

CURRENT PRACTICE PATTERNS OF INDIAN PHYSIOTHERAPISTS IN THE REHABILITATION OF PARKINSON'S DISEASE: A CROSS-SECTIONAL SURVEY STUDY

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Abstract

Introduction: Parkinson's Disease (PD) is the second most prevalent neurological ailment worldwide. The prevalence of PD in India ranges from 33 -328 per 1,00,000. However, there is lack of data to support the existing practice followed by Indian physiotherapists for Parkinson's Disease rehabilitation. **Objective:** To examine Indian Physiotherapists' clinical practice trends regarding Parkinson's Disease assessment and rehabilitation and to learn more how evidence-based PD rehabilitation is implemented. **Methodology:** An electronic questionnaire was sent to the Indian physiotherapists via social networking sites. The e-survey questionnaire included three components: demographic details, assessment, and intervention of PD. 129 responses were received. **Data Analysis:** Data was analyzed using SPSS version 20 software. **Result and Conclusion:** Out of 129 responses, 122 met the inclusion criteria of this study. Because the information gathered was qualitative, the results were expressed in terms of frequencies and percentages. This study implicates that there is a great diversity in the Rehabilitation of PD, especially the assessment. Evidently, there is a need to follow the evidence-based practice regarding the rehabilitation of PD and execute them. Nevertheless, more research is needed to understand the reasons that are influencing the practice patterns of Indian Physiotherapists.

Keywords: Physiotherapists, Rehabilitation, Parkinson's Diseases, Physiotherapy.

Introduction

Parkinson's Disease (PD) is progressive and is the second most prevalent neurological ailment worldwide¹. Parkinson's Disease prevalence increases with age²; making an ageing population a factor in its projected 12 million global cases by 2040³, making it the fastest growing neurodegenerative disorder.^{4,5}

India, with a land size of 3.287million km² and a population of 1436.51 million, is the largest country in South Asia.⁶ According to Vikas Dhiman et al.'s comprehensive review and meta-analysis on the prevalence of Parkinson's Disease, the prevalence rate of Parkinsonism in India ranges from 33 – 328 per 1,00,000 people.⁷ A comparative study has shown that both incidence and prevalence of PD are 1.5 – 2 times higher in males when compared with females.⁸ Females have a greater mortality rate and a faster pace of disease development than males, despite the fact that men have a twofold greater possibility of acquiring PD. In addition, there are gender- specific differences in disease risk factors, treatment outcomes, and symptoms, including both motor and non – motor symptoms.⁹

The majority of Parkinson's Disease patients struggle with growing mobility limitations, such as, issues with walking, balance, posture and transfers. This often gives rise to increased dependence, aversion to falls, unfortunate incidents, and sedentary lifestyle, which elevates one's risk of osteopenia or

cardiovascular disorders as well as social isolation. In conclusion, expenses rise and quality of life declines.¹⁰ PD patients endure progressively worsening mobility issues even with excellent medical care via medicines or neurosurgery. Therefore, physiotherapy is also required along with medical treatment.¹¹ Physiotherapy is not likely to affect the disease development directly, but it can enhance the activities of daily living (ADLs) by training the Parkinson's Disease patients how to use movement patterns and strategies.¹⁰ There are numerous studies showing the effectiveness of physical therapy, including the assessment and management of people with PD (pwp). To be able to select the optimal treatment option and help pwp reach their optimum level of functional independence and social engagement, a physiotherapist must use evidence-based practice (EBP).¹² Quality research, clinical knowledge, and patient value make up the core element of EBP.¹³ Physiotherapists have demonstrated a great propensity for professional answerability and incorporating the finest available evidence in their clinical practice during the last few decades.¹⁴ An evidence-based literature review highlighted six key domains for the rehabilitation of Parkinson's Disease: Transfer, Gait, Posture, Dexterity, Balance and Physical Capacity.¹⁰

According to a meta-analysis, traditional physiotherapy, treadmill training, resistance training, strategy training, dual tasking, dance, martial arts, balance and gait training are all useful in improving the motor symptoms, easing the balance issues, gait abnormalities, and quality of ¹⁵ life of pwp. To improve the patient outcomes and develop clinical practice, detailed and evidence-based guidelines guiding the use of standardized evaluation methods, resulting variables, and therapy approaches specific to PD are needed. However, there is a dearth of data to support the existing practice followed by Indian physiotherapists for Parkinson's Disease rehabilitation. Identifying the current practice pattern of Indian physiotherapists in PD is a crucial step in guiding the future research on Parkinson's disease assessment and management. Therefore, the motive of this study is to determine the current practice patterns of Indian physiotherapists concerning the assessment and physiotherapy intervention of PD.

METHODOLOGY

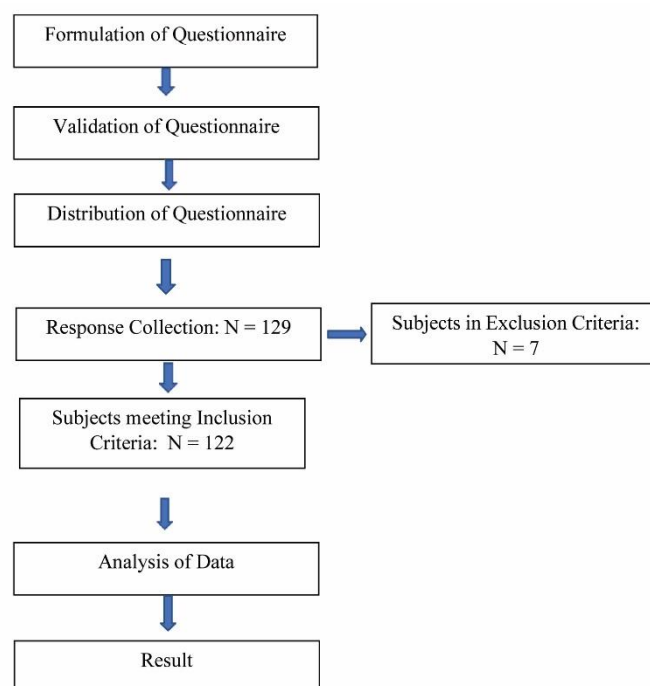
Questionnaire Origination

This study was approved by the head of the physiotherapy department (HOD), In-charge of the department and other senior faculties. A questionnaire comprising 41 items was produced as a result of a unified discussion and decision between the research team and the experts following the evidence-based protocol in the rehabilitation of PD and through the previous researches done on the assessment and management of Parkinson's disease. Three neurologists validated the questionnaire after it was developed, and few changes were done. A pilot study with 12 therapists was conducted in March 2023 to test the reliability of the questionnaire.

Survey study with Final Questionnaire

The final questionnaire contained 40 questions divided into three sections. The first section featured 9 questions about demographic details of the physiotherapists, the second section had 16 questions about the therapist's assessment of Parkinson's disease patients and how frequently they assess patients using the scales, and the third section included 15 questions about the intervention given to PD patients by the therapists in early, mid and late stage. The evidence-based questionnaire along with the consent form was created in Google Forms and forwarded to Indian therapists via social networking sites. The purpose of this survey study was explained in the form and the unanimity of the respondents was maintained. The survey was opened for 2 months (from April 5, 2023 – June 4, 2023). 129 responses were received within this time period, with 7 responses being eliminated. Therefore, the data were collected from 122 individuals for this study. Inclusion criteria - Indian physiotherapists who were: graduated physiotherapists, physiotherapists pursuing masters, physiotherapists working in tertiary care hospitals, physiotherapy interns. first, second, third and Final year undergraduates, and foreign-based physiotherapists were excluded from the study.

PROTOCOL



DATA ANALYSIS

Questionnaire Origination

After the evidence-based questionnaire was developed, reliability and internal consistency of the questionnaire were tested using Cronbach's Alpha Coefficient.

Survey study with Final Questionnaire

This study was based on primary data collected through Questionnaire. The data were numerically coded in MS Excel 2013, and analysis of the data was done using the SPSS version 20. Because the data was qualitative, the results were expressed in terms of frequencies and percentages.

RESULT

Questionnaire Origination

There were 12 pilot participants in the pilot study. The reliability of the Questionnaire was checked using the data obtained from these 12 responses. The overall statistics reliability was 0.647 and the reliability of intervention statistics was 0.737.

Survey study with Final Questionnaire

129 responses were received, and 122 responses were included in the study. This study received responses from 14 states and the majority was from Uttarakhand (n=78, 63.9%), and the majority of the participants were females (n=90, 73.8%). The majority claimed a bachelor's degree as their highest qualification. Most of the respondents had the experience of less than a year (46.7%) and the practice setting was hospital-based outpatient clinic (53.3%). Majority of the participants had seen more than one and less than five (54.9%) PD patients annually. 42.6% of the participants were aware of the European Physiotherapy Guideline and 19.2% of physiotherapists were always following this guideline.

The majority of the respondents use UPDRS (Unified Parkinson's Disease Rating Scale – 37.7%) for the rating of PD motor symptoms. To assess balance, gait, transfers, physical capacity, dexterity, and cognition most of the participants use

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Berg Balance Scale (76.2%), 6 Minute Walk Test (41.8%), Modified Parkinson Activity Scale (46.7%), 6 Minute Walk Test with Borg Scale (68.9%), Unified Parkinson Disease Rating Scale (37.9%), and Mini Mental Status Examination (72%) respectively. 77.9% participants ask the patient to maintain a falls diary. Most to the therapists had seen Forward head posture (45.1%) in pwp and the most common pain site was back pain (53.3%). Mostly, the participants monitor the progression of the PD patients, but they don't use any specific scales (34.4%).

According to the participants, preferred exercise duration was 30 minutes (50.8%). 77% physiotherapists advise the patients to maintain their exercise diary. Most of the participants ask the patients to exercise after 60 minutes of taking medicine (57.8%). To reduce pain, the majority use posture correction exercises (36.9%). To improve balance, freezing of gait, transfers, dexterity, physical capacity, and cognition most of the respondents use mirror therapy (41.8%), dual tasks (40.2%), auditory and visual cues (46.7%), functional activities (66.4%), muscle strength and joint mobility (82%), dual tasks (30.3%) respectively. To improve vital functions, the majority use Diaphragmatic breathing (45.1%). Patient education was done by 99.2% participants and to improve stooped posture 56.6% use posture training. The later stage management goals of most of the participants was to educate the caregivers.

Table 1: Demographic details of the respondents

Characteristics	N (%)
State	
Uttarakhand	78 (63.9)
UP	9 (7.4)
Bihar	1 (0.8)
Delhi	10 (8.2)
Haryana	3 (2.5)
Telangana	1 (0.8)
MP	2 (1.6)
Karnataka	3 (2.5)
Punjab	5 (4.1)
Maharashtra	4 (3.3)
Gujarat	3 (2.5)
Tamil Nadu	1 (0.8)
Himanchal Pradesh	1 (0.8)
Rajasthan	1 (0.8)
Experience	
Less than a year	57 (46.7)
More than 1 & less than 5 yr.	56 (45.9)
More than 5 & less than 10 yrs.	7 (5.7)
More than 10 years	2 (1.6)
Sex	
Male	32 (26.2)
Female	90 (73.8)
Practice Setting	
Hospital based outpatient clinic	65 (53.3)
Physiotherapist operated private practice	22 (18)
Physician owned private practice	4 (3.3)
Inpatient	11 (9)
Others	20 (16.4)
Qualification	
Bachelors	77 (63.1)
Masters	39 (32)
PhD	6 (4.9)
Conferences/ educational courses	

More than once annually	36 (29.5)
Once annually	72 (59)
Never	12 (9.8)
Others	2 (1.6)
PD patient's exposure	
Less than 1	21 (17.2)
More than 1 and less than 5	77 (54.9)
More than 5 and less than 10	23 (18.9)
More than 10	11 (9.0)
Knowledge about European Guideline	
Yes	52 (42.6)
No	70 (57.4)
Frequency of following guideline	
Never	42 (40.40)
Sometimes	42(40.4)
Always	20 (19.2)

Table 2: Responses regarding the assessment of PD

Characteristics	N (%)
PD Rating Scale	
Hoehn and Yahr Scale	35 (28.7)
Unified Parkinson's Disease Rating Scale (UPDRS)	46 (37.7)
Both a & b	36 (29.5)
Others	5 (4.1)
Balance	
Berg Balance Scale	93 (76.2)
Rapid Turns Test	6(4.9)
Push & Release Test	10 (8.2)
Times Up & Go Test	11 (9.0)
Others	2 (1.6)
Gait	
Rapid Turns Test	39 (32.0)
Timed up & Go Test	29 (23.8)
Six Minute Walk Test	51 (41.8)
Others	3 (2.4)
Falls Diary	
Yes	95 (77.9)
No	27 (22.1)
Transfers	
Five Times Sit to Stand	37 (30.3)
Timed Up & Go Test	26 (21.3)
Modified Parkinson Activity Scale	57 (46.3)
Others	2 (1.6)
Physical Capacity	
Six Minute Walk with Borg Scale	84 (68.9)
Five Times Sit to Stand	37 (30.3)
Others	1 (0.8)
Dexterity assessment frequency	
Never	35 (28.7)
Sometimes	61 (50.0)
Always	26 (21.3)
Dexterity	
Nine-hole peg test	16 (24.2)
UPDRS	25 (37.9)
Functional dexterity test	2 (3.0)
Box and block test	3 (4.5)
MDS-UPDRS	1 (1.5)
Symptoms assessment	1 (1.5)
MMSE	5 (7.6)

PPBT/PPT (Purdue pegboard test)	1 (1.5)
Rapid Turns Test	1 (1.5)
Manual dexterity scale	3 (4.5)
No specific scale	8 (12.1)
Cognition assessment frequency	
Never	12 (9.8)
Sometimes	56 (45.9)
Always	54 (44.3)
Cognition	
Mini Mental Status Examination	85 (72.0)
Scales for Outcomes in Parkinson's Disease – Cognition (SCOPA-COG)	29 (24.6)
Others	4 (3.3)
Posture Assessment Frequency	
Never	2 (1.6)
Sometimes	18 (14.8)
Always	102 (83.6)
Posture seen in PD	
Forward Head Posture	55 (45.1)
Kyphotic Posture	53 (43.4)
Scoliosis	2 (1.6)
Others	12 (9.9)
Pain Assessment Frequency	
Never	4 (3.30)
Sometimes	74 (60.7)
Always	44 (36.1)
Pain Site	
Back Pain	65 (53.3)
Lower limbs	36 (29.5)
Upper limbs	18 (14.8)
Others	3 (2.4)
Frequency of progression monitoring	
Never	6 (4.9)
Sometimes	45 (36.9)
Always	71 (58.2)
PD progression monitoring	
Upgraded ADL with Modified Ergonomics	1 (0.8)
Pre and post symptoms	5 (4.1)
Hoehn and Yahr Scale	3 (2.5)
Gait, Muscle tone and Posture	5 (4.1)
Based on ADLs, FIM	5 (4.1)
Flexibility, MMT, Balance and Movements	4 (3.3)
UPDRS	19 (15.6)
Equilibrium and Non-Equilibrium Tests	1 (0.8)
Clinical Rating Scale	15 (12.3)
Writing	1 (0.8)
Balance and Gait	3 (2.5)
Balance and Co-ordination, Posture, Tremor, Speech	4 (3.3)
Patient Record, diary	13 (10.7)
Both UPDRS and H&Y Scale	1 (0.8)
No specific scale	42 (34.4)

Table 3 Responses regarding the intervention of PD

Characteristics	N (%)
Exercise duration	
15 minutes	17 (13.9)
30 minutes	62 (50.8)
45 minutes	32 (26.2)
60 minutes	7 (5.7)
>60 minutes	4 (3.3)

Exercise Diary	
Yes	94 (77.0)
No	28 (23.0)
Preferred time for exercise	10 (8.2)
Immediately after taking medicine	19 (15.6)
After 60 minutes of taking medicine	73 (59.8)
After 90 minutes of taking medicine	19 (15.6)
Anytime	11 (9.0)
Pain Management	
Transcutaneous Electrical Nerve Stimulation (TENS)	42 (34.4)
Interferential Therapy (IFT)	13 (10.7)
Trigger point Release	5 (4.1)
Soft tissue manipulation	12 (9.8)
Posture correction	45 (36.9)
Others	5 (4)
Balance	
Mirror Therapy	51 (41.8)
External Cues	18 (14.8)
Dance	1 (0.8)
Functional Activities	46 (37.7)
Others	6 (4.9)
Freezing of Gait	
Action Observation Training	20 (16.4)
Dual Tasking	49 (40.2)
External Cues	26 (21.3)
Treadmill training	19 (15.6)
Others	8 (6.4)
Transfers	
From on to off practice	29 (23.8)
Mental Imagery & Action Observation Training	32 (26.2)
Dance	2 (1.6)
Auditory and Visual cues	57 (46.7)
Others	2 (1.6)
Dexterity	
Functional activities	81 (66.40)
Reaching Activities	33 (27.0)
Tactile Cues	6 (4.9)
Others	2 (1.6)
Physical Capacity	
Improve muscle power and Joint Mobility	100 (82.0)
Martial Arts	3 (2.5)
Dance	2 (1.6)
Treadmill Training	15 (12.3)
Others	2 (1.6)
Cognition	
Mental Imagery	34 (27.9)
Action Observation Training	33 (27.0)
External Cues	15 (12.3)
Dual Tasking	37 (30.3)
Others	3 (2.4)
Vital Function Intervention?	
Yes	110 (90.2)
No	12 (9.8)
Vital Functions	
Diaphragmatic Breathing	55 (45.1)
Glossopharyngeal Breathing	1 (0.8)
Inspiratory and Expiratory muscle training	44 (36.1)
Posture Correction	15 (12.3)

Others	7 (5.7)
Patient and his/her caregiver education	
Yes	121 (99.2)
No	1 (0.8)
Stooped posture	
Stretching and Strengthening Exercises	41 (33.6)
Posture training	69 (56.6)
Proprioceptive discrimination exercises	10 (8.2)
Aerobic Exercises	1 (0.8)
Others	1 (0.8)
Later stage management goals	
To maintain vital functions	34 (27.9)
To prevent pressure sores and contractures	29 (23.8)
To educate the caregivers	49 (40.2)
Others	10 (8.2)

DISCUSSION

The comprehensive purpose of this study was to figure out the current practice pattern of Indian Physiotherapists concerning the rehabilitation of pwp. Overall, 129 responses were received, with 7 being eliminated from the study because two of the responses came from different nations, while the other five lacked information about the state in which they practiced. Therefore, 122 responses were included in the study. The responses were obtained from 14 states and the majority of the responses were from Uttarakhand followed by Delhi and UP. 73.8% participants were females and 26.2% were males with majority having the experience of less than one year followed by the experience of more than one year and less than 5 years. the highest level of qualification held by 63.1% of participants was a Bachelor's degree, 32% a Master's degree, and 4.9% a PhD. Most of the physiotherapists had managed more than one and less than 5 PD patients annually followed by more than 5 and less than 10 patients annually.

The questionnaire of this study was based on the six core domains that are usually targeted by the physiotherapists in the rehabilitation protocol of PD.¹ According to our data, most physiotherapists use the Unified Parkinson's Disease Rating Scale (UPDRS), followed by the Hoehn and Yahr scale. Some physiotherapists use both scales. Movement disorder society (MDS) has revised the UPDRS scale and found some flaws in it. Therefore, they altered the original scale by addressing its weaknesses and vagueness while retaining its original design. The revised scale is known as MDS-UPDRS.²⁴ However, based on the finding of this study, MDS-UPDRS is scarcely used by the Indian physiotherapists. Few therapists responded that they don't rate the motor symptoms of PD.

Balance is one of the key components in the rehabilitation of Parkinson's Disease.⁹ Out of 122 therapists, 93 were using Berg Balance Scale (BBS) to assess balance in people with Parkinson's Disease. The remaining therapists were using Rapid Turns Test, Push and Release Test, timed up and go (TUG) Test and Romberg Test. European Physiotherapy Guidelines (EPG) recommended Berg Balance Scale (BBS), Push and Release test, TUG and Rapid Turns Test to assess balance in people with PD. The second key domain is gait which is assessed using Rapid Turns Test, TUG, Six Minute Walk Distance (6MWD), Functional Gait Assessment (FGA), and Modified Parkinson Activity Scale (M-PAS gait).¹ From this study, we found that majority of the Indian therapists use 6MWD followed by Rapid

turns test, TUG test. Few therapists use FGA and 3 Minute Walk Test. Falls diary is also an essential part of the assessment and is maintained by people with PD. Falls diary gives therapists an information regarding the problem that needs to be addressed. It is a one-pager form which patient fills when he experiences fall (or near fall).¹ 95 (77.9%) therapists out of 122 ask people with PD to fill the falls diary. The third core area that physiotherapists should assess or address, is the ability of pwp to transfer from one place or position to another place or position. The scales and tests recommended by EPG are M-PAS bed and chair, 5 Times Sit to Stand (FTSTS), and TUG test.¹ According to the findings of this study, 57 (46.7%) out of 122 physiotherapists use M-PAS, 37 (30.3%) use FTSTS, 26 (21.3%) use TUG test, and few therapists were not using any scale or test to assess transfer of pwp.

Physical capacity is the fourth core area that is addressed by physiotherapists. To assess physical capacity 6MWD with Borg scale and FTSTS are used. In this study, 68.9% of Indian physiotherapists were using 6MWD with Borg Scale, 30.3% were using FTSTS (1 therapist was not assessing the physical capacity of pwp in his/her practice). The fifth key domain is Dexterity (the ability of an individual to grip and manipulate items using coordinated movements of hand and fingers). According to EPG, Nine Hole Peg Test (NHPT) is used to assess the dexterity in pwp. From this study, we found that the majority (71.3%) Indian physiotherapists assess dexterity and 28.7% doesn't assess dexterity. Out of 71.3% physiotherapists 21.3% were regularly assessing dexterity and 50% were occasionally assessing dexterity. The responses collected on the usage of scales in assessing dexterity were diverse, with the majority of the therapists employing the UPDRS (37.9%), followed by NHPT (24.2%) and 12.1% physiotherapist were not using any specific scale. Rest of the therapists were using Functional and Manual Dexterity Test, Box and Block Test, MDS-UPDRS, Symptoms Assessment, Mini Mental Status Examination (MMSE) and Purdue Pegboard test (PPBT or PPT).

Mild cognitive impairment in PD (PD-MCI) is one of the nonmotor symptoms which quality of life in pwp. It usually remains stable and even reverts back to normal cognitive level, but in some patients, it leads to Parkinson's Disease Dementia (PDD).²⁵ Therefore, it is necessary to monitor the cognition of pwp to prevent PDD. The scales that are recommend for the assessment of cognition are MMSE and Scales for Outcomes in Parkinson's Disease – Cognition (SCOPA-COG).¹ Our survey showed that 90.2% of physiotherapists assess cognition and 9.8% has never assessed cognition in PD patients. Out of 90.2% therapists, 44.3% often assessed cognition in pwp and 45.9% assessed cognition from time to time. 85 therapists use MMSE, 29 therapists use SCOPA-COG, and few use Montreal Cognitive Assessment (MoCA) test to assess cognition. The sixth core area is posture.⁹ Postural dysfunction is usually seen in pwp, it occurs due to motor axial involvement. Posture has two components: orientation and balance. Involvement of orientation component results in stooped posture, camptocormia and Pisa syndrome. Balance component is affected due to loss of postural reflex which causes postural instability. Postural instability is usually seen in Later stage of PD.²⁶ Scoliosis is also more common in PD as compared to normal elderly individuals, mostly single curvature and is more prevalent in females.²⁷ Posture assessment is important, and in our survey,

it was found that 98.4% of Indian physiotherapists assess Posture in PD patients. Out of 98.4% physiotherapists, 83.6% assess posture very frequently. Majority of the Indian Physiotherapists has seen Forward head posture (45.1%) and Kyphotic Posture (43.4%) and few physiotherapists has seen scoliosis, simian posture and camptocormia in pwp.

Pain is a heterogenous symptom and distressing factor in PD. It has a huge impact on the quality of life of pwp. Most common type of pain is musculoskeletal pain followed by radicular pain, arthritic and visceral pain, central neuropathic pain and dystonic pain. pain worsens with the progression of PD. All types of Pain are more prevalent in later stage as compared to early and mid stage. The most common site of musculoskeletal pain is low back and neck.^{28,29} According to the information gathered by our survey, 96.8% Indian physiotherapists assess pain in pwp. 60.7% of therapists assess pain from time to time while, 36.1% of therapist assess pain frequently. Most of the therapists responded that their patients mostly complaints of back pain (53.3%) followed by lower limb (29.5%), upper limb (14.8), and low back pain. few therapists said, their patients never complained of pain. About 95.1% (out of 122) of Indian physiotherapists monitors the progression of PD. Of 95.1%, 58.2% therapists always monitor the progression of PD. There is great diversity in the process of PD progress monitoring in Indian Physiotherapists. Majority (34.4%) of the therapist responded that they check the progression of PD, but there are no specific scales, followed by UPDRS (15.6%), clinical rating scale (12.3%), 10.7% therapists monitor the progression by maintaining patient record or diary, rest of the physiotherapists use Hoehn and Yahr Scale (H&Y), equilibrium and non-equilibrium tests. Some therapists assess balance, gait, muscle tone, flexibility, Manual Muscle Testing (MMT), coordination, speech, tremors, pre and post symptoms, Activities of daily living (ADLs) and Functional Independence measure (FIM) to monitor the progression of PD.

The goals of physiotherapy regarding pwp are: patient education, motivation, self-efficacy, prevent physical inactivity or sedentary lifestyle, prevent fear of fall (or fall), reduce pain, improve Physical capacity, onset activity limitation delay, improve transfers, improve balance, improve freezing of gait, improve manual activities. The goals of later stage are: to maintain vital functions, prevent pressure sores and contractures, and support caregivers/nurses. 99% of the Indian physiotherapists educate the patients regarding their condition and about the progression of the disease. To prevent physical inactivity, pwp should exercise for atleast 30 minutes (5 days/week).¹ According to our survey, 50.8% (62) of Indian Physiotherapists ask the patients to exercise for 30 minutes every day and 26.2% (32) ask the patients to exercise for 45 minutes. The rest of the physiotherapists ask the patient to exercise for 15 minutes (13.9%), 60 minutes (5.7%), and >60 minutes (3.3%). Exercise diary is an important part of the rehabilitation. In that diary, pwp are supposed to write how much time they have spent doing exercises each day in a week and will rate how they feel after doing exercises using Borg Scale. Our survey showed that 77% of the Indian physiotherapists ask the patients to maintain the exercise diary. According to EPG, therapists should recommend the patient to exercise during on period (After 90 minutes of taking medicine). To improve physical capacity and to delay the onset of activity

limitation, gradually patient should start 'on to off practice'. Majority (59.8%) of Indian physiotherapists ask the patient to exercise after 60 minutes of taking medicine and 15.6 % therapists ask the patient to exercise after 90 minutes of taking medicine. Few therapists ask the patient to exercise immediately after taking medicine or anytime.

As pain affects the quality of life of pwp, pain management is an important goal. The methods to reduce pain are: pain education, postural correction, soft tissue manipulation, electrotherapy (mainly TENS), mirror therapy, trigger point release.¹ Most (36.9%) of the Indian physiotherapists use posture correction exercises, 34.4% use TENS, 10.7% use IFT while the rest use trigger point release, soft tissue manipulation, hot fomentation and combination therapy to alleviate pain. To improve balance, majority of the Indian physiotherapists use mirror therapy followed by functional activities and external cues (visual, tactile, auditory, olfactory and gustatory cues). Few physiotherapists use high intensity dance to improve balance. There is diversity among Indian physiotherapists in improving the freezing of gait. Majority of the Indian physiotherapists use dual tasking, followed by external cues, action observation training, and treadmill training to improve gait. Some therapists use the combination of these exercises and very few physiotherapists use Rhythmic Initiation (PNF technique), gait training with obstacles, and cycling.

To improve transfers of pwp, the methods used by Indian physiotherapists were: auditory and visual cues (46.7%), mental Imagery and action observation training (26.2%), from on to off practice (23.8%). Very few physiotherapists use dance and transfer training. To improve dexterity of pwp, majority (66.4%) of the Indian therapists use Functional activities followed by reaching activities (27%) and some physiotherapists use tactile cues. To improve physical capacity, 82% (out of 122) of Indian physiotherapists improve muscle power and joint mobility of the patients, followed by treadmill training (12.3%). Rest of the physiotherapists use martial arts, high intensity dance, aerobic exercises and combination of these exercises. To improve cognition of pwp, Indian physiotherapists mostly use dual tasking (30%), mental imagery (27.9%), action observation training (27%), and external cues (12.3%).

The goals of Indian physiotherapists for the management of later stage are: caregiver education (40.2%), vital function maintenance (27.9%), and pressure sores and contracture (23.8%). 7.4% of physiotherapists have all of these goals for later stage patients. Vital function management plays a crucial role in the rehabilitation of PD in later stage. About 90.2% of Indian physiotherapists manage vital functions. To manage vital functions, majority of the Indian physiotherapists works on diaphragmatic breathing (45.1%), inspiratory and expiratory muscle strength (36.1%), and posture correction (12.3%). Rest of the therapists use Active cycle of breathing technique (ACBT), incentive spirometry and combination of these exercises. For stooped posture, 56.6 % Indian physiotherapists give posture training, 33.6% use stretching and strengthening exercises, 8.2% use Proprioceptive discrimination exercises and very few therapists use posture correction in combination with Proprioceptive neuromuscular facilitation (PNF).

Limitations

The generalizability of this study was limited. The sample size of this study was limited (122) and it cannot represent the practice pattern of all Indian physiotherapists.

CONCLUSION

This study provided a direction towards the practice pattern that Indian Physiotherapists follow for the assessment and management of Parkinson's disease (PD). Nevertheless, more research is needed to understand the reasons that are influencing the practice patterns of Indian Physiotherapists. This study implicates that there is a great diversity in the Rehabilitation of PD, especially the assessment. Evidently, there is a need to follow the evidence-based practice regarding the rehabilitation of PD and execute them.

By finding out the current practice pattern of Indian physiotherapists in the rehabilitation of PD, this study provides guidance to other future studies and is the first step in forming the guidelines for Indian physiotherapists regarding PD rehabilitation.

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