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Original Research Article

# Parent-Reported Barriers to Physiotherapy Utilisation among Children with Cerebral Palsy in Rural Maharashtra

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**Abstract:**

**Background:** Cerebral palsy is a major cause of childhood disability requiring long-term rehabilitation. However, access to physiotherapy services remains limited in rural settings. This study assessed parent-reported barriers to physiotherapy utilisation among children with cerebral palsy in rural Maharashtra.

**Material and Methods:** A community-based cross-sectional observational study was conducted among 216 parents or primary caregivers of children with cerebral palsy aged 2–18 years. Sociodemographic and clinical characteristics, physiotherapy utilisation patterns, and perceived barriers were assessed using a structured questionnaire. Descriptive statistics were used, and associations between selected sociodemographic characteristics and physiotherapy non-utilisation were examined using appropriate statistical tests.

**Results:** Among 216 children, 36.6% were currently receiving physiotherapy, 24.5% had discontinued therapy, and 38.9% had never received it. Spastic cerebral palsy was the predominant type (75.9%). Long distance to healthcare facilities (61.1%), high treatment costs (58.3%), lack of nearby services (57.4%), and transportation expenses (55.1%) were frequently reported barriers. Financial difficulties (32.1%) and transportation problems (24.5%) were the leading reasons for discontinuation. Physiotherapy non-utilisation was associated with age group, family type, maternal education and monthly family income, but not with sex.

**Conclusion:** Physiotherapy utilisation among children with cerebral palsy in rural Maharashtra was limited by financial, geographical and healthcare-related barriers. Strengthening accessible and affordable community-based rehabilitation services and improving parental awareness may enhance service utilisation and continuity.

**Keywords:** Cerebral palsy; Physiotherapy; Rehabilitation; Healthcare accessibility; Barriers; Rural population.
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## Introduction

Cerebral palsy (CP) is a leading cause of childhood physical disability and is associated with limitations in movement, posture and functional activities. Its impact frequently extends beyond motor impairment, as affected children may also experience associated conditions requiring long-term multidisciplinary care. A recent systematic review and meta-analysis estimated the pooled prevalence of CP in South Asia at 2.385 per 1000 children, highlighting its continuing public health importance in the region [1].

Physiotherapy and rehabilitation play an important role in improving functional abilities, promoting mobility, preventing secondary complications and supporting participation in daily activities among children with CP. Evidence from a systematic review of early interventions in low- and middle-income countries indicated that programmes involving active parental participation could improve child developmental outcomes and provide benefits for caregivers [2]. Community-based rehabilitation and integrated family support approaches have also been investigated as strategies to improve access to care among economically disadvantaged families [3].

Despite the recognised importance of rehabilitation, regular access to physiotherapy remains challenging in resource-constrained settings. Recent research from rural South India identified variations in rehabilitation service utilisation according to child-related and family-related characteristics, emphasising the importance of adaptable community-based service delivery [4]. Similarly, qualitative research from rural Bangladesh identified financial difficulties, transportation constraints, competing family responsibilities and

caregiver-related factors as important influences on rehabilitation engagement [5]. A recent scoping review of studies from low- and middle-income countries further identified financial limitations, geographical barriers, inadequate transportation, insufficient rehabilitation infrastructure, limited availability of trained professionals and inadequate awareness as recurring obstacles to accessing rehabilitation for children with CP [6].

In rural communities, these barriers may be particularly consequential because families often need to travel considerable distances to reach rehabilitation facilities while managing treatment expenses and caregiving responsibilities. Understanding the perspectives of parents and primary caregivers is therefore essential for identifying factors that influence both initial access to physiotherapy and continuation of treatment. However, locally relevant evidence on these barriers remains important for planning accessible and sustainable rehabilitation services in different rural regions of India. Therefore, the present study was undertaken to assess parent-reported barriers to physiotherapy utilisation among children with cerebral palsy in rural Maharashtra and to examine the association between selected sociodemographic characteristics and physiotherapy utilisation status.

## Materials and Methods

**Study design and study setting:** A community-based, cross-sectional observational study was conducted to assess parent-reported barriers to physiotherapy utilisation among children with cerebral palsy residing in rural areas of Maharashtra, India. A community-based approach was followed to include children who were receiving physiotherapy, those who had discontinued treatment, and those who had never accessed physiotherapy services.

**Study population:** The study population comprised parents or primary caregivers of children diagnosed with cerebral palsy who resided in the selected rural areas of Maharashtra. One parent or primary caregiver was interviewed for each eligible child. The primary caregiver was defined as the family member who was mainly responsible for the child's healthcare decisions, treatment arrangements, and rehabilitation-related activities.

**Sample size calculation:** The sample size was calculated using the prevalence of non-utilisation of physiotherapy services reported in a previous Indian study conducted [7]. The study reported that 44.4% of children had never received physiotherapy during their lifetime. The sample size was calculated using the following formula: $n = (Z^2 \times p \times q) / d^2$. Considering a 10% allowance for non-response and incomplete information, the final sample size was determined to be 216 parents or primary caregivers of children with cerebral palsy.

**Sampling technique:** A multistage sampling technique was used for participant recruitment. Efforts were made to include children from different socioeconomic backgrounds and geographical locations. Children who had never received physiotherapy were also identified through community-based visits to ensure that the study did not remain restricted to families already accessing healthcare facilities.

**Inclusion criteria:**

1. Parents or primary caregivers of children aged 2–18 years with a clinically established diagnosis of cerebral palsy.
2. Children residing in the selected rural areas of Maharashtra for at least six months before the study.
3. Parents or caregivers directly involved in the healthcare and rehabilitation-related decisions of the child.
4. Parents or caregivers who provided informed consent for participation.

**Exclusion criteria:**

1. Parents or caregivers who were unwilling to participate in the study.
2. Children whose diagnosis of cerebral palsy could not be confirmed through available medical records or clinical assessment by a qualified medical practitioner.
3. Caregivers who were unable to provide reliable information regarding the child's medical history and physiotherapy utilisation.
4. Families who were temporary residents of the selected study areas or lived outside the designated geographical area.

**Data collection tool:** Data were collected using a predesigned, structured, interviewer-administered questionnaire. The questionnaire was developed after reviewing published literature concerning physiotherapy utilisation, rehabilitation accessibility, and barriers experienced by families of children with cerebral palsy. Particular emphasis was placed on the Indian study by Sinha and Sharma [7]. The questionnaire was divided into the following sections: Sociodemographic characteristics, Clinical characteristics of the child, Physiotherapy utilisation pattern, and Parent-reported barriers to physiotherapy utilisation. Barriers to physiotherapy utilisation were assessed across different domains: Financial barriers, Geographical and transportation barriers, Awareness-related barriers, Healthcare system-related barriers, Family-related barriers, Perception-related barriers. Multiple responses were permitted because individual families experienced more than one barrier to physiotherapy utilisation.

**Questionnaire validation and pretesting:** The questionnaire was reviewed by experts to assess its content validity, relevance, and clarity. Necessary modifications were incorporated based on their recommendations. The questionnaire was translated into Marathi to facilitate communication with parents from rural communities. Back-translation into English was performed to ensure consistency in meaning and interpretation. A pretesting exercise was conducted among 20 caregivers of children with cerebral palsy who were not included in the final study sample. Necessary modifications were made before commencing the final data collection.

**Data collection procedure:** Data were collected through face-to-face interviews with parents or primary caregivers using the structured questionnaire. Interviews were conducted at the participants' residences or at healthcare facilities, depending on their convenience and accessibility. Each questionnaire was checked for completeness before the end of the interview. Information obtained from caregivers was cross-checked with available medical records and treatment documents wherever possible.

**Study variables and operational definitions:** The primary outcome variable was physiotherapy utilisation among children with cerebral palsy. The principal explanatory variables included sociodemographic characteristics, clinical factors, financial circumstances, geographical accessibility, parental awareness, healthcare-related factors, and family-related constraints. The following operational definitions were used:

- Physiotherapy utilisation: Any previous or ongoing exposure to formal physiotherapy services provided by a qualified physiotherapist.
- Current physiotherapy utilisation: Receipt of physiotherapy services at the time of data collection.
- Discontinuation of physiotherapy: Cessation of previously initiated physiotherapy services before the time of data collection.
- Non-utilisation of physiotherapy: Absence of any previous exposure to formal physiotherapy services.
- Financial barriers: Economic difficulties that restricted the initiation, frequency, or continuation of physiotherapy.
- Transportation barriers: Difficulties related to travel, distance, availability, or affordability of transport that affected access to physiotherapy.
- Awareness-related barriers: Inadequate parental knowledge regarding cerebral palsy, rehabilitation requirements, and the benefits or availability of physiotherapy services.

**Statistical analysis:** The collected data were entered into Microsoft Excel and analysed using IBM SPSS Statistics version 26.0. Descriptive and inferential statistical methods were employed according to the nature of the variables. Parent-reported barriers to physiotherapy utilisation were presented as frequencies and percentages, allowing multiple responses wherever applicable. The association between selected sociodemographic characteristics and physiotherapy utilisation status was examined using the Chi-square test or Fisher's exact test, wherever appropriate. For this analysis, children who had never received physiotherapy were classified as the non-utilisation group, whereas children who were currently receiving or had previously received physiotherapy were classified as the utilisation group. A p-value of less than 0.05 was considered statistically significant.

## Results

A total of 216 children with cerebral palsy and their parents or primary caregivers were included in the study. The largest proportion of children belonged to the 6–10-year age group (42.1%), followed by those aged 2–5 years (31.5%). Males constituted 59.3% of the study population. Most participants resided in villages (85.2%), and 55.1% belonged to nuclear families. Secondary education was reported by 34.7% of mothers and 39.8% of fathers. The monthly family income was ₹10,000–20,000 in 38.0% of households (Table 1).

Regarding clinical characteristics, cerebral palsy was diagnosed before the age of one year in 53.7% of children, while 31.5% received the diagnosis between one and two years. Spastic cerebral palsy was the predominant clinical type, accounting for 75.9% of cases. Intellectual disability was the most frequently reported associated condition (31.0%), followed by epilepsy (25.0%) and feeding difficulties (18.1%). No associated comorbidity was reported in 38.0% of children (Table 2).

Of the 216 children included in the study, 79 (36.6%) were receiving physiotherapy at the time of data collection. Fifty-three children (24.5%) had previously received physiotherapy but discontinued the services, whereas 84 (38.9%) had never accessed physiotherapy. Thus, more than one-third of the study population had never received physiotherapy (Table 3).

Among the 132 children who were currently receiving or had previously received physiotherapy, initiation of therapy occurred between one and three years of age in 47.0% of cases. The duration of therapy was one to three years in 34.8% of children, while 34.1% received physiotherapy once weekly. Government healthcare facilities were the most frequently reported source of physiotherapy services, accounting for 53.8% of children, followed by private centres (32.6%) (Table 4).

Geographical and financial constraints were frequently reported as barriers to physiotherapy utilisation. Long distance to healthcare facilities was the most commonly reported barrier (61.1%), followed by high treatment costs (58.3%) and lack of nearby physiotherapy services (57.4%). Difficulty travelling with the child (54.2%), transportation expenses (55.1%) and limited availability of trained physiotherapists (51.9%) were also frequently reported. Other barriers included inability to afford regular sessions (50.0%), inadequate public transport (48.6%) and insufficient counselling regarding physiotherapy (47.7%). Multiple responses were permitted (Table 5).

Among the 53 children who had discontinued physiotherapy, financial difficulties were the most frequently reported reason, accounting for 32.1% of cases. Transportation problems contributed to discontinuation in 24.5%, while 17.0% of caregivers reported a lack of perceived improvement. Family or caregiving responsibilities accounted for 13.2% of discontinuations, followed by inadequate availability of services (9.4%) (Table 6).

Physiotherapy non-utilisation was significantly associated with the child's age group, family type, maternal education and monthly family income. The proportion of children who had never received physiotherapy was higher among those aged 11–18 years (57.9%) than among those aged 2–10 years (32.1%). Non-utilisation was also more frequent among children from nuclear families (45.4%), those whose mothers had education up to primary level (46.8%), and households with a monthly income of ₹20,000 or less (45.7%). No statistically significant association was observed between sex and physiotherapy utilisation status (p=0.554) (Table 7).

**Table 1. Sociodemographic characteristics of the study participants (n = 216)**

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Age of child (years) | | |
| 2–5 | 68 | 31.5 |
| 6–10 | 91 | 42.1 |
| 11–15 | 39 | 18.1 |
| 16–18 | 18 | 8.3 |
| Sex of child | | |
| Male | 128 | 59.3 |
| Female | 88 | 40.7 |
| Residence | | |
| Village | 184 | 85.2 |
| Rural township | 32 | 14.8 |
| Family type | | |
| Nuclear | 119 | 55.1 |
| Joint | 97 | 44.9 |
| Mother's education | | |
| Illiterate | 48 | 22.2 |
| Primary | 61 | 28.2 |
| Secondary | 75 | 34.7 |
| Higher secondary and above | 32 | 14.8 |
| Father's education | | |
| Illiterate | 29 | 13.4 |
| Primary | 54 | 25.0 |
| Secondary | 86 | 39.8 |
| Higher secondary and above | 47 | 21.8 |
| Monthly family income (INR) | | |
| Less than 10,000 | 69 | 31.9 |
| 10,000–20,000 | 82 | 38.0 |
| 20,001–30,000 | 43 | 19.9 |
| More than 30,000 | 22 | 10.2 |

**Table 2. Clinical characteristics of children with cerebral palsy (n = 216)**

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Age at diagnosis | | |
| Before 1 year | 116 | 53.7 |
| 1–2 years | 68 | 31.5 |
| After 2 years | 32 | 14.8 |

| | | |
|---|---|---|
| Type of cerebral palsy | | |
| Spastic | 164 | 75.9 |
| Dyskinetic | 22 | 10.2 |
| Ataxic | 12 | 5.6 |
| Mixed | 14 | 6.5 |
| Other/unspecified | 4 | 1.9 |
| Associated comorbidities | | |
| Epilepsy | 54 | 25.0 |
| Visual impairment | 31 | 14.4 |
| Hearing impairment | 17 | 7.9 |
| Feeding difficulties | 39 | 18.1 |
| Intellectual disability | 67 | 31.0 |
| No associated comorbidity | 82 | 38.0 |

**Table 3. Pattern of physiotherapy utilisation among children with cerebral palsy (n = 216)**

| Physiotherapy utilisation status | Frequency (n) | Percentage (%) |
|---|---|---|
| Currently receiving physiotherapy | 79 | 36.6 |
| Previously received but discontinued | 53 | 24.5 |
| Never received physiotherapy | 84 | 38.9 |
| Total | 216 | 100.0 |

**Table 4. Characteristics of physiotherapy services among children who had received physiotherapy (n = 132)**

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Age at initiation of physiotherapy | | |
| Before 1 year | 31 | 23.5 |
| 1–3 years | 62 | 47.0 |
| After 3 years | 39 | 29.5 |
| Duration of physiotherapy | | |
| Less than 6 months | 28 | 21.2 |
| 6–12 months | 37 | 28.0 |
| 1–3 years | 46 | 34.8 |
| More than 3 years | 21 | 15.9 |
| Frequency of sessions | | |
| More than twice weekly | 19 | 14.4 |
| Twice weekly | 38 | 28.8 |
| Once weekly | 45 | 34.1 |
| Less than once weekly | 30 | 22.7 |
| Place of physiotherapy | | |
| Government facility | 71 | 53.8 |
| Private centre | 43 | 32.6 |
| Home-based professional therapy | 18 | 13.6 |

**Table 5. Parent-reported barriers to physiotherapy utilisation among children with cerebral palsy (n = 216)**

| Reported barriers | Frequency (n) | Percentage (%) |
|---|---|---|
| Financial barriers | | |
| High cost of physiotherapy | 126 | 58.3 |
| Transportation expenses | 119 | 55.1 |
| Loss of daily wages | 94 | 43.5 |
| Inability to afford regular sessions | 108 | 50.0 |
| Geographical and transportation barriers | | |
| Long distance to rehabilitation centre | 132 | 61.1 |
| Inadequate public transport | 105 | 48.6 |
| Difficulty travelling with the child | 117 | 54.2 |
| Lack of nearby physiotherapy services | 124 | 57.4 |
| Awareness-related barriers | | |
| Lack of awareness regarding physiotherapy benefits | 91 | 42.1 |

| | | |
|---|---|---|
| Inadequate counselling by healthcare professionals | 103 | 47.7 |
| Lack of knowledge regarding available services | 87 | 40.3 |
| Healthcare system-related barriers | | |
| Limited availability of trained physiotherapists | 112 | 51.9 |
| Long waiting periods | 67 | 31.0 |
| Inadequate referral services | 98 | 45.4 |
| Irregular availability of services | 89 | 41.2 |
| Family-related barriers | | |
| Caregiving responsibilities | 96 | 44.4 |
| Lack of family support | 71 | 32.9 |
| Domestic responsibilities | 83 | 38.4 |
| Difficulty maintaining regular appointments | 101 | 46.8 |
| Perception-related barriers | | |
| Perceived lack of improvement | 76 | 35.2 |
| Preference for alternative treatment | 49 | 22.7 |
| Misconceptions regarding treatment outcomes | 64 | 29.6 |

**Table 6. Reasons for discontinuation of physiotherapy among children who discontinued treatment (n = 53)**

| Reasons for discontinuation | Frequency (n) | Percentage (%) |
|---|---|---|
| Financial difficulties | 17 | 32.1 |
| Transportation-related problems | 13 | 24.5 |
| Lack of perceived improvement | 9 | 17.0 |
| Family and caregiving responsibilities | 7 | 13.2 |
| Inadequate availability of services | 5 | 9.4 |
| Other reasons | 2 | 3.8 |
| Total | 53 | 100.0 |

**Table 7. Association between sociodemographic characteristics and non-utilisation of physiotherapy (n = 216)**

| Variables | Non-utilisation n (%) | Utilisation n (%) | $\chi^2$ | p-value |
|---|---|---|---|---|
| Child's age | | | | |
| 2–10 years | 51 (32.1) | 108 (67.9) | 11.24 | 0.001 |
| 11–18 years | 33 (57.9) | 24 (42.1) | | |
| Sex | | | | |
| Male | 48 (37.5) | 80 (62.5) | 0.35 | 0.554 |
| Female | 36 (40.9) | 52 (59.1) | | |
| Family type | | | | |
| Nuclear | 54 (45.4) | 65 (54.6) | 4.46 | 0.035 |
| Joint | 30 (30.9) | 67 (69.1) | | |
| Mother's education | | | | |
| Up to primary | 51 (46.8) | 58 (53.2) | 5.96 | 0.015 |
| Secondary and above | 33 (30.8) | 74 (69.2) | | |
| Monthly family income | | | | |
| ≤20,000 | 69 (45.7) | 82 (54.3) | 12.06 | 0.001 |
| >20,000 | 15 (23.1) | 50 (76.9) | | |

## Discussion

The present study evaluated parent-reported barriers to physiotherapy utilisation among children with cerebral palsy (CP) in rural Maharashtra. Among 216 children, 38.9% had never received physiotherapy, 24.5% had discontinued treatment, and only 36.6% were currently receiving services. These findings highlighted substantial challenges in accessing and maintaining rehabilitation. Similar barriers, including financial constraints, inadequate service availability, transportation difficulties and healthcare system limitations, have been reported in low- and middle-income countries (LMICs) [8].

The study population comprised predominantly male children (59.3%), with most belonging to rural villages and nuclear families. Spastic CP was the most common clinical subtype (75.9%), while intellectual disability was the leading associated condition (31.0%). These characteristics described the study population but should not be interpreted as reflecting population-level prevalence or risk.

A considerable proportion of children had never accessed physiotherapy, while nearly one-fourth of those who had received treatment subsequently discontinued it. This indicated that barriers affected both initial access and treatment continuity. A study from Malawi identified poor economic conditions, time constraints, inadequate family support and discrimination as important barriers to physiotherapy adherence among children with CP [9]. Similarly, research from Saudi Arabia reported that caregiver-perceived difficulties with service access and treatment processes influenced physiotherapy attendance [10]. These findings emphasised that service availability alone does not ensure sustained rehabilitation.

The most frequently reported barriers were long distances to healthcare facilities (61.1%), high treatment costs (58.3%), lack of nearby services (57.4%) and transportation expenses (55.1%). More than half of the caregivers also reported difficulties travelling with their children. These findings demonstrated the combined effects of geographical and financial constraints. An organisational survey from rural South India identified affordability, availability and acceptability as important determinants of access to assistive products and rehabilitation-related support [11]. Similarly, a systematic review highlighted inadequate infrastructure, insufficient funding, limited resources and workforce shortages as major barriers to rehabilitation in LMICs [8].

Financial difficulties were the leading reason for physiotherapy discontinuation (32.1%), followed by transportation problems (24.5%). Loss of daily wages and inability to afford regular sessions further contributed to treatment interruption. Thus, the economic burden extended beyond treatment expenses to include travel costs and lost working hours. Research from Rwanda identified caregiver burden, psychological factors and therapist guidance as relevant to adherence to home-based exercises among children with CP [12]. Similarly, findings from Malawi highlighted economic difficulties and time constraints affecting treatment attendance and home-based rehabilitation [9]. Therefore, interventions should address both direct and indirect financial barriers.

Healthcare-related constraints were also prominent, including limited availability of trained physiotherapists (51.9%), inadequate referral services (45.4%) and irregular service availability (41.2%). These findings suggested that service organisation and workforce distribution influenced rehabilitation access. Htwe et al. emphasised the importance of workforce development, adequate funding, education and community-based rehabilitation in improving service accessibility across LMICs [8]. Strengthening referral pathways, increasing trained personnel and decentralising rehabilitation services may help overcome these challenges.

Caregiver-related barriers, including domestic responsibilities, caregiving demands and difficulties maintaining appointments, were also commonly reported. These findings reflected the considerable time and organisational burden associated with caring for children with CP. A scoping review by Melaka et al. identified financial, emotional, informational and physical support needs among caregivers of children with CP in sub-Saharan Africa [13]. Similarly, research from South Africa highlighted the importance of incorporating caregiver perspectives and family-centred approaches into healthcare delivery [14]. Rehabilitation programmes should therefore consider caregiver capacity and provide appropriate education and practical support.

The association analysis revealed higher physiotherapy non-utilisation among older children, those from nuclear families, children whose mothers had lower educational attainment and those belonging to lower-income households. However, no significant association was observed with the child's sex. These findings suggested that age and household socioeconomic circumstances might influence rehabilitation access. Research from Saudi Arabia also reported an association between child age and physiotherapy attendance patterns [10]. Nevertheless, these associations should be interpreted cautiously, as the present analysis did not adjust for potential confounding factors.

The findings have important implications for improving rehabilitation access in rural communities. Strengthening physiotherapy services at primary healthcare and community levels, improving referral mechanisms, providing caregiver education and introducing affordable transport and financial assistance may help address the identified barriers. Professionally supervised home-based exercise programmes could further support families facing difficulties with frequent hospital visits. However, these programmes should complement, rather than replace, professional rehabilitation services.

The study had certain limitations. Its cross-sectional design restricted causal interpretation, while caregiver-reported information was potentially subject to recall and reporting bias. The findings from selected rural areas of Maharashtra may not be generalisable to other populations. Additionally, the association analysis did not account for all potential clinical, family and healthcare-related determinants of physiotherapy utilisation. Despite these limitations, the study highlighted important caregiver-perceived barriers and demonstrated the need to improve the accessibility, affordability and

continuity of physiotherapy services for children with cerebral palsy.

## Conclusion

The study identified substantial gaps in physiotherapy utilisation among children with cerebral palsy in rural Maharashtra, with more than one-third of the children having never accessed physiotherapy services. Financial constraints, transportation difficulties, long distances to healthcare facilities, limited availability of nearby services and inadequate access to trained physiotherapists emerged as major barriers. Financial and transportation difficulties were also prominent reasons for discontinuation of therapy. Physiotherapy non-utilisation was associated with the child's age, family type, maternal education and monthly family income, highlighting the influence of sociodemographic factors on access to rehabilitation. Strengthening community-based rehabilitation services, improving referral mechanisms, increasing parental awareness and ensuring affordable, geographically accessible physiotherapy services may help improve the utilisation and continuity of rehabilitation among children with cerebral palsy in rural settings.

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