Original Article

DOI: 10.7860/JCDR/2026/81716.23647

Physiotherapy Section

A Cross-sectional Study on Patient Participation in Stroke Rehabilitation: Exploring the Influence of Client-centred Care on Patient Satisfaction and Clinic-based Adherence

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ABSTRACT

Introduction: Stroke rehabilitation, based on individual limitations and needs, necessitates significant knowledge. To obtain all of this, individuals' continued involvement in therapeutic interventions is vital. Yet previous studies show inconsistent levels of patient involvement and limited understanding of its influence on satisfaction and adherence.

Aim: To determine patient participation in rehabilitation and its association with satisfaction and clinic adherence in stroke rehabilitation in individuals with stroke.

Materials and Methods: A cross-sectional study was conducted, with 82 stroke patients, under the affiliation of the Ashok & Rita Patel Institute of Physiotherapy, Anand, Gujarat, India, getting physiotherapy services from January 2022 to June 2022. To evaluate patient participation in rehabilitation, the Client-Centred Rehabilitation Questionnaire (CCRQ) has been used. Patient satisfaction and clinic-based adherence were assessed using the MedRisk Instrument for Measuring Patient Satisfaction with Physical Therapy Care (MRPS) and the Index of Adherence, respectively. The data were analysed using descriptive statistics. Demographic differences were tested using the Mann-Whitney U and Kruskal-Wallis tests, while Spearman's correlation used to check association between patient involvement, satisfaction, and adherence. The statistical significance level was considered to be p-value <0.05.

Results: The study recruited 82 participants, out of whom 65 (79.3%) were males and 17 (20.7%) were females. The subjects varied in age from 27 to 75-year-old (54.52±11.98). The CCRQ comprised seven domains, among which physical comfort demonstrated the highest mean score (1.39±0.36), while client-centred education was the lowest rated (2.63±0.96). Spearman's correlation analysis showed that all CCRQ domains were significantly associated with patient satisfaction, whereas only emotional support (p=0.015) and client-centred education (p=0.014) demonstrated low to moderate but statistically significant correlation with adherence, highlighting their key role in sustaining patient involvement.

Conclusion: The findings revealed that stroke patients' responses to participation in their rehabilitation have substantial variation. All CCRQ domains were strongly linked to patient satisfaction, but only emotional support and client-centred education were associated with clinic adherence. Future studies can be carried out to check patient participation in different healthcare settings with the same objective involving different populations.

Keywords: Patient involvement, Patient participation in rehabilitation

INTRODUCTION

Stroke contributes to a considerable number of health issues and deaths worldwide. In recent decades, factors such as population growth, ageing demographics, and the rise of modifiable risk factors associated with stroke have led to a notable increase in stroke rates in low- and middle-income countries [1]. Stroke causes a wide spectrum of sensory-motor, cognitive-perceptual, and behavioural deficits [2]. Treatment that is focused on the experiences, goals, and objectives of stroke survivors necessitates a complete understanding and skill set to incorporate stroke survivors' views [3]. During the rehabilitation program, the patients, as well as caretakers, must be taken into account when determining objectives and possible treatments. Individuals and care providers should be informed and encouraged to verify that the techniques learned in treatments are practiced at home [4]. "Person-centredness" is often used to describe patient participation in rehabilitation, and it can be achieved by using "person-centred" and "shared decision-making" interchangeably [5,6]. Patients' involvement, the interpersonal contact between health care providers and patients, is emphasised in a person-centred approach to healthcare [7,8]. Patients' rights to shape and directly engage in the decision-making processes connected to their treatment are included in willingness to participate in rehabilitation [9].

Patient-centered rehabilitation has increasingly been recognised as a fundamental paradigm within contemporary healthcare practice. Within this framework, patient satisfaction has emerged as a critical metric for evaluating the quality and effectiveness of care [10]. Empirical evidence indicates that higher levels of satisfaction are positively associated with improved therapeutic outcomes [11]. Specifically, satisfied patients are more likely to adhere to prescribed treatment regimens, derive greater benefit from rehabilitation interventions, and report enhanced quality of life [10-13]. In the context of post-stroke rehabilitation, patient engagement is particularly influential in determining adherence to exercise protocols [14,15]. Factors such as the relevance of exercise prescriptions and involving patients in treatment planning have been found to positively influence adherence [15]. The findings of previous studies suggest that more research has to be done across different clinical settings and teams to quantify the level of patient engagement in rehabilitation [16,17]. Therefore, the objective of the study was to determine patient participation in rehabilitation and its association with satisfaction and clinic adherence in stroke rehabilitation in individuals with stroke.

MATERIALS AND METHODS

A cross-sectional design was employed to evaluate patient participation in rehabilitation among stroke survivors. A convenience sample strategy was used to recruit participants from various outpatient departments and clinical settings throughout Gujarat, India. The study was conducted under the affiliation of the Ashok & Rita Patel Institute of Physiotherapy, Anand, Gujarat, India. The investigation spanned a period of six months, from January 2022 to June 2022. This study has been approved by the Institutional Ethics Committee-Charusat (IEC/CHARUSAT/21/61). The consent of the participants has been taken before including them in the study.

Sample size calculation: A total of 82 patients were recruited based on eligibility criteria, and the sample size was calculated using formula:

$n=\{z^2*p*(1-p)/e^2\}/\{1+(z^2*p*(1-p)/(e^2*N))\}$ [18].

A confidence level of 95% (α=0.05) was considered, with a margin of error (e) of 5%. The expected population proportion (p) was taken as 5.59% [19], and the population size (N) was assumed to be 100,000.

Inclusion criteria

- Patients with the first-ever stroke;
- Duration of stroke 3-12 months;
- Availing of physiotherapy service for ≥ 3 weeks;
- Participants able to understand and respond to the questionnaire.

Exclusion criteria

- Patients with other neurological diseases;
- Patients with orthopaedic or cardiac co-morbidity;
- Patients with aphasia.

Study Procedure

After approval from the ethics committee, stroke participants were recruited from the study setting sites, and those who fulfilled the inclusion criteria were included in the study. They explained the goal of the study, and participants were then asked to sign a permission form. Demographic detail was obtained, and the data for patient participation in rehabilitation were collected through CCRQ, MRPS, and the Index of Adherence

Outcome Measures

- **Client-Centred rehabilitation questionnaire:** To assess patient participation in rehabilitation CCRQ was used. Permission to use the CCRQ was obtained from the developer of the questionnaire. It has seven domains, namely emotional support, coordination and continuity, family involvement, client-centred education, participation in decision-making and goal-setting, client outcome evaluation, and physical comfort. Items consisted of remarks to which participants would have a five-point Likert answer option, where five stands for strongly disagree and one for strongly agree [20]. A lower score implies a higher level of client-centredness. It has high internal (0.72-0.87), test-retest (0.74-0.85) reliability and discriminative construct validity [20]. Professional testimonies on the Gujarati translation were sought after a questionnaire was translated into Gujarati. Pilot testing and expert interactions were used to establish the questionnaire's face validity.
- **MedRisk instrument for measuring patient satisfaction with physical therapy care:** MedRisk is an established tool [21] that has been used extensively across the world to assess patients' satisfaction with physiotherapy rehabilitation [22]. Eight studies evaluated the psychometric characteristics of this instrument after converting the original English questionnaire languages to Korean, Sinhalese, Gujarati, Spanish, and Brazilian Portuguese [23]. In an order of one to five, the subject was instructed to rank the questions. Where one represents a strongly disagree and five represents a strongly agree [21]. Questions four and seven have been purposely worded negatively. During final scoring, they were counted as positive [21]. The instrument has excellent internal consistency (0.94 to 0.86) [22]. This instrument is useful for assessing satisfaction with treatment because of its good psychometric qualities tested on a wide, varied sample [21].
- **Index of adherence**

It consists of clinic attendance and behaviour evaluations during treatment sessions. It is done by dividing the number of sessions attended by the number of sessions planned [24].

STATISTICAL ANALYSIS

Descriptive statistics were used to describe baseline characteristics and to define measured or calculated variables by using the Statistical Package for Social Sciences (SPSS) software version 23.0. The Shapiro-Wilk test was run to check the normal distribution. The Mann-Whitney U and Kruskal-Wallis tests were employed to check if there had been any significant variation among the groups based on demographic data and patient participation level. Spearman's correlation was used to assess associations between patient participation in rehabilitation and patient satisfaction, and clinic-based adherence, respectively. A p-value <0.05 was considered statistically significant.

RESULTS

Baseline Characteristics of Participants

Based on the inclusion criteria, the study recruited 82 participants, out of whom 65 (79.3%) were males and 17 (20.7%) were females. The subjects varied in age from 27 to 75-year-old 54.52±11.98. [Table/Fig-1] shows the basic demographic details of the participants.

Demographic variables	n (%)
Age (in years)	
21-40	11 (13.4)
41-60	44 (53.7)
61-80	27 (32.9)
Gender	
Male	65 (79.3)
Female	17 (20.7)
Educational detail	
No formal education	12 (14.6)
Primary	48 (58.5)
Secondary	12 (14.6)
Graduate or above	10 (12.2)
Marital status	
Married	73 (89.0)
Unmarried	9 (11.0)
Duration of stroke (in months)	
3-6	38 (46.3)
6-12	44 (53.7)

[Table/Fig-1]: Basic demographic details of the participants.

The Proportion of Patient Participation among Stroke Survivors

The physical comfort was the best-achieved domain 1.39±0.36, emotional support was the second-best 1.62±0.44; emotional support and family involvement was 1.62±0.44 and 1.68±0.36 respectively, are demonstrated in [Table/Fig-2]. The least-achieved domain was determined to be client-centred education 2.63±0.96. In addition, answers differed in terms of patient participation in decision-making and goal-setting, and client-centred education. In

S. No.	CCRQ domain (number of Items)	Mean±SD	Mean range
1	Participation in decision-making and goal-setting (6)	2.42±0.70	1.68-3.44
2	Client-centred education (5)	2.63±0.96	1.56-4.04
3	Client evaluation of outcomes (4)	2.58±0.62	2.16-3.49
4	Family involvement (5)	1.68±0.36	1.26-2.11
5	Emotional support (4)	1.62±0.44	1.15-2.04
6	Physical comfort (4)	1.39±0.19	1.12-1.55
7	Coordination and continuity (5)	2.27±0.88	1.24-3.54

[Table/Fig-2]: Patients participation in rehabilitation after a stroke (CCRQ domains). Likert scale: 1 strongly agree, 2 agree, 3 neither agree nor disagree, 4 disagree, 5 strongly disagree

the domains of client evaluation of outcome and coordination and continuity, responses were varied.

The physical comfort (96.95%), emotional support (91.15%), and family involvement (87.32%) were the most positively experienced domains by patients, shown in [Table/Fig-3]. All reported being treated with respect and dignity, and most felt their pain was acknowledged and that family involvement was adequate. Client-centred education was the least experienced, with many lacking clear information about therapy and community support. Participation in decision-making and coordination showed mixed responses; many felt treatment options were unclear and nearly half repeated information to different staff. Most patients reported insufficient discussion of progress, though scheduling accommodations were noted.

CCRQ domains	Agree n (%)	Neutral n (%)	Disagree n (%)
Participation in decision-making and goal-setting			
The program staff and I decided together what would help me.	62 (75.6)	5 (6.1)	15 (18.3)
I was kept well-informed about my progress in areas that were important to me.	32 (39)	13 (15.9)	37 (45.1)
The program staff took my individual needs into consideration when planning my care.	63 (76.8)	3 (3.7)	16 (19.5)
My treatment needs, priorities, and goals were important to the program staff.	67 (81.7)	6 (7.3)	9 (11)
I was encouraged to participate in setting my goals.	75 (91.5)	2 (2.4)	5 (6.1)
Treatment choices were fully explained to me.	22 (26.8)	4 (4.9)	56 (68.3)
Average	**48.00 (65.23)**	**5.50 (6.72)**	**23.00 (28.05)**
Client-centred education			
I had difficulty getting the healthcare information I needed.	53 (64.6)	3 (3.7)	26 (31.7)
I was given adequate information about support services in the community.	18 (22)	2 (2.4)	62 (75.6)
I received the information that I needed when I wanted it.	75 (91.5)	4 (4.8)	3 (3.7)
My therapy program was explained to me in a way that I could understand.	33 (40.2)	9 (11)	40 (48.8)
There were times when I received more information than I was ready for.	61 (74.4)	15 (18.3)	6 (7.3)
Average	**48.00 (58.54)**	**6.60 (8.04)**	**27.40 (33.42)**
Client evaluation of outcomes			
The program staff tried to accommodate my needs when scheduling my therapy.	61 (74.4)	2 (2.4)	19 (23.2)
I accomplished what I expected in my rehabilitation program.	49 (59.8)	20 (24.4)	13 (15.8)
The program staff and I discussed my progress together and made changes as necessary.	26 (31.7)	3 (3.7)	53 (64.6)
I learned what I needed to know in order to manage my condition at home.	58 (70.7)	11 (13.4)	13 (15.9)
Average	**48.50 (59.15)**	**9.00 (10.98)**	**24.50 (29.88)**
Family involvement 2			
The program staff treated me as a person instead of just another case.	68 (82.9)	3 (3.7)	11 (13.4)
My family/friends were given the information that they wanted when they needed it.	62 (75.6)	2 (2.4)	18 (22)
My family/friends received information to assist in providing care for me at home.	70 (85.4)	1 (1.2)	11 (13.4)
My family and friends were treated with respect.	80 (97.6)	0	2 (2.4)
My family/friends were involved in my rehabilitation as much as I wanted.	78 (95.1)	0	4 (4.9)
Average	**71.60 (87.32**	**1.20 (1.46)**	**9.20 (11.22)**
Emotional support			
My family/friends were given the support that they needed by the program staff.	68 (82.9)	0	14 (17.1)
I was treated with respect and dignity.	82 (100)	0	0
I felt comfortable expressing my feelings to the program staff.	80 (97.6)	0	2 (2.4)
My emotional needs (worries, fears, anxieties) were recognised and taken seriously by the program staff.	69 (84.1)	8 (9.8)	5 (6.1)
Average	**74.75 (91.15)**	**2.00 (2.45)**	**5.25 (6.40)**
Physical comfort			
My physical pain was controlled as well as possible.	77 (93.9)	4 (4.9)	1 (1.2)
My reports of pain were acknowledged by the program staff.	80 (97.6)	1 (1.2)	1 (1.2)
I had adequate time for rest and sleep.	82 (100)	0	0
The program staff tried to ensure my comfort.	79 (96.3)	2 (2.4)	1 (1.3)
Average	**79.50 (96.95)**	**1.75 (2.13)**	**0.75 (0.93)**
Coordination and continuity			
I knew who to contact if I had problems or questions during my rehabilitation program.	69 (84.1)	2 (2.5)	11 (13.4)
I know who to contact if I have problems following discharge.	80 (97.6)	0	2 (2.4)

I was told what to expect when I got home.	70 (85.4)	6 (7.3)	6 (7.3)
My therapists, nurses, and doctors worked well together.	25 (30.5)	7 (8.5)	50 (61)
I had to repeat the same information to the different program staff.	45 (54.9)	0	37 (45.1)
Average	**57.80 (70.50)**	**3.00 (3.66)**	**21.20 (25.84)**

[Table/Fig-3]: Participation of patients in rehabilitation at the item level.

Significant Variation among the Groups Based on Demographic Data and Patient Participation Level

The demographic variables exerted a limited influence on the domains of the CCRQ are revealed in [Table/Fig-4]. Notably, female participants reported significantly higher scores in the client evaluation of outcomes domain compared to males (p=0.030). Additionally, married individuals demonstrated significantly greater perceptions of client-centred education relative to their unmarried counterparts (p=0.018).

	Domains of participation						
Variables	PDM Mean±SD p-value	CE Mean±SD p-value	CEO Mean±SD p-value	FI Mean±SD p-value	ES Mean±SD p-value	PC Mean±SD p-value	CC Mean±SD p-value
Gender							
Women	2.71±0.80	2.82±0.74	2.96±0.90	1.87±0.85	1.71±0.45	1.40±0.38	2.36±0.66
Men	2.35±0.57	2.58±0.68	2.48±0.80	1.63±0.71	1.60±0.46	1.39±0.32	2.25±0.55
	0.095	0.232	0.030*	0.191	0.326	0.813	0.458
Age (in years)							
21-40	0.42±0.8	2.51±0.85	2.73±0.98	1.82±0.83	1.66±0.65	1.52±0.28	2.38±0.67
41-60	2.38±0.58	2.55±0.62	2.54±0.81	1.75±0.81	1.56±0.41	1.33±0.29	2.25±0.59
61-80	2.50±0.64	2.83±0.75	2.57±0.86	1.52±0.58	1.70±0.43	1.44±0.34	2.26±0.51
	0.728	0.206	0.838	0.350	0.153	0.113	0.113
Education							
Graduate or above	2.13±0.58	2.34±0.53	2.30±0.89	1.24±0.21	1.33±0.26	1.28±0.30	2.18±0.45
No formal education	2.64±0.81	2.60±0.84	2.69±0.85	1.72±0.76	1.60±0.31	1.25±0.28	2.45±0.61
Primary	2.42±0.64	2.67±0.73	2.59±0.83	1.82±0.84	1.66±0.50	1.41±0.32	2.19±0.58
Secondary	2.44±0.43	2.77±0.54	2.63±0.65	1.48±0.45	1.71±0.47	1.54±0.30	2.50±0.58
	0.386	0.477	0.580	0.069	0.097	0.055	0.231
Marital status							
Married	2.47±0.62	2.70±0.68	2.61±0.83	1.72±0.78	1.64±0.47	1.39±0.32	2.30±0.59
Unmarried	2.04±0.65	2.09±0.63	2.31±0.94	1.42±0.23	1.42±0.22	1.36±0.31	2.04±0.40
	0.060	0.018*	0.236	0.574	0.214	0.806	0.169

[Table/Fig-4]: Baseline variable groups' mean and statistical test for CCRQ domains.
*Significant at the p<0.05; the Mann-Whitney U test (M-W U) is used when comparing two groups, the Kruskal-Wallis test (K-W) is used when comparing more than two groups
Abbreviation: PDM: Participation in decision-making and goal-setting; CE: Client-centred education; CEO: Client evaluation of outcomes; FI: Family involvement; ES: Emotional support; PC: Physical comfort; CC: Coordination and continuity

Correlation Between CCRQ Domains, Index of Adherence, and Patient Satisfaction (MRPS)

The results of simple correlation analysis conducted using Spearman's rank correlation to examine the associations between individual CCRQ domains, patient satisfaction (MRPS), and the index of adherence are presented in [Table/Fig-5]. All CCRQ domains were significantly associated with MRPS (p<0.01 or p<0.05) with moderate to high correlation (r=0.274-0.642). The strongest correlation was seen for client evaluation of outcomes domain (r=0.642) and participation in decision-making and goal-setting domain (r=0.623), indicating that these domains showed moderate positive correlation with patient satisfaction. Most CCRQ domains showed negligible correlations with adherence, except client-centred education (r=0.270, p=0.014) and emotional support (r=0.267, p=0.015), which demonstrated low to moderate but statistically significant correlations.

	Index of adherence		MRPS	
CCRQ domains	Correlation coefficient (r)	p-value	Correlation coefficient (r)	p-value
Participation in decision-making and goal-setting	0.086	0.444	0.623	<0.001
Client-centred education	0.270	0.014*	0.545	<0.001
Client evaluation of outcomes	0.121	0.278	0.642	<0.001
Family involvement	0.103	0.356	0.518	<0.001
Emotional support	0.267	0.015*	0.340	0.002**
Physical comfort	0.141	0.206	0.274	0.013**
Co-ordination and continuity	0.004	0.973	0.487	<0.001

[Table/Fig-5]: Spearman's correlation of CCRQ domains with the index of adherence and MRPS.
**Correlation is significant at the 0.01 level; *Correlation is significant at the 0.05 level

DISCUSSION

This cross-sectional study investigated the level of involvement of stroke patients in rehabilitation and explored the association between patient satisfaction and clinic-based adherence. Prior studies have emphasised the importance of capturing patient participation from the patient's perspective, as it enhances care quality and fosters greater autonomy in managing one's health [25]. Existing evidence indicates that allowing stroke patients to define their own goals for rehabilitation is beneficial. Participating in goal-setting causes no harm to patients or the healthcare professionals who assist them [26].

Using the CCRQ, the present study revealed substantial variability in patient engagement, ranging from high to low levels. Among the CCRQ domains, the highest levels of agreement were observed in physical comfort domain, emotional support domain, and family involvement domain. These results are consistent with previous studies, which indicate that healthcare professionals often provide respectful care and encourage activity engagement [27,28]. These

findings align with prior research in primary healthcare settings, where individual experiences and engagement levels were also diverse [28]. Previous studies have emphasised the selection of outcome measures must be guided by the patient's goals in order to make the goal setting process patient-centred and to measure the process's outcomes [26]. Therapists must educate patients on the concept and practice of patient-centred goal setting, as well as providing clear information about the condition, prognosis, and time course, in order to foster realistic expectations [26,29,30].

The domains of decision-making and goal-setting, coordination and continuity of care, client-centred education, and evaluation of outcomes demonstrated comparatively lower mean scores. Notably, 68.3% of participants reported that therapy options were not fully communicated. This finding supports earlier research showing that healthcare providers rarely help patients set realistic and individualised goals [31]. Stroke recovery is a prolonged and complicated process that requires clear communication and active patient participation in planning and monitoring progression of the recovery. However, 64.6% of participants in the present study reported having no structured conversations with therapists concerning their progress or the need for therapy modifications. A previous review found that, despite high levels of enthusiasm, patients felt they had little influence over rehabilitation goals and participated passively in goal formulation [26]. The lack of active participation was linked to therapists not explicitly incorporating patients' social and occupational demands into treatment goals, suggesting a perceptual practice gap [32]. The current study found that gender and marital status influenced certain aspects of client-centred care. Female participants reported greater involvement in evaluating the outcome. Married individuals perceived higher levels of client-centred education. No significant differences were found across age or education levels. As shown in previous studies, women often value holistic, empathetic care, whereas men prioritise the effectiveness of treatment [33]. Similarly, younger, and more educated patients tend to engage more actively during healthcare interactions [34].

Patient satisfaction and clinic-based adherence were assessed using the MRPS and an Index of Adherence. Satisfaction was positively associated with rehabilitation engagement, reaffirming findings from prior rehabilitation studies where patient participation was a key predictor of satisfaction [35]. Within CCRQ domains satisfaction was closely linked to all domains. These findings reinforce earlier research, which noted that healthcare providers with a collaborative approach had more satisfied patients [36]. Additionally, satisfaction and performance were associated with sufficient time and high-quality interactions with professionals [37]. However, the relationship between participation and clinic-based adherence was weak. Similarly, client-centred education and emotional support showed weak but statistically significant associations. This finding mirrors previous work in osteoarthritis care, where shared decision-making based on patient preferences was a key driver of adherence [38]. However, it is recommended that such agreements would probably occur in more patient participation, which will lead to better clinical outcomes and adherence, as contrasted to the outcomes of an idealised program that the individual does not participate in [39]. Patient participation in collaborative treatment process is a critical factor to consider when improving treatment adherence and outcomes. Improved therapist-patient communication and a focus on patients' motivations can lead to greater treatment adherence and clinical outcomes [40].

Limitation(s)

The present study also has limitations; participants were recruited from only specific settings, which may affect the generalisability of the study to other regions. Assessment of satisfaction and patient participation is based on their perception at the time of assessment, so likely to be influenced by personal factors. Exploring patient participation in rehabilitation will help to comment on areas where there is a greater scope for increasing active patient participation in a specific population. The present study will be helpful to allow the therapist to know in which area the participation of patient in rehabilitation should be improved.

CONCLUSION(S)

The present study demonstrates that patients generally perceived high levels of emotional support, physical comfort, and family involvement in their rehabilitation care. However, variability in responses related to decision-making, coordination, outcome evaluation, and education suggests inconsistencies in these areas. All CCRQ domains were significantly associated with patient satisfaction, emphasising the importance of comprehensive client-centred care. Notably, only emotional support and client-centred education were linked to adherence. These findings indicate that while comprehensive client-centred care supports overall patient satisfaction, emotional support and personalised education play a crucial role in maintaining long-term engagement and adherence to rehabilitation. Future studies should evaluate patient participation in different healthcare settings carried out with the same objective involving different populations. Patient participation in rehabilitation is a collaborative process. Therefore, it is important to investigate the experiences of therapists regarding patient participation in rehabilitation. A qualitative study that investigates individuals' perspectives on patient participation in rehabilitation can provide elaborative information.

Acknowledgement

The authors would like to thank Dr. Cheryl A. Cott, Graduate Department of Rehabilitation Science, Faculty of Medicine, and the University of Toronto, for permitting to use of CCRQ for the study. The authors also would like to thank participants of the study, and all the Institutes and clinics for playing a pivotal role in the study. The authors gratefully acknowledge the Institutional support of the Ashok & Rita Patel Institute of Physiotherapy, Charusat, where this study was carried out as part of the MPT dissertation program.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Jul 15, 2025
- Manual Googling: Feb 17, 2026
- iThenticate Software: Feb 19, 2026 (1%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Jul 02, 2025**
Date of Peer Review: **Nov 09, 2025**
Date of Acceptance: **Feb 21, 2026**
Date of Publishing: **Jun 01, 2026**