

Integrating physiotherapy in rural primary health care: Early lessons on the value, feasibility, and emerging role of the physiotherapist from a community-oriented primary care (COPC) program in Rajasthan, India

Colis Anwari^{1,2}, Deekshita Yadav³, Gargi Goel⁴, B. C. Rao⁵, Pavitra Mohan⁶, Ramakrishna Prasad^{7,8}

¹Visiting Physiotherapy Faculty, Basic Healthcare Services, Udaipur, Rajasthan, India, ²Physiotherapy, PCMH Restore Health, Bangalore, Karnataka, India, ³Physiotherapy, Basic Healthcare Services, Udaipur, Rajasthan, India, ⁴Primary Care Physician, Basic Healthcare Services, Udaipur, Rajasthan, India, ⁵Family Physician and Mentor, Academy of Family Physicians of India (Karnataka Chapter), Bangalore, Karnataka, India, ⁶Secretary, Basic Healthcare Services, ⁷Department of Family Medicine, Basic Health Care Services, Udaipur, Rajasthan, India, ⁸Chair, AFPI National Centre for Primary Care Research and Policy, India and PCMH Restore Health and Wellness Bangalore, Karnataka, India

Abstract

Background: Physiotherapists are health professionals who enhance mobility and quality of life (QoL) through clinical reasoning and the application of evaluation and treatment strategies. Their role is crucial in promoting health, preventing injury, and maintaining function. Aim: This paper aims to (1) share early experiences and learnings from integrating physiotherapy in rural primary health care, (2) discuss the scope and role of physiotherapists in the primary care team, (3) list the competencies of physiotherapists in rural primary care settings, and (4) advocate for a re-imagined role of physiotherapists as multi-skilled "primary care physiotherapists." **Setting and Method:** Using a selection of case stories from rural primary health care settings, the paper provides insights into the integration and impact of physiotherapy within these communities. **Results:** The integration of physiotherapy in rural primary health care has demonstrated significant benefits in promoting comprehensive primary health care. The case stories highlight the expanded scope and essential competencies of physiotherapists as vital members of the primary care team. **Conclusion:** This paper emphasizes the critical role physiotherapy plays in primary health care and calls for broader recognition and support for physiotherapists. It underscores the need for a re-imagined perspective of physiotherapists in rural settings, advocating for their role as multi-skilled primary care professionals.

Keywords: Physiotherapy, rural primary health care, rural physiotherapy, rural health

Introduction

Address for correspondence: Dr. Colis Anwari, PCMH Restore Health, #20 / 7, Second Main Road, Seshadripuram, Bangalore - 560 020, Karnataka, India. E-mail: anwari.colis@gmail.com

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Nearly 70% of India's population lives in rural areas.^[1] The daily life of rural communities involves heavy physical work and hazardous livelihoods. This puts them at risk of overuse injuries, chronic lung diseases, chronic pain, and disability. However, when they seek care, several lacunae exist at the primary care level.

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For patients presenting with chronic pain (often expressed as musculoskeletal pain), a clinical diagnosis, based on a carefully obtained history and a focused physical examination, is rarely made. Patients and families are rarely counseled on the nature and natural history of their condition, the risk factors that underlie or aggravate their symptoms, realistic timeline for improvement, and measures they can take to prevent recurrence by correcting the *patho-biomechanics* at play. In addition, patients are put at risk of several adverse consequences on account of overuse of analgesics such as nonsteroidal anti-inflammatory drugs, unnecessary injections, intravenous administrations, steroids, and "miracle" cures, which result in significant out-of-pocket expenses for families that often subsist at or below the poverty line. These result in the proverbial "adding insult to injury."

The need for integration of physiotherapy in rural primary care:

Physiotherapists are health professionals who promote mobility and quality of life (QoL) by using clinical reasoning to select and apply appropriate evaluation and treatment strategies to promote health, prevent injury, and maintain function.^[2] In addition to providing pain relief, physiotherapists aim to bring behavioral change by addressing knowledge gaps and perceptions. This is an essential pillar toward longer-term disease prevention, health promotion, symptom relief, and community-based rehabilitation. The inclusion of physiotherapy in a multidisciplinary treatment program has been shown to improve physical function, reduce disability, and contribute to earlier return to work.^[2] However, despite the obvious need, access to physiotherapy in rural areas that is integrated with primary care is rarely seen.

The practice of physiotherapy in rural, remote, and underserved areas is particularly challenging because several additional competencies to respond to the unique context of rural communities need to be honed. A few studies in Australia have examined the question "What unique knowledge, skills, abilities, attributes, or other characteristics do physiotherapists need to possess or learn to provide effective physiotherapy specifically in a rural or remote setting?"^[3] However, there are no studies to the best of our knowledge from Indian settings, particularly when physiotherapy is integrated into rural primary care.

In this article, we describe our early experiences of integrating physiotherapy into a rural primary care team. Specifically, using a selection of case stories, we share our early learnings of integrating physiotherapy in rural primary health care; discuss the scope and role of the physiotherapist as a member of the primary care team; list the competencies of a physiotherapist as a member of a rural primary care team; and argue for the re-imagination of the physiotherapist in rural settings as a multiskilled "primary care physiotherapist."

Methods

Our practice context

Basic Healthcare Services (BHS) is a not-for-profit organization that provides responsive, empathetic primary health "circle

of care" that is rooted in the community.^[4] BHS operates in extremely poverty-stricken areas of rural southern Rajasthan. In these areas, most families own small unirrigated farms and have limited employment opportunities. Such a situation forces many young men to migrate to cities as laborers. Food is scarce, and malnutrition among children and adults is high. The terrain is hilly, and habitations are scattered. The nearest functional government health facilities are 20–30 km away. These cases were not submitted to the Institutional Ethics Committee for approval, but formal permission and support through written documentation from the individuals and primary care givers was obtained.

Community clinics, called AMRIT clinics, have been set up at six locations; these provide preventive, promotive, and primary curative services. The clinics are led by qualified nurses and supported by a family physician. Community health workers and volunteers (Swasthya Kirans - SKs) further extend the community reach of services.^[5] The clinics are set up in a community building following a contract with the local self-government. Each clinic provides primary healthcare to a cluster of approximately 2000– 3000 tribal families through three nurses (women) providing clinical care and outreach care to the surrounding dispersed populations. A physician visits the clinics once a week.

Recognizing the need for physiotherapy in the community on account of direct and continuous work in the community over a decade, we started the Integrated Physiotherapy in Primary Care Program at the three AMRIT clinics in Salumber block in June 2022.

The following case reports are based on the assessment and management of three of the patients who presented to us for physiotherapy needs.

Selection of illustrative cases

Between June 2022 and April 2024, 681 patients were evaluated and treated in our Rural Physiotherapy and Rehabilitation program. Of these, 412 were men and 269 were women, with a mean age of 51.02 years in men and 48.30 years in women. After reviewing these cases and internal discussions, we selected three illustrative case stories that 1) highlight our early learnings of integrating physiotherapy in rural primary health care; (2) allow discussion on the scope and role of the physiotherapist as a member of the primary care team; (3) enable listing of the competencies of a physiotherapist as a member of a rural primary care team; and (4) help us define us the role of a primary care physiotherapist in rural settings.

Case reports

Case 1: Kalu, a 10-year-old boy who could no longer walk

Kalu (name changed), a 10-year-old boy, presented to the AMRIT Clinic at Manpur. He was brought to the clinic by his family. Kalu's primary complaint was weakness in his bilateral lower limbs for the past 2 months. Due to the weakness, he was unable to walk. He was also unable to perform any activities of daily living.

On probing further, the family reported that when Kalu was 3 years old, he developed a chest deformity. This gradually got worse, and by the time he was 10 years old, he developed lower limb weakness with muscle atrophy. They also remembered that their neighbor was being treated for tuberculosis (TB). Kalu's parents are farmers who own a piece of land that they maintain for their livelihood. Kalu is the second child in the birth order and has one younger sister and elder brother. Before coming to the AMRIT clinic, the family had already taken the child to multiple informal and formal healthcare providers and spent a significant amount of money.

On examination, Kalu was conscious and oriented. The neck showed forward posture with cervical kyphosis. Other abnormal findings included pectus carinatum (chest) with kyphoscoliotic posture, and lower limb muscle atrophy with loss of sensation on both sides as noted in figure 1a. He was unable to perform any active range of movement of the lower limbs. The primary care physician and physiotherapist together arrived at a working diagnosis of Pott's spine (extrapulmonary TB). No imaging was pursued due to the practical challenges of access.

The family was counseled on the nature of the condition, treatment options, and management plan. Kalu was started on antitubercular (ATT) medications. Along with ATT, to improve his lower limb strength and function and to slow the progression of deformities, a home exercise program was initiated. The home exercises included deep breathing exercises, straight leg raise, pelvic bridging, lower extremity range of movement exercises, and standing with support.

Kalu was followed up closely both in the clinic and via home visits by the physiotherapist accompanied by the CHW. After 2 months of regular follow-up and family support, Kalu was able to stand and walk a few steps with the help of the stick. Figure 1b is the picture when Kalu came for a follow-up at the clinic after 3 months. Over the next few months, there was a steady improvement, and now Kalu has gained a healthy weight, is able to ambulate comfortably, carry out ADLs independently,



Figure 1: (a) is the day of assessment with paraplegia, (b) after 2 months of ATT and the home exercise program

and even play with other children. This is a source of much satisfaction for him, his family, and us as healthcare providers.

Case 2: Lalji, a 50-year-old male, developed left-side Hemiplegia along with vertigo when working in his farm Lalji (name changed), a 50-year-old male, presented to the AMRIT Clinic at Ghated. He came to the clinic primarily for loss of sensation and inability to use his left side for the last 3 months. Due to the disability, he was unable to go to work on his farm. On further questioning, he reported experiencing dizziness when he was working in his farm and subsequently lost sensation and motor function on the left side of his body. We learned that the family did not take Lalji to the hospital for treatment but took him to a traditional healer instead assuming that he accidentally stepped on a sorcerous object. He spent most of his savings and even mortgaged his land in hopes of recovery but to no avail.

During one of the community outreach programs, the BHS team found him with this disability at home. They counseled the family and suggested they bring him to the AMRIT clinic at Ghated. The next day, he visited the clinic along with his elder daughter. He was frustrated and tense due to his disability. He narrated his story and the difficulties that he was facing in carrying out his regular ADL and being unable to contribute to the family's financial expenses as he was the sole breadwinner for a family of five.

On examination, he was unable to perform the range of motion exercises of his left upper limb (UL) and lower limb (LL). His right shoulder was elevated with left wrist drop and grade 2 spasticity (Modified Ashworth Scale) and had a circumduction gait. He was noted to have loss of sensory and motor function and slurred speech. His blood pressure and lipid panel were found to be elevated. The clinical team arrived at a working diagnosis of stroke secondary to hypertension and hyperlipidemia. The patient and the family were educated and informed about the condition. He was initiated on treatment with a combination of amlodipine 5 mg, atorvastatin 20 mg, and aspirin 75 mg. Neurorehabilitation exercises such as passive range of motion, pelvic bridging, standing with support, bed mobility exercise, and walking with support were also initiated.

Table 1: Katz index of independence in activities of daily living for Lalji				
Katz index of independence in activities of daily living				
Activities Points (1 or 0)	Score Before Starting Physiotherapy	Score after 6 weeks of Physiotherapy		
BATHING	0	1		
DRESSING	0	1		
TOILETING	1	1		
TRANSFERRING	0	1		
CONTINENCE	0	0		
FEEDING	1	1		
Total Points	2	5		

SCORING: 6=High (patient independent) 0=Low (patient very dependent

Table 2: Practice scope of physiotherapy in rural primary health care		
Scope	Setting	Activity
Promotive	Outreach and training program, home visit	Group therapy for specific vulnerable populations Basic stretching and exercises for BHS staff
Preventive	Home visit, outreach and training program, community meeting	Musculoskeletal strength training and enhancing lung volume to occupational hazards Antenatal and postnatal care (ANC & PNC) exercises to reduce complications during and post delivery
Pain relief and treatment	Home visit and outpatient clinic	Treatment at clinic for patients suffering from different conditions or diseases through exercise therapeutics and electro-modalities Improve lung capacity for patients suffering from respiratory conditions Exercise therapeutics for pregnancy complications
Rehabilitation	Home visit, outpatient clinic, and community meeting	Reduce disability for patients suffering from NCDs Improve patient's functionality and quality of life through exercise therapeutics and assistive devices Pulmonary rehabilitation for patients who have recovered from respiratory conditions
Palliative	Home visit	Maintaining bed mobility and educating the family in different exercise therapeutic approaches to reduce the pain and suffering

Table 3: Description of the role of the physiotherapist in the rural primary care team

the futar primary care team		
Role		
Referral	The physiotherapist works closely with physicians, nurses,	
resource	and CHWs to identify conditions/presentations among patients who will benefit from referral to physiotherapy.	
Physiotherapy	Initial assessment that includes thoughtful history,	
care provider	focused examination, and special tests to establish the	
	clinical diagnosis, baseline status, key impairments, and	
	activity limitations	
	 Physiotherapy diagnosis and management 	
	 Counseling and follow-up 	
Capacity	To build capacity of the CHW for scheduling follow-up	
building	visits regularly, to facilitate exercise adherence, identify	
	changes in functional abilities, and collaborate on setting	
	new goals as needed.	
Faculty	Serve as a clinical educator and capacity builder for	
resource	the staff to deepen the understanding of the course	
	of the disease, importantly incorporating behavioral	
	interventions to facilitate exercise adherence and uptake.	

The importance of continuing medication and exercise was explained to the patient and family. After one and a half months of regular follow-up and home visits by the physiotherapist, Lalji was found to be improving and adherent with the medications and exercise. Table 1 shows the changes in his Katz Index over 6 weeks.

Case 3: Mukesh, a 4-year-old boy who could not stand

Mukesh (name changed), a 4-year-old boy, was brought to the clinic by his mother. He complained of pain in his knee on bending. Due to the pain, he gradually stopped walking and going to school. On further probing, it emerged that he had already been diagnosed with tubercular arthritis of the right knee joint, but he had defaulted on his ATT. His father is a migrant laborer who works in a nearby city. On examination, Mukesh was conscious and oriented but malnourished. His knee was swollen with grade 3 tenderness, and he was unable to demonstrate active range of motion. A knee extension lag of 20° was noted.

The clinical team educated the parents on the importance of restarting ATT. He was also started on exercises to reduce the 20° extension lag and improve his muscle strength and range of motion. After 6 months of regular follow-up in the form of home visits, Mukesh showed excellent recovery and is now able to walk independently and play with other children his age, as depicted in [Figure 2a and b]. When we asked Mukesh's mother how she found her child's recovery, she simply smiled and responded, "I am so happy to see my child walk again!"

The above cases encapsulate multiple domains of learning relevant to rural practice. First, clinicians need to bear in mind that morbidity patterns and presentations in rural practice are different. These are largely due to a lack of awareness, poor access to healthcare, low expectations from the healthcare system, or delays due to misleading advice by quacks. Each case above illustrates the role of physiotherapy as a part of the primary care team.

For example, in the first case, we see that a child whose chest developed a deformity as a toddler was only brought to see a doctor at the age of 10 years after the onset of paraparesis. Here, the interprofessional collaboration between the primary care physician and the physiotherapist in first suspecting the diagnosis of Pott's spine (spinal extrapulmonary TB) and then creating an integrated plan that included pharmacotherapy (toward cure of TB), physiotherapy (for rehabilitation), educating the family (primary caregivers), and extension of the services of the clinic to the home of the patient (home-based care) resulted in a transformational clinical outcome, satisfaction, and cost savings for the family. In addition, it enhanced the joy of practice for the healthcare team.

In the second case, we see an example of stroke (CVA) in the rural setting. Previous studies have shown that this is a growing problem due to the increasing burden of hypertension, diabetes, and other non-communicable diseases. When we examine the cascade of care for stroke in rural areas, we see that the issue

Competency domain	Specific learning objectives
Clinical reasoning	 Recognizes when features of a presentation do not fit the scope of physiotherapy (PT) practice (e.g., in the case of Kalu, who had suspected tuberculosis of the spine, recognizing that physician evaluation and antitubercular therapy were needed in addition to physiotherapy) Elicits a full and detailed history of presenting complaints (history must include past medical history, surgical history, social
	 and occupational history, habits, medications, allergies, etc.) 3. Hypothesizes and formulate a PT diagnosis from the history (e.g., in the patient with stroke, stating the PT diagnosis as wrist drop secondary to spasticity rather than simply leaving the diagnosis as "left side weakness") 4. Identification of Red flags or possible serious underlying pathology (e.g., in a patient with left arm pain referred for PT,
	being cognizant that arm pain could be due to coronary artery disease and not always musculoskeletal pathology)
Professionalism	 Identify own professional development needs, and implement strategies for achieving them (e.g., in the cases above, learning the complex PT treatment in each of the above conditions by interprofessional discussion)
	2. Accountability is active acceptance of the responsibility for the diverse roles, obligations, and actions of the primary care physiotherapist (e.g., how the physiotherapist took responsibility of the patient care by referral, treatment plan, and education of the family)
Communication	 Use concise, systematic communication at the appropriate level when conversing with colleagues in the practice context (e.g., in the cases above the Communication between the Primary Care Physiotherapist and Lead Physician in making a working diagnosis keeping in mind their family history and context)
	2. Using a biopsychosocial model of disease and different factors influencing the treatment and Prognosis (e.g., in the case of Lalji where the team had to take into account the social and cultural perspective of his treatment)
Education	 Be observed in clinical practice and can discuss clinical cases with a senior clinician and attend Multidisciplinary departmental meetings (e.g., in the above cases, the role of the primary care physiotherapist in patient management, the role of the physician in the treatment of the patient and educating the team and family on the importance of exercises)
Systems-based practice	1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty (e.g., primary care physiotherapist delivering care in different platform based on population needs)
	2. Participate in identifying system errors and in implementing potential systems solutions (e.g., building capacity of the team, including the nurse to identify the patient who would benefit with physiotherapy referral).
Patient management	1. Gather essential and accurate information about patients and their conditions through history taking, physical examination, and the appropriate use of laboratory data and imaging (e.g., in the above case of suspected tuberculosis of the spine, where the primary care physiotherapist was able to gather information)
	2. In collaboration with the patient and the healthcare team, make informed decisions about diagnostic plans using up-to-date scientific evidence and clinical judgment (e.g., in the selected above cases, the decision was made by the PHC team based on

Table 4: Rural primary care physiotherapy clinical competencies (adapted from APTA resident core competencies)^[9]



clinical reasoning and judgment)

Figure 2: (a) is the day of assessment and (b) is after 4 months of the home exercise program

starts with failure to recognize and adequately manage risk factors, including hypertension, tobacco use, diabetes, and low BMI metabolic syndrome. In addition, once a stroke occurs, access to physiotherapy is dismal. Furthermore, these patients suffer from secondary strokes due to inadequate management of risk factors even after the stroke.^[5] Once again, interprofessional collaboration^[6,7] between the various members of the primary care team is key to providing continuity of care, communitybased care, building a trusting relationship, counseling, and effective stewardship of resources.

Rural communities tend to be involved in excessive and repetitive physical labor such as loading and unloading heavy objects, manual farming, construction, and mining. Such strenuous and relentless (repetitive) stresses, when layered on chronic malnutrition and aging, make rural populations even more vulnerable to occupational health hazards of excessive wear and tear of joints and soft tissue structures. In this context, physiotherapy services represent a high-value but scarcely available resource in rural India.^[8]

Discussion

Over the last two decades, India has made significant advances in the health of its population. However, a gap that remains is that despite the obvious need, access to physiotherapy in rural areas that is integrated with primary care is rarely seen.

It is hoped that the above discussion will sensitize and emphasize to educators, practitioners, and systems planners of primary health care and physiotherapy the critical role physiotherapy can play in promoting comprehensive primary health care. In addition, this paper emphasizes the broader imagination of and support for physiotherapists that is best enabled by a) creating a formal role for physiotherapy in the primary health care system in India; b) integrating physiotherapists as core members of the primary health care team; c) capacity building of the physiotherapist by inclusion in complex clinical decisionmaking, encouraging continuous learning to improve broader clinical skills; and d) championing the value and unique skills physiotherapists bring to other healthcare professionals and health system planners.

While designing the rural physiotherapy program, integrated with primary care, we imagined the program to include preventive, health-promotive, curative, rehabilitative, and palliative care [as shown in Table 2].

While implementing the program and encountering cases such as those reported in this paper, we propose a renewed and reimagined role for the physiotherapist as a member of a primary care team [Table 3]:

Early insights on competencies for safe and effective integration of physiotherapy in rural primary care:

Over the course of the first year of the program, we also identified the following two broad domains for physiotherapy integration into rural primary care teams. See Table 4 for a listing.

As the program has evolved, we are also noticing the expansion of the mindset of the physiotherapist role into one that is broader, that has imbibed the values of primary care, and that can be described as a "primary care physiotherapist" mindset. Several core values of primary care such as "broad skills and practice (generalism)," "person and family orientation," "continuity of care," "community-based care," "building a trusting relationship," "effective counseling," "biopsychosocial and ecological approach," "serving as a steward of resources," and "a sense of privilege of serving in the community" are finding greater resonance in the work of the physiotherapist over time.^[10] This represents an epistemic and personal change, that is, shifts in worldview, attitudes, and identity that can only have been learned or discovered by immersive experience, reflection, and practice rather than learned by formal instruction.

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Conflicts of interest

There are no conflicts of interest.

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