and willingness to follow medical advice played a significant role in preventing further complications and ensured timely referral to physiotherapy services. Also she understood that this was a medical problem and required proper treatment.

Treatment at TMSS Medical College & Rafatullah Community Hospital

Seeking Medical Help Again

One month ago, when the situation became almost unbearable, the family decided to take Jomela to TMSS Medical College Hospital. There, an orthopedic specialist examined her thoroughly.

The doctor explained that Frozen Shoulder has three stages:

1. Freezing Stage: In this stage, pain increases and movement gradually begins to decrease
2. Frozen Stage: In this stage, pain may reduce but movement becomes very limited
3. Thawing Stage: In this stage, movement gradually returns

Jomela was in the transitional phase between the freezing and frozen stages.

Referral to Physiotherapy Center

The doctor referred Jomela to the Physiotherapy Center. He said that physiotherapy is the most effective treatment for this type of problem. Medication alone cannot cure this disease.

The physiotherapist took detailed information from Jomela—her occupation, daily activities, how the problem started, the nature of the pain, etc. Then a treatment plan was prepared.

The physiotherapist designed a comprehensive one-month treatment plan. Her management focused on three pillars:

- Pain Management (Modalities): Advanced tools like UST (Ultrasound Therapy), TENS (Transcutaneous Electrical Nerve Stimulation), and IRR (Infrared Radiation) were used to reduce deep-tissue inflammation and pain.
- Manual Therapy: To break the adhesions in the shoulder joint, therapists applied Capsular Stretching, Mulligan Gliding techniques, and Soft Tissue Mobilization.
- Therapeutic Exercise: To regain her range of motion, Jomela was put through a rigorous regimen of Shoulder Wheel exercises, Pulley exercises, and Pendulum exercises.

Throughout this month, Jomela remained diligent, attending every session and following the lifestyle modifications suggested by her therapists.

Regular Treatment Sessions

Jomela Begum received regular physiotherapy for one month. Every day in the first week, then 5 days a week afterward. She never missed a session. She regularly performed the home exercises that the physiotherapists had taught her.

Jomela's Consciousness and Self-Confidence

Awareness About Treatment

Jomela Begum's greatest virtue was her awareness. When everyone was advising traditional treatment, she didn't go that way. She understood that one must have faith in modern medical science.

When physiotherapists explained the disease to her, she listened attentively and tried to understand. She asked questions, wanted to know why these exercises were being done, how they were working.

Discipline and Patience

She went to the physiotherapy center at a specific time every day. Rain or shine, she never missed a session. She also regularly performed home exercises at home.

Family Support

Jomela's family provided her with tremendous support. Her son ensured that she could go to the physiotherapy center on time every day. Her daughter-in-law took on all the household responsibilities without complaint. The granddaughters, though young, tried to understand their grandmother's condition.

This family support played a significant role in Jomela's recovery. When the entire family is supportive, the patient's mental strength increases, and recovery becomes faster.

Progress and Complete Recovery

Gradual Improvement

After the first week of treatment, Jomela began to feel changes. The nighttime pain started to decrease slightly. She could sleep a bit better. This gave her mental strength.

By the second week, her shoulder movement began to improve. She could raise her arm a little higher. Activities like combing hair and tying hair became somewhat easier.

By the third week, significant improvement was visible. She could work in the kitchen for short periods. She could lift her granddaughter in her lap.

Return to Normal Life

By the fourth week, Jomela had almost fully recovered. She could now comfortably perform all her previous tasks. Caring for her granddaughters, cooking, household chores—she was doing everything.

The nighttime pain was completely gone. She was sleeping peacefully. Her appetite returned. Her mental health improved significantly.

Continued Maintenance

Although treatment at the physiotherapy center had ended, Jomela continued to do her home exercises regularly. The physiotherapist had told her that doing these exercises regularly would prevent the problem from recurring.

She also became more conscious about her work methods. She tried not to put sudden stress on her shoulder. When lifting heavy objects, she now used both hands.

Reclaiming Independence and Gratitude

Jomela Begum is currently very happy. She has expressed gratitude to all the staff at the physiotherapy center. She says, "They not only treated my shoulder but also gave me back my life. I can now care for my granddaughters again, which gives me the greatest joy."

She advises others with similar problems to seek proper treatment without delay. She says, "Many people turn to traditional healers or think it will heal on its own. This is wrong. If you have a problem, you should go to a proper hospital and take treatment."

Jomela is now living a completely normal life. She wakes up at 5 AM, does household chores, cares for her granddaughters, participates in social and religious activities. But now she is more conscious about her health.

She performs her home exercises regularly. She has learned to work without putting excessive stress on her body. She takes adequate rest.

Message to Others

Jomela wants to convey a message to other women like herself: "We women always think of ourselves last. We take care of everyone in the family but neglect our own health. This is wrong. If we are not healthy, we cannot take care of our family."

She also emphasizes the importance of seeking proper treatment. "Frozen Shoulder is a disease that can be completely cured with proper treatment. But if you delay or take wrong treatment, the problem can become complicated. So if you have shoulder pain, see a doctor immediately and take physiotherapy."

Jomela's discipline and regularity were key factors in her recovery. She never missed a session and regularly performed home exercises. This demonstrates that no matter how good the treatment plan, without patient compliance, complete recovery is not possible.

Jomela Begum's story is an inspiration to all of us. She demonstrated how with proper awareness, timely medical intervention, patience, and discipline, even a seemingly difficult problem like Frozen Shoulder can be completely overcome.

Today, Jomela Begum is a different woman. She is completely free from the excruciating pain that once kept her awake. More importantly, her range of motion has returned to normal. She can once again tie her hair, hang the laundry, and most importantly, lift her granddaughters into her arms without hesitation.

Her recovery is not just physical; her appetite has returned, her sleep is sound, and her cheerful spirit is back. Her story illustrating that scientific awareness, timely referral, and specialized physiotherapy can restore dignity and independence to the lives of the elderly.

TMSS Prosthetics, Orthotics, Limb & Brace Fitting Center [POLBC]

Introduction

The TMSS Prosthetics, Orthotics, Limb & Brace Fitting Center (TMSS POLBC) represents a critical intervention in the rehabilitation landscape of Bangladesh. Established under the aegis of TMSS Health Research Foundation, the center aims to address the significant gap in assistive technologies and rehabilitation services for persons with disabilities. Globally, the World Health Organization (WHO) estimates that over one billion people require assistive devices, yet access remains disproportionately limited in low- and middle-income countries (WHO, 2022). In Bangladesh, the prevalence of disability is estimated at 9.07% of the population (Bangladesh Bureau of Statistics, 2019), underscoring the urgent need for affordable, high-quality prosthetic and orthotic services. TMSS POLBC functions as a hub for clinical care, community outreach, and skill development, providing individuals with mobility aids such as prosthetic limbs, orthotic braces,

POLBC is substantially supported by several philanthropic organizations, including Let for Bangladesh (LWFB), an Australia-based charitable organization; the Rotary Club of Romna, Dhaka; Better to Be; and Bank Al-Falah. Through their financial contributions, the center is able to provide artificial limbs to economically disadvantaged patients who otherwise lack the financial means to procure such assistive devices.

Objective

The primary objective of TMSS POLBC is to enhance the quality of life for individuals with physical disabilities through the provision of evidence-based prosthetic and orthotic services. This includes:

1. Designing, fabricating, and fitting prosthetic and orthotic devices to meet individual functional requirements.
2. Offering rehabilitative counseling and support to facilitate the reintegration of beneficiaries into society and the workforce.
3. Training local technicians and healthcare providers in modern limb and brace fabrication techniques to ensure sustainability and accessibility.
   By achieving these objectives, the center contributes to reducing functional limitations and promoting independence among persons with disabilities.

Vision

TMSS POLBC envisions a society where individuals with physical disabilities can access high-quality assistive devices without financial or logistical barriers, enabling them to lead independent, productive, and dignified lives. The center aims to be a model institution in South Asia for sustainable prosthetic and orthotic service delivery.

Mission

The mission of TMSS POLBC encompasses four key components:

1. **Service Excellence:** Delivering personalized prosthetic and orthotic care based on international standards.
2. **Capacity Building:** Empowering local technicians and healthcare providers with the skills required for effective rehabilitation.
3. **Research and Innovation:** Engaging in applied research to improve device design, comfort, and functionality.
4. **Community Outreach:** Raising awareness about disability rights and facilitating access to services for marginalized population.
   Through these initiatives, the center seeks not only to provide devices but also to create sustainable support systems for long-term rehabilitation.

Impact

The impact of TMSS POLBC extends across clinical, social, and economic dimensions. Clinically, the center has enabled thousands of individuals to regain mobility, reducing dependence on caregivers and mitigating secondary complications associated with immobility, such as muscle atrophy and joint deformities (Smith et al., 2021). Socially, the provision of assistive devices has facilitated educational participation, employment, and social integration for persons with disabilities, fostering inclusivity and self-confidence. Economically, beneficiaries who regain mobility can contribute productively to household income and community development, aligning with the broader Sustainable Development Goals (UN, 2015). The center also serves as a training hub, equipping technicians and health professionals with specialized skills that enhance the national rehabilitation infrastructure.

In addition to its direct services, TMSS POLBC emphasizes research-driven interventions, incorporating feedback from beneficiaries to refine device design and fitting protocols. Community engagement initiatives, such as awareness campaigns and outreach camps in rural areas, further amplify the center's impact by identifying unserved population and providing timely interventions. Through this holistic approach, TMSS POLBC demonstrates the potential of integrated prosthetic and orthotic services to transform the lives of persons with disabilities while strengthening health systems in resource-limited contexts.

Conclusion

TMSS Prosthetics, Orthotics, Limb & Brace Fitting Center exemplifies a comprehensive model of rehabilitation care that integrates clinical service, capacity building, research, and community engagement. Its objectives, vision, and mission are aligned with global best practices in assistive technology provision, and its impact is evidenced by enhanced mobility, social inclusion, and economic empowerment among beneficiaries. As Bangladesh continues to address the challenges posed by disability and limited access to assistive devices, institutions such as TMSS POLBC are critical in ensuring equitable, sustainable and high-quality rehabilitation services.

Table: TMSS Limb Center: Year-wise Patient Distribution

Year	Number of Patients
2020	78
2021	374
2022	464
2023	424
2024	812
2025	759
Total	**2911**

Source: Documentation Cell, **TMSS Prosthetics, Orthotics, Limb & Brace Fitting Center**

Case Study-01

Reclaiming Identity: Mr. Abdul Alim's Rehabilitation Journey

Abstract

This case study examines the rehabilitation journey of an adult lower-limb amputee following traumatic road traffic injury in a low-resource rural context. It explores the psycho-social, economic, and functional consequences of limb loss and the process of identity reconstruction through structured rehabilitation. The study highlights the role of accessible, community-based prosthetic and physiotherapy services in restoring mobility and self-efficacy. Findings demonstrate how patient-centered rehabilitation interventions contribute to improved quality of life and social reintegration. The case provides insight into the lived experiences of amputees in Bangladesh and the systemic barriers they encounter. It underscores the importance of multidisciplinary rehabilitation in fostering resilience, dignity, and sustainable functional recovery.

Keywords

Traumatic amputation; Prosthetic rehabilitation; Road traffic injury; Psycho-social adjustment; Community-based rehabilitation; Bangladesh

Introduction

Limb loss in low resource countries often represents far more than the loss of a limb. It disrupts identity, livelihood and the social fabric that holds families together. Across South Asia, road traffic trauma has become one of the leading causes of amputation, fueled by rising vehicle density, inadequate road safety measures and limited enforcement of protective regulations (Khan et al., 2020). Survivors of traumatic amputation frequently experience profound psychological distress, reduced income and long-term disability that extends far beyond the initial injury. Studies from lower income contexts show that access to prosthetics and rehabilitation is often limited by cost, geography and lack of specialized services, leaving many amputees without opportunities to regain independence (Sahu et al., 2016). In Bangladesh, more than twenty thousand road traffic deaths occur annually and countless others survive with life altering injuries. For those who undergo amputation, rehabilitation services remain scarce, mostly urban centered and financially out of reach for rural families (Rahman et al., 2019).

In this challenging environment, the TMSS Prosthetics & Orthotics and Limb Center in Bogura stands out as a critical community-based service provider. It is one of the very few centers in northern Bangladesh able to deliver free prosthetic limbs, physiotherapy and comprehensive rehabilitation. For individuals whose futures appear suddenly blocked by disability, TMSS offers a pathway back to mobility, livelihood and dignity. This case study explores the journey of Mr. Abdul Alim, a hardworking farmer and deed writer whose life changed abruptly after a devastating road accident. His story reflects the emotional, social and physical transitions that follow amputation and highlights the transformative power of accessible, compassionate rehabilitation.

Life Before the Accident: A Man Living with Purpose

Before the accident, 43 years old Mr. Abdul Alim, a hardworking farmer and deed writer lived a life shaped by hard work, routine and dreams of supporting his family. He worked as a deed writer in Sherpur Land Registry Office, offering legal support to landowners and farmers in his community. At the same time, he sustained a thriving farm at home where he raised cattle, pigeons, goats and chickens, and cultivated vegetables and fruits that he sold in the local market. Each morning began before sunrise. He walked through the dew-covered fields, inspected the livestock and prepared feed with practiced efficiency. Once the farm work was complete, he quickly got ready for his office duties, often dropping his six-year-old son at school along the way. Community members admired his discipline, his generosity and his commitment to improving his family's future. His life was full, active and deeply connected to the land and people around him.

One Accident: Redefined Everything

One morning, after selling produce in the market, Alim realized he was running late. He still needed to drop his son at school, meet clients waiting at the land registry office and later attend an educational session at the Open University in Bogura. His mind was overwhelmed with tasks and deadlines. As he rode hurriedly on the road, the sun reflected sharply off shop windows and the phone in his pocket continued to ring insistently.

He glanced down for only a moment to check the call, but that instant became life altering. A sudden collision threw him violently off the motorcycle. Metal, gravel and dust exploded around him. As he lay crushed beneath the wreckage, he felt searing pain in his right leg and a terrifying awareness that something was terribly wrong.

In those seconds, time seemed suspended. Memories of his family, especially his young son, flooded his mind. He realized how often he had rushed through life, postponing simple joys for work. Now he was uncertain whether he would have the chance to return to them at all.

Bystanders rushed to help and he was transported urgently to Shaheed Ziaur Rahman Medical College Hospital in Bogura. From there he was transferred to the National Institute of

Traumatology and Orthopaedic Rehabilitation in Dhaka. Surgeons attempted multiple interventions, but the damage to his right leg was too extensive.

After the Amputation: Uncertain Future

Waking up after surgery was devastating. Alim stared at the place where his leg had once been and struggled to imagine a life without it. His family was equally shaken. As the sole provider, his inability to work threatened their livelihood. The thought of medical expenses, home responsibilities and the uncertainty of recovery weighed heavily on them.

Emotionally, Alim wrestled with grief, frustration and fear. He wondered how he would return to work, how he would support his family and whether he would ever stand on his land again. The farm that once represented purpose and pride now felt like a distant memory. Without rehabilitation, his future seemed blocked.

A Turning Point: Entering TMSS Rehabilitation and Limb Center

As his condition stabilized, Alim was referred to the TMSS Prosthetics & Orthotics and Limb Center, the only facility in northern Bangladesh providing comprehensive amputee rehabilitation. When he arrived, he was greeted by a multidisciplinary team that included Physiotherapists, Prosthetic Technicians and Counselors. They listened attentively to his story, examined his residual limb and assessed his readiness for prosthetic fitting.

The team explained the rehabilitation process in clear and reassuring terms. For the first time since the accident, Alim saw a path forward. The promise of being able to walk again, tend to his land and return to work stirred hope within him.

Soon, his measurements were taken and the process of preparing his artificial limb began. During this period, physiotherapy targeted strengthening, balance retraining and preparation for prosthetic use. Though progress was slow at first, he remained determined.

Learning to Walk Again: Rehabilitation as Renewal

When his prosthetic limb was finally ready, Alim felt a mixture of nervousness and anticipation. With the help of the therapists, he stood upright again. The world looked different from this perspective. The parallel bars offered stability, but confidence came from the steady guidance of the rehabilitation team who walked beside him.

Step by step, he learned to shift his weight, align his body and trust the prosthesis. His gait became smoother as his strength increased. Physiotherapy sessions became moments of empowerment rather than struggle.

Rehabilitation did not only rebuild his body. It restored his belief that he still had purpose, value and identity.

Returning to Life: Work, Community and Family Reconnection

After completing rehabilitation, Alim gradually resumed his responsibilities. He began working again as a deed writer, returning to the Sherpur Land Registry Office where clients welcomed him warmly. He tended to his cattle, goats, chickens and pigeons, harvested vegetables from his farm and returned to selling produce at the market. With time he regained the ability to drop his son at school and participate in community gatherings.

Friends and neighbors admired his resilience. His wife, who had carried immense emotional burden during his recovery, expressed profound relief. His son embraced him with pride, seeing him not as a weakened figure but as an example of courage.

Alim discovered a renewed appreciation for time, relationships and the simple joys he once overlooked. His life was no longer driven by hurried deadlines but by gratitude and presence.

Conclusion

The journey of Mr. Abdul Alim reveals the transformative impact of accessible prosthetic and rehabilitation services for amputees in Bangladesh. In a setting where thousands suffer traumatic limb loss each year and rehabilitation services remain limited, the TMSS Prosthetics & Orthotics and Limb Center provides a critical lifeline. Through professional prosthetic fitting, physiotherapy and compassionate guidance, Alim regained not only the ability to walk but the ability to live fully, work meaningfully and reconnect with his family and community.

His story is a testament to resilience and to the profound power of rehabilitation to restore dignity and identity after life altering injury.

Case Study-02

From Struggle to Strength: Lamia's Path to Recovery through TMSS Limb Center

Abstract:

This case study explores the rehabilitation trajectory of a pediatric lower-limb amputee following traumatic road traffic injury in a low-resource setting. It examines the physical, psychological, and social consequences of childhood limb loss and the role of community-based rehabilitation in restoring functional independence. The study highlights the importance of timely prosthetic fitting and structured physiotherapy in facilitating mobility and educational reintegration. Findings illustrate the transformative impact of holistic, family-centered rehabilitation on resilience and self-efficacy. The case provides evidence of how accessible prosthetic services can enable children to re-engage in normal developmental activities. It underscores the significance of inclusive rehabilitation models in promoting dignity, social participation, and long-term life opportunities.

Keywords

Pediatric amputation; Prosthetic rehabilitation; Road traffic injury; Community-based rehabilitation; Psycho-social resilience; Bangladesh

Introduction

Traumatic limb loss in childhood is one of the most devastating injuries a family can endure. Globally, millions of children and adults live with amputation related disability, with traumatic injuries being a major cause in lower income regions where road accidents, workplace hazards and limited safety regulations are widespread (Islam et al., 2023). In many lower and middle income countries, including Bangladesh, access to prosthetic limbs and rehabilitation remains severely limited due to cost, availability and scarcity of trained personnel (Mehta and Shah, 2015). As a result, thousands of amputees face long periods of immobility, social exclusion and psychological distress. A study from a tertiary rehabilitation center in Bangladesh reported that the average gap between amputation and the first prosthetic fitting was more than six years, causing profound and often irreversible impact on mobility, education, income and quality of life (Hosen et al., 2019).

In response to these national challenges, the TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center was established as a humanitarian rehabilitation service, providing free prosthetic limbs, physiotherapy and long term support for amputees across the country. .

Before the Accident: Enlightened Childhood

Before tragedy entered her life, Lamia was like any other lively seven year old. She is living in Sherpur, Bogura dictrict, with her parents, elder brother and grandmother. Her days were filled with school, coaching classes, helping her mother with chores and playing outside until dusk. She enjoyed drawing and dreamed of becoming a doctor. Her father, Liton Mondol, operated a small tea stall in the local bazar, and though the family lived modestly, their home was steady and full of affection.

Lamia’s childhood was simple, bright and hopeful. Nothing in her world suggested that life would change so sharply and so soon.

Accident that Changed Everything

On May 07, 2020, Lamia was traveling with her father on a motorcycle after visiting her grandparents. The afternoon was warm, the road familiar and her arms wrapped securely around her father. Without warning, a truck swerved into their path and hit their motorcycle with violent force. Bystanders rushed them to the nearest hospital, but the injuries were catastrophic. Both father and daughter had sustained severe crushing injuries to their right legs.

Despite the efforts of emergency doctors, neither limb could be saved. The medical team informed the family that amputation was necessary to preserve their lives. In one single moment, the future of both parent and child was reshaped. For Lamia, who once ran freely and dreamed boldly, waking up without her right leg was incomprehensible. For her father, the dual burden of his own amputation and the loss suffered by his daughter weighed heavily on his heart.

The family’s emotional world shattered. Their financial foundation, already fragile, was thrown into crisis. Hope seemed to close like a door.

Life after Amputation: Fear, Uncertainty and Silence

Returning home after surgery was one of the hardest moments for the family. Lamia was silent for days, unable to reconcile the reality of her missing limb. She told her mother that she feared she would never walk again, never play with her friends, never return to school and never become a doctor. Her father, equally injured, returned home unable to work and unsure how to support the household.

Their small tea stall was the only source of income, and even that grew uncertain as Liton struggled with his own recovery. The family spent their limited savings on medical care. They did not know where to go or how to secure prosthetic limbs. They feared the future, not because of hardship alone, but because there seemed to be no path forward.

Door is Opened: Discovering TMSS Limb Center

The turning point came unexpectedly. While speaking with neighbors, Lamia's parents learned about the TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center, known locally for providing free artificial limbs and rehabilitation services. The neighbors encouraged them to visit and reassured them that many amputees had regained mobility through TLC.

Carrying both hope and uncertainty, the family traveled to Bogura the next morning. At TLC, they were greeted warmly by the rehabilitation team, who listened to their story with empathy. The staff assessed Lamia and her father carefully, explained the entire rehabilitation process and assured them that walking again was not only possible but highly likely.

For the first time since the accident, the family felt the presence of light after a long period of darkness. The possibility of mobility returned to their lives.

Rehabilitation at TMSS: Step by Step Towards a New Life

Once the assessments were complete, the TLC team designed a personalized rehabilitation plan for Lamia. At first she was hesitant and frightened. Standing on her remaining limb required effort, and the memory of the accident lingered in her expression. But the physiotherapists guided her patiently, teaching her to balance, strengthen her muscles and trust her body again.

When the day came to fit her prosthetic leg, Lamia stood with trembling excitement. The prosthesis was adjusted carefully for comfort and alignment. When she took her first step, supported by the parallel bars and the encouraging voices of the TLC staff, her face lit up. She had walked again.

Rehabilitation continued for weeks. Lamia practiced walking, balancing, climbing small steps and engaging in playful movement. Her gait became smoother and her confidence stronger. Slowly, her childhood began to return. She laughed again. She played again. She told her mother she wanted to study hard and become a doctor again.

Her father also received a prosthetic limb from TLC and returned to running his tea stall. The family's livelihood, dignity and daily rhythm slowly rebuilt themselves.

New Beginning

Today, Lamia is thirteen years old and studying in Class Six. She walks confidently on her prosthetic leg, attends school regularly and speaks openly about her dreams. Recently she participated in the Junior Amputee Football Launching Program and Final Exhibition Match, traveling with her mother from Sherpur to Bogura to join young athletes from across the country.

On the field, Lamia ran, balanced and kicked the ball with determination. She told organizers that she loves studying as much as she loves sports. At home she rarely gets the chance to play freely, but during the training camp she felt alive. Her mother, Farzana Begum, watched proudly, sharing that they enrolled her in a good school so that she will never feel like a burden to anyone.

Lamia is now preparing for upcoming selections to represent Bangladesh in the Special Olympics. Her voice is full of confidence. Her eyes reflect joy. Her movement shows strength, not loss.

Limb Center's Impact

Lamia's story is a powerful reminder that limb loss in childhood does not have to lead to lifelong disability or hopelessness. With timely intervention, compassionate care and accessible prosthetic services, children can reclaim their childhood, independence and dreams. Through TLC, Lamia regained mobility, confidence and social belonging. Her father regained his livelihood. Her family regained hope.

Her journey also demonstrates the enormous value of community based rehabilitation programs in countries like Bangladesh, where thousands of amputees remain underserved.

It impacts enormously that describes transformational journey of Lamia Zahan, a young girl who lost her right leg at the age of seven in a tragic road accident. Through timely prosthetic fitting, rehabilitation and continued psycho-social support, Lamia regained her mobility, returned to school and grew into a confident adolescent who now trains as a junior amputee football athlete preparing to represent Bangladesh internationally. Her story reflects not only personal resilience but also the power of community based rehabilitation programs in restoring dignity and future possibility.

Conclusion

This case shows how the TMSS Limb Center transformed the life of a child amputee by restoring mobility, dignity and possibility. Through free prosthetic support, skilled rehabilitation and ongoing encouragement, Lamia transitioned from trauma and despair to confidence and achievement. Today she is a student, an athlete and a symbol of resilience. Her story stands as proof that with accessible rehabilitation, even the most devastating injuries can lead to renewed purpose and a brighter future.

Case Study-03

Untold Story of Md. Rimon: Regained Identity through TMSS Limb Center

Abstract

This case study explores the lived experience of an adolescent amputee and his rehabilitation journey through a community-based prosthetic service in Bangladesh. It documents the multidimensional impacts of traumatic limb loss on physical functioning, psycho-social well-being, education, and family resilience. The paper highlights the critical role of accessible, free-of-cost prosthetic and rehabilitation services in restoring mobility and dignity. Findings demonstrate that holistic, patient-centered rehabilitation can facilitate functional independence and social reintegration. The case contributes empirical insight into child and adolescent rehabilitation in low-resource settings. It underscores the importance of integrated prosthetic care models for sustainable disability recovery.

Keywords

Traumatic amputation; Prosthetic rehabilitation; Child and adolescent disability; Community-based rehabilitation; Psycho-social reintegration; Bangladesh

Introduction

Globally, limb loss represents a significant portion of the disability burden, particularly in low income and lower-middle-income countries where traumatic injuries are common and rehabilitative systems remain limited. Research shows that millions of individuals live with untreated or poorly managed amputation-related disability, with traumatic limb loss being a major contributor in developing regions (Islam et al., 2023). In many countries of the Global South, access to prosthetic and orthotic services is extremely constrained due to financial barriers, lack of trained personnel and the absence of community-based rehabilitation systems (Mehta and Shah, 2015).

Bangladesh reflects these global patterns. A study conducted at a tertiary rehabilitation center found that most lower limb amputees were young males from rural areas and that the average delay between amputation and first prosthetic fitting exceeded six years, often resulting in permanent functional limitations, loss of livelihood and severe psycho-social consequences (Hosen et al., 2019). For children in particular, amputation can interrupt schooling, restrict participation in community life and drastically reshape family roles.

Within this challenging national landscape, the TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center emerged as a humanitarian initiative to fill a critical gap. Established initially with support from the Rotary Club of Ramna and later sustained through Let's Work for Bangladesh, the center provides free prosthetic limbs, offer training and rehabilitation. This case study presents the journey of a young boy from *Sherpur Upazila* whose right leg amputation threatened to rewrite the course of his childhood. His story demonstrates how community-based prosthetic and rehabilitation services can restore mobility, confidence and dignity even in the face of profound loss.

Background

Md. Rimon, 18 years old boy grew up in Mohipur village, Sherpur Upazila in Bogura district, in a family living on the fragile edge of poverty. He was studying at standard 12 at local college, Sherpur Government Degree College, Bogura. His father supported the household by selling peanuts in the local schools, earning only to meet daily needs. To help ease the pressure, the boy often worked part time at a nearby rice mill with his grandmother and as part-time worker of Roads and High Way Construction Company, after his college. His contribution, though small, brought him pride. It made him feel responsible and useful to his family.

One afternoon, while working with a Roads and Highways construction team, he moved closer to the edge of the site to tie a knot around a fallen concrete slab from the roadside drain. The excavator operator signaled him forward, its engine growling steadily in the background. As he bent down, trusting the coordination between man and machine, the sharp metal arm of the excavator lurched without warning. There were no safety barriers, no trained supervisor watching, no protective gear shielding him. In a split second, the heavy front edge crashed into his right thigh with crushing force. The impact was brutal and unforgiving. Pain shot through his body as he collapsed onto the ground, and by the time his co-workers reached him, it was clear that the damage was catastrophic. His leg, mangled beyond repair, bore the full violence of a machine never meant to meet human flesh. The accident was sudden, chaotic and irreversible, leaving his right limb shattered far past any possibility of reconstruction.

He was taken first to local doctor and then referred urgently to larger hospitals; finally was reached National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR) in Dhaka where surgeons performed an emergency amputation to save his life. The operation ended the immediate threat, but it marked the beginning of immense uncertainty. A child who once ran, played and helped his father now woke up without a limb, terrified of what awaited him.

Family Crisis: Emotional, Social and Financial Impact

The amputation shuddered the family deeply. His parents struggled to understand how a routine day at the regular workplace had taken such a tragic turn. His mother cried quietly through the nights, while his father tried to remain strong even as he felt his world collapsing. He had lost not only his son's mobility but also the sense of security that poverty had already strained.

Financially, the situation worsened rapidly. Hospital costs, travel expenses, post-surgery care and the need for continuous follow-up drained every savings the family had. They borrowed from relatives and neighbors, unsure of how they would ever repay. The boy, sensing the burden he had placed on his parents, withdrew emotionally. Then he feared he would never walk again, never return to school and never be the child he once was.

The accident not only injured his body but it shattered his confidence and threatened his identity also.

Turning Point: Entry into the TMSS Limb Center

Hope returned slowly, almost hesitantly. After the amputation and their return from the hospital, the family found themselves adrift, unsure how to rebuild their lives. Each day felt heavy with uncertainty, and the father, Mr. Aminur Islam struggled to imagine how his son would ever walk again or return to the life. One evening, while sharing his grief with an old friend, he learned that this friend had survived a similar accident years earlier. The friend described how the TMSS Limb Center had helped him regain mobility and dignity. He urged his father not to lose heart and handed him the address of the center, insisting he make contact. The next morning, with a mixture of desperation and fragile hope, Aminur reached out to the TMSS Limb Center, marking the beginning of a new chapter in his son's recovery. At the limb center, Mr. Shafique, Head of Limb Center explained gently that limb loss did not mean lifelong disability. With proper rehabilitation and a well-fitted prosthetic limb, the boy could walk again, attend school and reclaim his independence.

This reassurance changed the emotional climate of the family. For the first time since the accident, they imagined a future where their son might stand on his own feet again, even if those feet looked different then before. Mr. Shafique guided them through the referral process, and the child was soon registered for comprehensive assessment at the TMSS Limb Center.

Rehabilitation Journey: Regaining Balance, Strength and Confidence

Rehabilitation began with careful evaluation of his residual limb, muscle strength, balance potential and emotional readiness. In the early sessions, he struggled to stand on one leg and hesitated to look at his amputated limb. The Rehabilitation Professionals approached him with patience, understanding that healing the mind was as important as training the body.

Strengthening exercises, stump care and balance training formed the foundation of the initial phase. Over time, the boy gained confidence to bear weight and relearn postural control. Once

his muscles strengthened and the residual limb healed sufficiently, the TMSS team provided a customized free prosthetic leg. This moment was emotionally powerful. For the first time since the accident, he stood tall with support from the prosthesis and with the encouragement of the rehabilitation team.

Walking training progressed from parallel bars to supervised ambulation and eventually independent steps. Each small milestone was celebrated by the team and his family. His confidence was grown with every movement. The Rehabilitation Professionals also engaged him in conversations about returning to school, rebuilding friendships and imagining a future career. This holistic approach helped him reframe his identity not as an amputee, but as a child with strength, resilience and possibility.

Organizational Contribution: Mission of TMSS Limb Center

From the organizational perspective, the boy's recovery represents the core mission of the TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center. Since its establishment, the center has supported thousands of amputees across Bangladesh by offering free prosthetic limbs, physiotherapy, gait training and psycho-social support. Recognizing the barriers highlighted in national studies, including long delays in prosthetic access and the absence of early rehabilitation, the center positions itself as a lifeline for individuals who might otherwise remain permanently disabled.

In this case, TMSS provided comprehensive, patient centered care that addressed medical, psychological and social dimensions. The free prosthesis removed financial barriers, while the rehabilitation team ensured proper usage, comfort and long term safety. The center's ongoing follow up ensured that the child continued to progress and remain confident in his mobility.

Restored Childhood: Social and Emotional Reintegration

As weeks passed, the boy began walking independently and rejoined school. His classmates welcomed him with admiration rather than pity. He played with friends again, sometimes cautious, sometimes bold, but always with a renewed sense of belonging. His parents, who once feared a life of dependency for their son, now watched him walk across the courtyard, nearby houses and bazar also with pride and relief.

The prosthetic limb became more than an assistive device. It became a symbol of regained childhood, renewed dignity and the beginning of a future that once seemed unreachable. The boy, inspired by his physiotherapist, expressed his dream to one-day work in a profession where he could help others recover from injury.

Conclusion

This case illustrates how accessible rehabilitation and prosthetic services can transform the life of a child amputee in Bangladesh. Against the backdrop of global and national evidence highlighting unmet prosthetic needs, the TMSS Limb Center stands as an essential service that restores mobility, self-worth and hope. Through compassionate care, skilled rehabilitation and free prosthetic support, a young boy who once felt defeated but regained the strength to walk, study and dream again. His story demonstrates that limb loss does not have to define a child's future, and with the right support, independence and dignity can be fully restored.

Case Study-4

Aynal Hoque's Story: Rehabilitation and Livelihood Restoration

Abstract:

This case study examines the rehabilitation journey of Mr. Aynal Hoque, whose life was profoundly disrupted by traumatic limb loss following a road traffic accident in Bangladesh. Drawing on contextual evidence from low-resource settings, the study highlights the physical, psychological and socio-economic consequences of amputation. The role of the TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center is explored as a critical provider of free prosthetic care and community-based rehabilitation. Through transfemoral prosthetic fitting, physiotherapy and structured follow-up, Aynal regained mobility and functional independence. Complementary livelihood support, including provision of an auto rickshaw, enabled restoration of income and social participation. His experience demonstrates how integrated rehabilitation and economic assistance can rebuild identity, dignity and long-term resilience. The findings reinforce the need for holistic support systems for amputees in low-income contexts.

Key words

Traumatic amputation, Prosthetic rehabilitation, Community-based rehabilitation, Livelihood restoration, Bangladesh, Road traffic injury, Psycho-social resilience, Assistive technology; Disability inclusion.

Introduction

Traumatic limb loss is increasingly recognized as a major cause of disability in low-income countries, where rapid urbanization, unsafe roads and inadequate emergency response systems contribute to rising injuries. Research from South Asia shows that road traffic accidents often lead to permanent disability, with amputees facing significant physical, social and financial burdens (Mishra et al., 2020). Studies highlight that in many low resource settings, amputees experience delays in obtaining prosthetic limbs, limited access to rehabilitation and profound psychological distress that impacts both individuals and families (Al-Rashidi et al., 2021).

In Bangladesh, the problem is particularly acute. Road traffic trauma is one of the country's fastest growing causes of disability, and survivors commonly report loss of employment, increased dependency and long-term economic hardship (Islam and Hoque, 2022). Amid these challenges, community-based rehabilitation centers play an essential role in restoring mobility and livelihoods. TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center in TMC and RCH, Bogura stands as one such institution offering free prosthetic limbs, physiotherapy and follow up support to individuals who otherwise have no access to assistive technology.

This case study explores the journey of Mr. Aynal Hoque, a man whose productive life was suddenly disrupted by a road accident that resulted in the loss of his right leg. Through prosthetic rehabilitation and livelihood support from TMSS and partner organizations, he transitioned from despair and dependency to renewed independence, pride and purpose.

Background

Before the accident, Aynal lived a simple life centered around family responsibility and honest work. He was married and the father of two young children. He lived with his parents in Amtoli, Shibgonj, Bogura where he contributed to household expenses through a job in private company that required mobility, stamina and long hours of physical activity. In addition to that he enrolled in MBA Program at Pundra University of Science & Technology (PUB) for developing his future.

His life revolved around providing for his family. Every day began with early morning chores and ended late at night as he worked to secure stability for his children's future. He was known in the community as a hardworking man who never hesitated to help others. For Aynal, dignity was tied to the ability to support his family with his own hands.

Accident: A Sudden Fall into Uncertainty

Everything was changed when one day he was faced a serious road traffic accident that resulted in the loss of his right leg. The trauma was not only physical but emotional and economic also. In the hospital bed, as he slowly regained consciousness, he learned that his leg could not be saved.

The amputation shattered his sense of identity. Overnight he went from being a provider to worrying he had become a burden. His children were too young to understand the full implications, but they sensed the tension in the household. His wife and parents tried to remain strong, yet the loss of income and the uncertainty ahead weighed heavily on everyone.

With no job, no mobility and no financial security, Aynal felt trapped between grief and desperation. His greatest fear was not for himself but for the future of his children.

Door Opens: Connecting with TMSS Limb Center

During this difficult period, Aynal was referred to the TMSS Limb Cenetr, a facility known in the region for providing free artificial limbs to those in need. When he arrived, the rehabilitation team welcomed him warmly and explained the process of prosthetic fitting, training and follow up care.

For the first time since the accident, he felt a ray of hope. The staff assessed his condition and determined that he was eligible for a transfemoral prosthetic limb. The entire process, from casting to final alignment, was performed with careful precision to ensure that he would achieve the most functional result possible. When the prosthetic limb was finally fitted, Aynal stood on his new leg. That moment was emotional and his steps were hesitant but determined. With guided physiotherapy, he gradually learned to walk again and his balance, movements were improved and his confidence was regained. And with every session, the belief that he could reclaim his life grew stronger.

Rebuilding Life: Mobility Restored, Dignity Regained

As he regained physical independence, the question of livelihood remained. He still had no job and worried daily about providing for his children and aging parents. His story caught the attention of ***Mr. Borhan Shafi***, former President of Let's Work for Bangladesh, a Australian Organization who visited the project area in 2024. After meeting with Aynal and listening his story, he personally visited his family.

Moved by the family's resilience and Aynal's unwavering determination, Mr. Shafi considered how additional support might help restore economic stability. After consulting with his team in Australia, he arranged to provide Aynal with an Auto Rickshaw as a means of livelihood.

This gift transformed the trajectory of Aynal's life. With his prosthetic limb enabling mobility and the Auto Rickshaw helps to provide income, he returned to work with pride. He began driving passengers, supporting his family and rebuilding the financial foundation that had once crumbled after the accident.

New Identity: Given *Aynal's* Rebirth

Today, Aynal supports his wife, children and parents through his work as an auto rickshaw driver. He is once again the provider he always wanted to be. His smile carries confidence. His walk carries purpose; his life, once interrupted by tragedy and now unfolds with renewed direction.

There is a softer side to his healing as well. During a routine follow up visit at the Limb Center, he quietly sang a haunting lullaby to a staff member. The melody was gentle, filled with emotion and memory. But when asked to sing for others, he grew shy, afraid they might laugh. His voice, like his recovery, reflects the mix of vulnerability and strength that shapes many amputees' journeys.

His life today is not defined by the loss of a limb but by the courage it took to rebuild everything afterward.

Conclusion

The story of Mr. Aynal Hoque is a testament to the transformative impact of accessible rehabilitation and compassionate livelihood support. TMSS Limb Center restored his mobility through a carefully fitted transfemoral prosthetic limb, while additional support from Let's Work for Bangladesh enabled economic independence through the gift of an auto rickshaw. His journey reflects the profound human capacity to rise again after life altering trauma and demonstrates how integrated rehabilitation and livelihood interventions can restore not only function but dignity, identity and hope.

Case Study-5

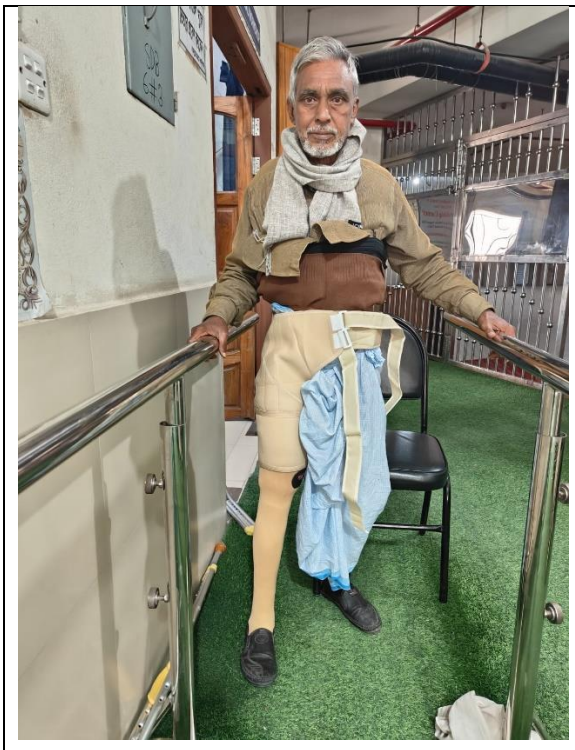
Rising After Rupture: Comprehensive Rehabilitation of an Elderly Traumatic Lower-Limb Amputee at TMSS Limb Center

Abstract

Traumatic lower-limb amputation represents a life-altering event that affects not only physical mobility but also psychological well-being, family dynamics, and socioeconomic stability. This case study describes the comprehensive rehabilitation journey of a 60-year-old male shopkeeper from rural Bangladesh who underwent right lower-limb amputation following a severe road traffic accident. The report examines the pre-injury functional status, circumstances of injury, surgical intervention, post-amputation psychological responses, and the role of prosthetic rehabilitation in restoring functional independence. Particular attention is given to family support, emotional adaptation, and reintegration into occupational and social roles. The findings demonstrate that even in older adults, timely prosthetic fitting combined with structured rehabilitation and psychosocial support can significantly improve quality of life, self-efficacy, and community participation.

Keywords

Traumatic amputation; Lower-limb prosthesis; Road traffic accident; Elderly amputee; Psychosocial rehabilitation; Community-based rehabilitation; Bangladesh



Public Health Perspective and Rationale

Road traffic injuries constitute a major cause of morbidity and disability in low- and middle-income countries, including Bangladesh. Factors such as inadequate road infrastructure, poor traffic regulation enforcement, driver fatigue, limited visibility, and mixed vehicle usage significantly increase accident risk. These injuries frequently affect economically productive individuals, resulting in long-term disability and profound socioeconomic consequences.

Lower-limb amputation, particularly among older adults, is associated with increased dependency, reduced mobility, emotional distress, and diminished quality of life. The sudden transition from physical independence to reliance on assistive devices often leads to anxiety, depression, and loss of self-identity. However, evidence suggests that access to prosthetic rehabilitation and holistic care can significantly mitigate these effects. Institutions such as the TMSS Prosthetics, Orthotics, Limb and Brace Fitting Center play a critical role in bridging the rehabilitation gap for underserved populations.

Pre-Injury Lifestyle and Socioeconomic Status

Mr. Abdul Mannan Khan, a 60-year-old male, is a long-established grocery shop owner from Mohishbatan village under Birkadar Union in Kahalu Upazila of Bogura district. For more than 25 years, he successfully operated a large grocery store in Dhupchachia Bazar, supplying essential food items including rice, lentils, flour, edible oil, and other daily commodities.

As the sole earning member of his household, he bore full financial responsibility for his family. His elder son was pursuing higher education at Rajshahi University, and his younger daughter was enrolled in a local college. Mr. Khan maintained an active daily routine and independently managed his business affairs. He regularly commuted between his home and shop using his personal motorcycle and was known as a confident and experienced rider.

Mechanism and Circumstances of Injury

On March 8, 2025, Mr. Khan departed from his home at approximately 7:15 a.m. to attend his shop. Environmental conditions included light morning fog, which reduced visibility on the roadway. At the time of the incident, three motorcycles were traveling side by side toward Dhupchachia. The other two riders were unknown to Mr. Khan.

Simultaneously, a large truck approached from the opposite direction at high speed, while a pickup truck attempted to overtake the motorcycles from behind. The roadway was narrow, and the combination of poor visibility, excessive speed, and limited maneuvering space created a hazardous situation. The pickup truck lost control and ran over all three motorcycles.

The two other riders died instantly at the scene. Mr. Khan sustained catastrophic injuries to his right lower limb, experienced loss of consciousness, and suffered massive hemorrhage. The accident represented a classic example of multi-vehicle collision under high-risk road conditions.

Acute Medical Management and Amputation

Local residents immediately provided assistance and transported Mr. Khan to Shaheed Ziaur Rahman Medical College Hospital, Bogura. Upon arrival at the emergency department, he received lifesaving interventions, including hemorrhage control and stabilization.

Subsequent admission to the Orthopedic Surgery Department revealed extensive vascular and neurological damage to the right lower limb. Despite aggressive medical management and continuous observation over a three-day period, the limb failed to demonstrate any signs of recovery. Progressive ischemia and tissue necrosis were observed, indicating irreversible damage.

In order to prevent systemic infection and further life-threatening complications, the multidisciplinary medical team decided to proceed with right lower-limb amputation. The procedure was performed following informed consent from family members, marking a turning point in Mr. Khan’s life.

Immediate Post-Amputation Challenges

Following amputation, Mr. Abdul Mannan Khan became completely dependent on a wheelchair for mobility. The sudden loss of his limb resulted in significant psychological trauma. He reported persistent insomnia, diminished appetite, emotional withdrawal, and feelings of helplessness and uncertainty about the future.

These symptoms represented a drastic change from his pre-injury mental state. The emotional burden was

further intensified by concerns regarding family responsibilities, financial stability, and his role as the sole provider.

During interviews, Mr. Khan became emotionally overwhelmed when discussing his wife, who remained continuously by his side, providing both physical care and emotional reassurance. His children and extended family also played an essential role in supporting him during this period of crisis.

Economic Disruption and Family Adaptation

The accident led to the temporary closure of Mr. Khan's grocery shop for approximately two months. As the business was the only source of income for the family, the financial strain was considerable. Eventually, the shop was reopened and managed by employees, with periodic supervision from his wife and son.

This adaptive strategy allowed the family to maintain economic stability while accommodating Mr. Khan's physical limitations. The family's collective resilience and role-sharing significantly contributed to his psychological recovery.

Accessing Prosthetic Rehabilitation Services

A crucial turning point occurred when Mr. Khan learned about another amputee in his village who had successfully regained mobility after receiving a prosthetic limb from the TMSS Medical College Hospital Artificial Limb Center. Encouraged by this firsthand testimony, he decided to seek care at TMSS Hospital.

Upon presentation, a comprehensive functional and physical assessment was conducted by the prosthetic and rehabilitation team. Based on clinical findings, a lower-limb prosthesis was prescribed, and a rehabilitation plan was developed.

Prosthetic Training and Functional Reintegration

After prosthetic fitting, Mr. Khan underwent structured training using the artificial limb with the assistance of crutches. Gradually, he was able to stand upright after months of wheelchair dependency. This achievement marked a significant psychological milestone.

He reported experiencing renewed hope, emotional relief, and improved self-confidence. With continued practice, he developed better balance, weight-bearing tolerance, and functional mobility. The rehabilitation process enabled him to regain a sense of control over his body and daily activities.

Mr. Khan expressed strong motivation to return to his shop and resume involvement in business management and social interactions.

Psychosocial Recovery and Quality of Life

The restoration of mobility through prosthetic rehabilitation had a profound impact on Mr. Khan's psychosocial well-being. Improved independence reduced feelings of dependency and helplessness. Family encouragement, community recognition, and the ability to stand and move again reinforced his self-esteem.

This case highlights the interrelationship between physical rehabilitation and mental health. Regaining functional ability served as a catalyst for emotional healing, illustrating the importance of integrated rehabilitation approaches.

Broader Implications of Community-Based Rehabilitation

Mr. Khan's experience underscores the effectiveness of community-based rehabilitation models in resource-limited settings. Access to affordable prosthetic services, combined with family involvement and follow-up support, enabled successful functional outcomes despite advanced age.

The TMSS Limb Center's role in providing inclusive, patient-centered rehabilitation demonstrates how institutional support can transform lives affected by traumatic disability.

Conclusion

This case study demonstrates that traumatic lower-limb amputation in older adults does not inevitably result in permanent dependency or loss of purpose. Through timely prosthetic intervention, structured rehabilitation, and strong family and community support, Mr. Abdul Mannan Khan was able to regain mobility, confidence, and functional independence.

The TMSS Limb Center played a pivotal role in restoring not only physical movement but also dignity and hope. This case reinforces the importance of expanding access to prosthetic and rehabilitation services in Bangladesh to improve quality of life for amputees across all age groups.

Impact of Physiotherapy and Limb Center

The TMSS Physiotherapy and Limb Center has emerged as an important institutional intervention aimed at addressing the rehabilitation needs of individuals with physical disabilities and mobility impairments. The impact of the center can be analyzed from several dimensions including physical health improvement, social inclusion, economic empowerment, and community awareness.

One of the most significant impacts of the center is the improvement in physical mobility and functional independence among patients. Physiotherapy treatment plays a critical role in restoring movement, reducing pain, and strengthening muscles. Patients suffering from stroke, spinal cord injuries, orthopedic trauma, and chronic musculoskeletal disorders have benefited from structured rehabilitation programs. Regular physiotherapy sessions help patients regain mobility and improve their ability to perform activities of daily living.

Another important impact is the provision of prosthetic and orthotic devices. Individuals who have lost limbs due to accidents, disease, or congenital conditions often face severe physical and psychological challenges. The availability of prosthetic limbs enables patients to regain mobility and independence. Orthotic supports help correct deformities and provide structural support for weakened limbs. These services significantly reduce disability and promote physical rehabilitation.

Beyond physical recovery, the center also contributes to psychological well-being and social reintegration. Disability often leads to social exclusion, stigma, and loss of self-confidence. Rehabilitation services provided by the center help restore dignity and confidence among patients. Many beneficiaries reported improved self-esteem after receiving treatment and assistive devices.

Economic empowerment is another key dimension of the center's impact. When individuals regain mobility and independence, they are more capable of participating in productive activities. Several beneficiaries of prosthetic limb services have been able to return to work or start small businesses. This not only improves their financial condition but also reduces dependency on family members.

The center also contributes to community awareness about disability and rehabilitation. Through outreach activities, community meetings, and health awareness programs, the institution educates communities about the importance of early rehabilitation and inclusive social attitudes. Such initiatives help reduce stigma associated with disability and encourage families to seek professional support.

Furthermore, the center plays an important role in supporting national and international commitments related to disability inclusion. Bangladesh is a signatory to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which emphasizes equal access to healthcare and rehabilitation services. The work of the TMSS Physiotherapy and Limb Center aligns with these commitments by promoting accessible and inclusive healthcare services.

Despite these achievements, the growing demand for rehabilitation services highlights the need for expansion of such facilities. Many rural areas in Bangladesh still lack access to physiotherapy and prosthetic services. Strengthening institutional capacity, training rehabilitation

professionals, and increasing financial support will be necessary to sustain and expand the impact of such initiatives.

Recommendations, Policy Briefing and Conclusion

Recommendations

Based on the findings of this case study, several recommendations can be proposed to strengthen physiotherapy and rehabilitation services in Bangladesh.

First, there is a need to expand rehabilitation infrastructure at both regional and community levels. Establishing additional physiotherapy and prosthetic centers in underserved areas would significantly improve access to rehabilitation services for persons with disabilities.

Second, human resource development is essential for strengthening rehabilitation services. Training programs for physiotherapists, prosthetists, and rehabilitation specialists should be expanded through universities and professional institutions.

Third, financial support mechanisms should be introduced to make assistive devices more affordable for low-income patients. Government subsidies, insurance coverage, and donor support could play an important role in reducing treatment costs.

Fourth, stronger collaboration between government health institutions and non-governmental organizations is necessary. Partnerships between public and private sectors can enhance service delivery and resource mobilization.

Finally, public awareness campaigns should be expanded to promote inclusive attitudes toward persons with disabilities and encourage early rehabilitation interventions.

Policy Briefing

The findings of this study highlight the urgent need for policy interventions to strengthen rehabilitation services in Bangladesh. Physiotherapy and prosthetic rehabilitation should be integrated into the national primary health care system. Such integration would ensure that rehabilitation services are accessible to people living in rural and remote areas.

Policy makers should consider establishing a national rehabilitation strategy aligned with international commitments such as the Sustainable Development Goals and the UN Convention on the Rights of Persons with Disabilities. This strategy should prioritize inclusive healthcare systems and promote equal access to rehabilitation services.

Investment in rehabilitation services should also be recognized as a socio-economic development strategy. By enabling persons with disabilities to regain functional independence and participate in economic activities, rehabilitation services contribute to poverty reduction and social inclusion.

Conclusion

The TMSS Physiotherapy and Limb Center represents an important initiative in improving access to rehabilitation services in Bangladesh. Through physiotherapy treatment, prosthetic limb services, and community awareness programs, the center has significantly contributed to improving the quality of life of persons with disabilities.

The findings of this case study demonstrate that rehabilitation services are not only medical interventions but also social and economic empowerment mechanisms. By restoring mobility and independence, physiotherapy and prosthetic services enable individuals to re-engage with their families, communities, and livelihoods.

However, the growing demand for such services highlights the need for stronger institutional support and policy commitment. Expanding rehabilitation infrastructure, investing in professional training, and promoting inclusive health policies will be critical for sustaining the impact of such initiatives.

Ultimately, the experience of the TMSS Physiotherapy and Limb Center offers valuable lessons for developing inclusive health systems that prioritize the needs of persons with disabilities. Strengthening rehabilitation services can play a transformative role in building a more equitable and inclusive society.

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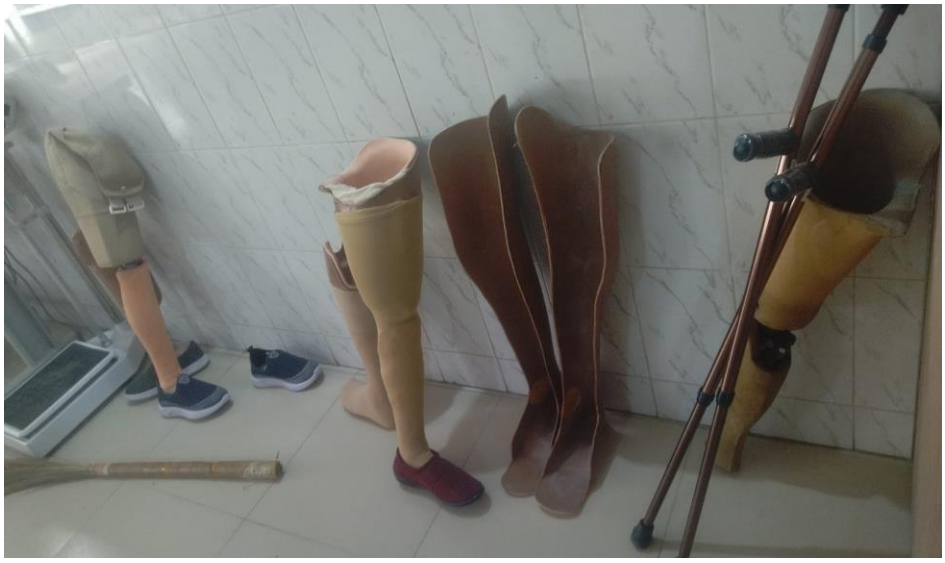

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