

DESCRIPTIVE ANALYSIS ON PHYSIOTHERAPY SERVICES PROVIDED UNDER MAKKALAI THEDI MARUTHUVAM SCHEME (MTM) IN TAMIL NADU

Abishek Jeevagan ⁽¹⁾, Pravin Thiagarajan ⁽¹⁾, Vidhya Viswanathan ⁽¹⁾, Krishnaraj K ⁽¹⁾, Selvavinayagam T S ⁽¹⁾

(1) Directorate of Public Health & Preventive Medicine

Abstract

INTRODUCTION : Non-communicable diseases (NCDs) are a global health challenge with profound socio-economic implications¹. The burden of NCDs is staggering, with the World Health Organization (WHO) estimating that they are responsible for approximately 71% of all global deaths, equivalent to around 41 million people each year.³ The "Makkalai Thedi Maruthuvam" scheme, launched by the Government of Tamil Nadu, embodies a visionary approach to healthcare delivery, particularly in rural areas. Physiotherapy plays a crucial role in rehabilitating individuals with physical disabilities, musculoskeletal disorders, and chronic conditions, enhancing their mobility, function, and quality of life.

OBJECTIVE : To estimate the coverage of physiotherapy services provided under the Makkalai Thedi Maruthuvam (MTM) scheme in Tamil Nadu. To assess the Health Unit District (HUD) wise performance of physiotherapy services Makkalai Thedi Maruthuvam (MTM) scheme in Tamil Nadu.

METHODOLOGY : A descriptive study was done among all beneficiaries of the Physiotherapy service under the Makkalai Thedi Maruthuvam scheme (MTM) in Tamil Nadu till 30.5.2024.

RESULTS : On analysing the most common and frequent diseases covered under physiotherapy services, it was found that Osteo/spondylo/Rheumatoid arthritis (17.3%) and Chronic arthritis (17%) were those covered most often. Motor neuron disease and Parkinson disease were the least covered. Regarding the districts with maximum performance block-wise, Ranipet district tops the list followed by Ariyalur and Dindigul.

CONCLUSION : This study provides a descriptive overview of the overall coverage of physiotherapy services under the Makkalai Thedi Maruthivam scheme. It also gives some picture of the HUD-wise district performance of these services.

KEYWORDS : Home-based Physiotherapy services, Makkalai Thedi Maruthuvam, Arthritis

INTRODUCTION

Non-communicable diseases (NCDs) are a global health challenge with profound socio-economic implications¹. Unlike infectious diseases, NCDs are not transmitted from person to person but are primarily caused by a combination of genetic, physiological, environmental, and behavioral factors.² This category encompasses a diverse range of conditions including cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes, among others. Burden of NCDs is staggering, with the World Health Organization (WHO) estimating that they are responsible for approximately 71% of all global deaths, equivalent to around 41 million people each year³. Alarmingly, the prevalence of NCDs is steadily rising, particularly in low- and middle-income countries where resources for prevention, diagnosis, and treatment are often limited.

India is undergoing a rapid epidemiological transition, characterized by a shift from communicable to non-communicable diseases as the leading causes of morbidity and mortality. This transition is driven by urbanization, lifestyle changes, an increasing ageing population, and improvements in healthcare that have led to

longer life expectancies.⁴ There are significant socioeconomic disparities in the burden of NCDs within India. While NCDs affect individuals across all socioeconomic strata, those from lower-income groups often face greater challenges in accessing preventive, diagnostic, and treatment services due to financial constraints and limited healthcare infrastructure in rural areas. India's healthcare infrastructure varies widely across different states and regions. While some states have made significant progress in strengthening healthcare systems and implementing NCD prevention and control programs, others face challenges related to inadequate infrastructure, healthcare workforce shortages, and limited access to essential medicines and technologies.

Tamil Nadu has made notable strides in healthcare delivery, with a well-established network of primary healthcare centers, secondary hospitals, and tertiary care



Please Scan this QR Code to

View this Article Online

Article ID: 2024:04:02:08

Corresponding Author: Abishek Jeevagan

e-mail : abishekjeevagan@gmail.com

facilities. The state has also implemented several initiatives to address NCDs, including the establishment of NCD clinics, screening programs, and awareness campaigns. Like the rest of India, Tamil Nadu grapples with a high burden of NCDs, particularly cardiovascular diseases, diabetes, and cancer. Urbanization, changing dietary patterns, and lifestyle factors contribute to the rising prevalence of these diseases in the state.

"Makkalai Thedi Maruthuvam" scheme, launched by the Government of Tamil Nadu, embodies a visionary approach to healthcare delivery, particularly in rural areas. Translating to "Healthcare at the People's Doorstep," this initiative aims to enhance access to essential healthcare services for marginalized communities by deploying mobile medical units equipped with diagnostic tools and medical personnel to remote and underserved regions.⁵

Through this scheme, individuals in Tamil Nadu, especially those residing in rural and inaccessible areas, receive vital preventive, diagnostic, and therapeutic interventions without the barrier of distance. By bringing healthcare directly to the people, Makkalai Thedi Maruthuvam empowers communities to proactively manage their health, thus contributing significantly to the state's efforts in achieving comprehensive healthcare coverage and ensuring equitable access to healthcare for all its citizens. Under the Makkalai Thedi Maruthuvam scheme in Tamil Nadu, the inclusion of physiotherapy and palliative care services underscores a holistic approach to healthcare delivery.

Physiotherapy plays a crucial role in rehabilitating individuals with physical disabilities, musculoskeletal disorders, and chronic conditions, enhancing their mobility, function, and quality of life. By integrating physiotherapy into the scheme, individuals in remote and underserved areas gain access to rehabilitative services that may otherwise be inaccessible.

Together, the integration of physiotherapy services within the Makkalai Thedi Maruthuvam scheme demonstrates the state's commitment to delivering comprehensive and inclusive healthcare services that address the diverse needs of its population, including those living in remote and marginalized communities. This study provides a descriptive overview of the Physiotherapy services under the Makkalai Thedi Maruthuvam scheme and its effectiveness. We estimated the coverage of Physiotherapy services provided under the Makkalai Thedi Maruthuvam (MTM) scheme in Tamil Nadu and assessed the Health Unit District (HUD) wise performance of Physiotherapy services in Makkalai Thedi Maruthuvam (MTM) scheme in Tamil Nadu.

METHODOLOGY

A descriptive study was conducted using data extracted from the MTM portal on the physiotherapy services provided to beneficiaries under the MTM scheme. The portal contains details on the total beneficiaries count, a list of diseases covered under the umbrella of physiotherapy services, and the status of treatment under current treatment, handed over to the beneficiary family for continuation of the service, treatment terminated, and death.

All the data entered in the portal since the inception of the program in 2021 till 30.05.2024 were included in the analysis. Along with this data, the total number of blocks was also collected from the respective HUDs and compiled to get the block-wise results. After extraction, the data was compiled in Microsoft Excel and analyzed using SPSS, version 16. HUD-wise coverage and block-wise coverage are expressed as percentages. The data reflected on the portal are the abstract numbers. Permission was obtained from the Director of Public Health to extract and analyze the data.

RESULTS

The total number of beneficiaries who received physiotherapy services under the MTM scheme was 5,98,912 patients. The diseases covered under the physiotherapy services include hemiplegia, Parkinson's disease, Chronic arthritis, Rheumatoid / spondylo / Osteo arthritis, Cerebral palsy, Muscular dystonia, Motor Neuron Disease, and Others.

The district-wise number of beneficiaries who received physiotherapy services per lakh population is given in Table 1.

Table 1: District-wise performance of physiotherapy services per lakh population under Makkalai Thedi Maruthuvam (MTM) Scheme, Aug 2021 to May 2024, Tamil Nadu

| Name of the Health Unit Districts | Number of beneficiaries per lakh population (N=598912) |
|-----------------------------------|--|
| Ariyalur | 2406 |
| Ranipet | 2233 |
| Karur | 1805 |
| Dindigul | 1678 |
| Nagapattinam | 1365 |
| Cheyyar | 1252 |
| Thiruvannamalai | 1241 |
| Thiruvarur | 1227 |
| Paramakudi | 1185 |
| Tiruppur | 1147 |
| Virudhunagar | 1121 |
| Palani | 1021 |
| Erode | 985 |
| Salem | 928 |
| Vellore | 859 |

| | |
|------------------|-----|
| Vellore | 859 |
| Cuddalore | 859 |
| Mayiladuthurai | 836 |
| Coimbatore | 817 |
| Dharmapuri | 803 |
| Sivagangai | 782 |
| Thiruchirappalli | 774 |
| Thiruvallur | 761 |
| Poonamallee | 761 |
| Tirupathur | 752 |
| Ramanathapuram | 735 |
| Thoothukudi | 732 |
| Tirunelveli | 722 |
| Kovilpatti | 675 |
| Tenkasi | 671 |
| Namakkal | 671 |
| The Nilgiris | 658 |
| Thanjavur | 646 |
| Kallakurichi | 627 |
| Theni | 625 |
| Athur | 602 |
| Aranthangi | 563 |
| Pudukottai | 559 |
| Villupuram | 465 |
| Kanniyakumari | 457 |
| Madurai | 450 |
| Krishnagiri | 441 |
| Sivakasi | 427 |
| Kancheepuram | 348 |
| Chengalpattu | 335 |
| Perambalur | 206 |
| Chennai | 153 |
| State | 758 |

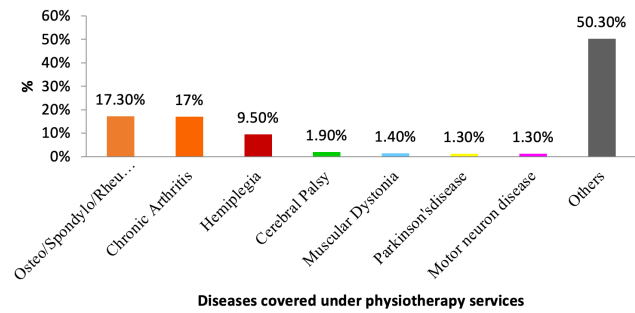


Figure 1: Diseases Covered under physiotherapy services in MTM scheme in Tamil Nadu

Those who are provided with physiotherapy services, 45% of the patients are currently under treatment, while treatment has been terminated for about 14.3% of beneficiaries. Of the total 11231 cerebral palsy patients given physiotherapy services, 1275 (11.4%) are in Madurai and 609 (5.4%) in Thiruvallur. Of the total 8307 muscular dystrophy patients given physiotherapy services, 1060 (12.8%) are in Madurai and 1002 (12.1%) in Thiruvallur.

DISCUSSION

The main findings of this study were that the majority of the patients who availed of home-based physiotherapy care services under the Makkalai Thedi Maruthuvam scheme are those with arthritis especially Osteo Arthritis (OA). Physical therapy is the recommended non-surgical approach for knee OA. Physiotherapy has been shown to not only help alleviate pain, but also enhance function, muscle strength, range of motion (ROM), joint stability, and aerobic conditioning.^{6,7,8} Knee osteoarthritis (OA) is a primary cause of musculoskeletal disability in the elderly, impacting both men and women^{9,10,11} according to the global burden of disease by WHO.¹²

Knee osteoarthritis (OA) doesn't just cause pain and joint stiffness, but also leads to reduced quadriceps strength, and physical disability, and affects overall disease outcome and quality of life.^{13,14,15,16} In managing knee OA, the main goals of treatment are pain reduction and functional improvement. Combinations of interventions are often preferred over a single approach.¹⁷ Moreover, research indicates that physical therapy, including exercise, can diminish the necessity for pharmaceutical and surgical treatments.⁶ Physical exercise is a versatile activity that can be conducted both in a clinical setting and within the comfort of one's own home. Extensive documentation by Deyle⁶ and Thomas et al.¹⁸ underscores the clear and considerable advantages of engaging in home-based physiotherapy. Home-based physiotherapy presents numerous advantages for patients in need of rehabilitation.

The average number of beneficiaries per month per team of the districts ranges from 10 to 177 beneficiaries. Top 10 districts is given in Table 2.

Table 2: Team-wise average coverage of physiotherapy services under Makkalai Thedi Maruthuvam (MTM) Scheme, Aug 2021 to May 2024, Tamil Nadu

| Name of the Health Unit Districts | Average number of beneficiaries per month per Block |
|-----------------------------------|---|
| Poonamallee | 177 |
| Ranipet | 121 |
| Ariyalur | 99 |
| Dindigul | 93 |
| Coimbatore | 78 |
| Karur | 75 |
| Tiruppur | 69 |
| Salem | 64 |
| Vellore | 62 |
| Thiruvannamalai | 59 |

Among the diseases for which the physiotherapy services are provided, 17.3% were patients with Osteo / spondylo / Rheumatoid arthritis, followed by 17% patients with Chronic arthritis and 9.5% with hemiplegia. The other common diseases for which physiotherapy services provided is given in Figure 1

Providing care in the comfort of their own homes not only fosters independence and imparts valuable self-management skills, but also empowers patients to take control of their recovery journey. These services involve regular visits from healthcare professionals, ensuring consistent monitoring and follow-ups, which ultimately lead to improved continuity of patient care and heightened levels of satisfaction.^{19,20}

The home-based physiotherapy services under Makkalai Thedi Maruthuvam also cater to individuals with neurological disorders, including conditions like hemiplegia which stands next to arthritis. Within this context, physical therapy for neurological patients encompasses a holistic approach aimed at educating and guiding patients to promote brain plasticity. By doing so, it helps to safeguard the functionality of the brain, muscles, and neuromuscular system, all of which are essential for maintaining overall health and a high quality of life.^{21,22,23}

Treatment adherence is crucial for its success. Patients who follow their treatment plans tend to have better outcomes. In physiotherapy, adherence involves attending appointments, following advice, doing prescribed exercises correctly and consistently, and sticking to the recommended frequency and intensity of exercises.^{24,25,26}

Home-based physiotherapy programs offer individuals the chance to carry on with therapy, whether it's in between center-based sessions or after completing center-based therapy. This allows for the continued maintenance of established intervention effects.^{27,28}

The implementation of home-based physiotherapy programs creates opportunities for increased parental or caregiver involvement and empowerment. These programs foster an environment where parents and health professionals can learn from each other and gain insight into each other's perspectives on rehabilitation. Additionally, home-based physiotherapy programs are often seen as a cost-effective solution and can be the preferred or only viable option in certain situations, such as when patients live far away from healthcare institutions.^{29,30,31}

Home-based physiotherapy simplifies treatment by eliminating the need to travel, reducing stress and dependency. It provides personalized, one-on-one care for seniors, reducing the risk of falls and supporting pain management, rehabilitation, and chronic condition management. These sessions play a crucial role in helping the elderly maintain independence and improve their mobility and functional ability.³²

As the program continues to attract widespread attention and engagement from the public, the demand for

it will rise. Consequently, it will be necessary to enhance and upgrade the system to effectively address future requirements.

CONCLUSION

Physiotherapy at home provides a holistic and patient-centred approach to care that enhances the individual's quality of life, promotes independence, and addresses specific needs and concerns; all within the comfort of their own home. The present study provides a descriptive picture of the overall coverage of physiotherapy services provided in all HUDs under the Makkalai Thedi Maruthuvam scheme. The long-term outcome of the home-based physiotherapy service is to be assessed in the future to understand the effectiveness and impact of improving the quality of life among the beneficiaries under this scheme. It will also help in identifying the key promoters and barriers for these services at the ground level in detail.

REFERENCES

1. Habib SH, Saha S. Burden of non-communicable disease: global overview. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. 2010 Jan 1;4(1):41-7.
2. Barouki R, Gluckman PD, Grandjean P, Hanson M, Heindel JJ. Developmental origins of non-communicable disease: implications for research and public health. *Environmental Health*. 2012 Dec;11:1-9.
3. Ramesh S, Kosalram K. The burden of non-communicable diseases: A scoping review focus on the context of India. *Journal of Education and Health Promotion*. 2023 Feb 1;12(1):41.
4. World Health Organization. A prioritized research agenda for prevention and control of noncommunicable diseases. World Health Organization; 2011.
5. https://spc.tn.gov.in/wp-content/uploads/M_T_M.pdf
6. Deyle GD, Henderson NE, Matekel RL, et al.: Effectiveness of manual physical therapy and exercise in osteoarthritis of the knee. A randomized, controlled trial. *Ann Intern Med*, 2000, 132: 173–181.
7. Puett DW, Griffin MR: Published trials of nonmedicinal and noninvasive therapies for hip and knee osteoarthritis. *Ann Intern Med*, 1994, 121: 133–140.

8. Dekker J, Boot B, van der Woude LH, et al.: Pain and disability in osteoarthritis: a review of biobehavioral mechanisms. *J Behav Med*, 1992, 15: 189–214.
9. Felson DT, Naimark A, Anderson J, et al.: The prevalence of knee osteoarthritis in the elderly. The Framingham Osteoarthritis Study. *Arthritis Rheum*, 1987, 30: 914–918.
10. Badley EM, Tennant A: Disablement associated with rheumatic disorders in a British population: problems with activities of daily living and level of support. *Br J Rheumatol*, 1993, 32: 601–608.
11. Cho HJ, Chang CB, Kim KW, et al.: Gender and prevalence of knee osteoarthritis types in elderly Koreans. *J Arthroplasty*, 2011, 26: 994–999.
12. Murray CJ, Lopez AD: The global burden of disease. Geneva: World Health Organization, 1997
13. Grainger R, Cicuttini FM: Medical management of osteoarthritis of the knee and hip joints. *Med J Aust*, 2004, 180: 232–236.
14. Felson DT, Goggins J, Niu J, et al.: The effect of body weight on progression of knee osteoarthritis is dependent on alignment. *Arthritis Rheum*, 2004, 50: 3904–3909.
15. O'Reilly SC, Jones A, Muir KR, et al.: Quadriceps weakness in knee osteoarthritis: the effect on pain and disability. *Ann Rheum Dis*, 1998, 57: 588–594.
16. Slemenda C, Brandt KD, Heilman DK, et al.: Quadriceps weakness and osteoarthritis of the knee. *Ann Intern Med*, 1997, 127: 97–104.
17. Zhang W, Moskowitz RW, Nuki G, et al.: OARSI recommendations for the management of hip and knee osteoarthritis, part I: critical appraisal of existing treatment guidelines and systematic review of current research evidence. *Osteoarthritis Cartilage*, 2007, 15: 981–1000.
18. Thomas KS, Muir KR, Doherty M, et al.: Home based exercise programme for knee pain and knee osteoarthritis: randomised controlled trial. *BMJ*, 2002, 325: 752–757.
19. Gitlin LN, Hauck WW, Winter L, et al.: Effect of an in-home occupational and physical therapy intervention on reducing mortality in functionally vulnerable older people: preliminary findings. *J Am Geriatr Soc*, 2006, 54: 950–955.
20. Gillespie LD, Robertson MC, Gillespie WJ, et al.: Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev*, 2009, 2: CD007146.
21. Carmeli E. Physical therapy for neurological conditions in geriatric populations. *Front Public Health*. 2017;5:333.
22. Barnes MP. Principles of neurological rehabilitation. *J Neurol Neurosurg Psychiatry*. 2003;74(Suppl 4):iv3-7.
23. Ward CD, Phillips M, Smith A, Moran M. Multidisciplinary approaches in progressive neurological disease: can we do better? *J Neurol Neurosurg Psychiatry*. 2003;74 (Suppl 4):iv8-12.
24. Jack K, McLean SM, Moffett JK, Gardiner E. Barriers to treatment adherence in physiotherapy outpatient clinics: a systematic review. *Man Ther*. 2010,15(3):220-8.
25. Turner-Stokes L. Cost-efficiency of longer-stay rehabilitation programmes: can they provide value for money? *Brain Inj*. 2007;21(10):1015-21.
26. Turner-Stokes L. The evidence for cost-effectiveness of rehabilitation following acquired brain injury. *Clin Med (Lond)*. 2004;4(1):10-2.
27. Paleg G, Livingstone R. Systematic review and clinical recommendations for dosage of supported home-based standing programs for adults with stroke, spinal cord injury and other neurological conditions. *BMC Musculoskelet Disord*. 2015;16:358.
28. Rae-Grant AD, Turner AP, Sloan A, Miller D, Hunziker J, Haselkorn JK. Self-management in neurological disorders: Systematic review of the literature and potential interventions in multiple sclerosis care. *J Rehabil Res Dev*. 2011;48(9):1087-100.
29. Beckers LW, Schnacker ML, Janssen-Potten YJ, Kleijnen J, Steenbergen B. Feasibility and effect of home-based therapy programmes for children with cerebral palsy: a protocol for a systematic review. *BMJ Open*. 2017;7(2):e013687.
30. Oddy, M, Silva Ramos, S. Cost effective ways of facilitating

home based rehabilitation and support. NeuroRehabilitation. 2013;32(4):781-90.

31. Novak I, Berry J. Home program intervention effectiveness evidence. Phys Occup Ther Pediatr. 2014;34(4):384-9.

32. The benefits of choosing home-based physiotherapy for seniors 2023 Nov-15; Antara blog; <https://www.antaraseniorcare.com/blogs/the-benefits-of-choosing-home-based-physiotherapy-for-seniors>