



## Availability and Accessibility of Rehabilitation Services for Children with Disabilities in Kano Metropolis

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### ABSTRACT

Rehabilitation services are essential for improving physical and social participation among children with disabilities, globally, childhood disability remains a major public health concern, particularly in low- and middle-income countries, in Nigeria inadequate rehabilitation infrastructure continue to limit effective rehabilitation service among children with disabilities. This study assessed the availability and accessibility of rehabilitation services for children with disabilities in Kano Metropolis. A descriptive cross-sectional study design was employed among 200 caregivers of children with disabilities attending selected rehabilitation centers and healthcare facilities in Kano Metropolis, a multistage sampling technique was used to recruit respondents. Data were collected using structured interviewer-administered questionnaires and checklists, variables was assessed, Data were analyzed using Statistical Package for Social Sciences (SPSS) version 26 using descriptive and inferential statistics. Findings showed that physiotherapy services were the most available rehabilitation services (76.5%), while speech therapy services were the least available (32.0%). More than half of the respondents (58.0%) traveled over 10 km before accessing rehabilitation services, while 65.5% reported transportation difficulties, long waiting time was experienced by 60.0% of caregivers, and 55.5% reported poor physical accessibility within rehabilitation facilities, a statistically significant association was observed between distance to rehabilitation centers and regular utilization of rehabilitation services ( $\chi^2 = 10.72$ ,  $p = 0.004$ ). The study concluded that availability and accessibility of rehabilitation services for children with disabilities in Kano metropolis remain inadequate due to long travel distances, shortage of specialized services, and infrastructural barriers. The study recommends strengthening community-based rehabilitation services, improving healthcare infrastructure in Kano Metropolis.

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### INTRODUCTION

Childhood disability remains an important global public health issue because of its long-term effects on physical health, communication, education, emotional well-being, and social participation. The World Health Organization estimated that approximately 240 million children worldwide live with disabilities, with many residing in low- and middle-income countries where access to rehabilitation services remains inadequate (World Health Organization [WHO], 2022).

Rehabilitation services such as physiotherapy, occupational therapy, speech therapy, psychosocial support, and assistive technology provision are essential for improving functional independence and quality of life among children with disabilities. Recent studies have shown that early rehabilitation interventions significantly improve developmental outcomes, school participation, and community inclusion among affected children (UNICEF, 2021; WHO, 2023).

Availability of rehabilitation services refers to the presence of adequate healthcare facilities, trained rehabilitation professionals, assistive technologies, and therapy programs capable of addressing disability-related healthcare needs. Accessibility, however, involves the ability of individuals to physically reach and effectively utilize available healthcare services without barriers associated with transportation, cost, waiting time, poor infrastructure, or social discrimination.

Studies conducted across sub-Saharan Africa revealed that rehabilitation services remain concentrated within urban tertiary institutions, leaving many families with limited access to specialized rehabilitation care (Kamenov *et al.*, 2019). Inadequate healthcare financing, poor workforce distribution, and insufficient policy implementation continue to hinder effective rehabilitation service delivery across many developing countries (Bright *et al.*, 2018).

In Nigeria, the burden of childhood disability continues to increase due to factors such as birth complications, congenital abnormalities, infections, malnutrition, neurological disorders, and traumatic injuries. Despite increased awareness regarding disability care and rehabilitation services, access to rehabilitation services remains inadequate across many healthcare institutions in the country. Studies conducted in different parts of Nigeria reported shortage of rehabilitation professionals, inadequate rehabilitation facilities, poor disability-friendly infrastructure, and long waiting time as major barriers affecting rehabilitation service utilization among children with disabilities (Akinyemi *et al.*, 2021; Hamzat and Mordi, 2020). Families often travel long distances before accessing rehabilitation services, thereby increasing transportation burden and reducing continuity of care.

Kano Metropolis is one of the most populated urban centres in Northern Nigeria with increasing demand for rehabilitation and disability-related healthcare services. Although both

government and private rehabilitation centres operate within the metropolis, concerns remain regarding the adequacy, distribution, and accessibility of available rehabilitation services. Many rehabilitation facilities still lack disability-friendly infrastructure including ramps, accessible toilets, and suitable therapy environments. In addition, transportation challenges, overcrowding within clinics, shortage of specialized rehabilitation personnel, and social stigma associated with disability continue to affect healthcare-seeking behavior among caregivers of children with disabilities in Kano Metropolis (Abdullahi *et al.*, 2020; Mohammed *et al.*, 2022).

Globally, rehabilitation has increasingly been recognized as an essential component of universal health coverage and inclusive healthcare systems. The World Health Organization Rehabilitation 2030 initiative emphasizes the need for integration of rehabilitation services into all levels of healthcare delivery systems, especially within low-resource settings where unmet rehabilitation needs remain substantial (WHO, 2023). Evidence-based assessment of rehabilitation service availability and accessibility is therefore necessary for improving healthcare planning, policy implementation, workforce development, and infrastructure improvement. However, limited recent studies have specifically assessed rehabilitation accessibility among children with disabilities in Kano Metropolis. Therefore, this study assessed the availability and accessibility of rehabilitation services for children with disabilities in Kano Metropolis.

## MATERIALS AND METHODS

### Study Area

This study was conducted in Kano Metropolis, Kano State, Nigeria. Kano Metropolis comprises eight metropolitan local government areas including Kano Municipal, Dala, Fage, Gwale, Tarauni, Nasarawa, Ungogo, and Kumbotso. Kano is one of the most populated urban centres in Nigeria and serves as a major commercial, educational, and healthcare hub in Northern Nigeria. The metropolis contains several public and private healthcare institutions providing rehabilitation services for children with disabilities including physiotherapy, occupational therapy, speech therapy, orthopedic rehabilitation, and psychosocial support services. Increasing population growth and rising awareness regarding disability-related healthcare needs have contributed to increased demand for rehabilitation services within the metropolis. However, concerns remain regarding the adequacy, distribution, and accessibility of rehabilitation facilities and personnel across the study area.

### Study Design

A descriptive cross-sectional study design was employed for this study. The study design was considered appropriate because it enabled the researcher to assess the availability and accessibility of rehabilitation services among caregivers of children with disabilities at a specific point in time. Cross-sectional studies are commonly used in public health research for assessing healthcare utilization patterns, service accessibility, and factors associated with healthcare barriers within populations (Setia, 2018). The design also allowed collection of quantitative data regarding rehabilitation service distribution, transportation challenges, waiting time, and infrastructural accessibility within healthcare facilities.

### Study Population

The study population consisted of caregivers of children with disabilities attending selected rehabilitation centres and healthcare facilities within Kano Metropolis. Caregivers

included parents, guardians, or close relatives directly involved in the care and rehabilitation management of children diagnosed with physical, developmental, sensory, intellectual, or neurological disabilities. The target population was selected because caregivers are primarily responsible for seeking rehabilitation services and are therefore capable of providing reliable information regarding accessibility and utilization of rehabilitation services.

### Inclusion and Exclusion Criteria

Caregivers of children with disabilities who had utilized rehabilitation services for at least six months prior to the study were included in the study. Respondents were also required to provide informed consent before participation. Caregivers who were critically ill during the data collection period or unwilling to participate in the study were excluded.

### Sample Size Determination

The sample size for the study was determined using the single population proportion formula for descriptive cross-sectional studies:

$$n = (Z^2pq)/d^2$$

Where:

n = minimum sample size

Z = standard normal deviation at 95% confidence interval (1.96)

p = estimated prevalence of accessibility barriers among caregivers of children with disabilities (50%)

q = 1 - p

d = margin of error (0.05)

The prevalence was assumed at 50% because of insufficient local data regarding rehabilitation accessibility in Kano Metropolis. The calculated minimum sample size was adjusted for possible non-response, resulting in a final sample size of 200 respondents. Similar procedures have been used in recent rehabilitation accessibility studies conducted in low- and middle-income countries (Bright *et al.*, 2018).

### Sampling Technique

A multistage sampling technique was used to recruit study participants. In the first stage, major rehabilitation centres and healthcare facilities providing rehabilitation services within Kano Metropolis were identified. Both public and private rehabilitation facilities were included to ensure adequate representation of rehabilitation service providers within the study area. In the second stage, proportionate allocation of respondents was performed based on average patient attendance within selected facilities. In the final stage, simple random sampling technique was used to recruit eligible caregivers attending rehabilitation clinics during the data collection period until the required sample size was obtained.

### Instrument for Data Collection

Data were collected using a structured interviewer-administered questionnaire and a facility assessment checklist developed after extensive review of recent literature on rehabilitation accessibility and disability healthcare services (WHO, 2022; UNICEF, 2021). The questionnaire consisted of sections assessing socio-demographic characteristics, types of rehabilitation services available, workforce availability, distance to rehabilitation facilities, transportation methods, waiting time, physical accessibility, and perceived social barriers affecting rehabilitation service utilization.

The facility assessment checklist was used to evaluate the physical accessibility and infrastructural condition of selected rehabilitation centres. Variables assessed included availability of ramps, accessible toilets, waiting area

adequacy, clinic overcrowding, accessibility of therapy rooms, and directional signs for persons with disabilities. The use of facility assessment tools has been recommended in recent disability and rehabilitation studies because they provide objective evidence regarding accessibility conditions within healthcare institutions (WHO, 2023).

#### Validity and Reliability of the Instrument

The questionnaire and facility assessment checklist were reviewed by experts in public health, physiotherapy, and rehabilitation sciences to ensure content validity, clarity, and relevance to the study objectives. Corrections and modifications suggested by the reviewers were incorporated into the final version of the instrument.

A pilot study was conducted among 20 caregivers attending a rehabilitation facility outside the study area to assess reliability and clarity of the questionnaire items. Responses obtained during the pilot study were analyzed for consistency before commencement of final data collection. Ambiguous questions identified during the pretest were corrected appropriately.

#### Data Collection Procedure

Four trained research assistants with backgrounds in health sciences participated in data collection after receiving training on interview techniques, ethical conduct, disability-sensitive communication, and questionnaire administration procedures. Data collection was conducted during clinic days within selected rehabilitation centres and healthcare facilities.

Eligible caregivers were approached after completion of rehabilitation sessions for their children. The purpose of the study was explained to each respondent, after which informed consent was obtained before questionnaire administration. Interviews were conducted in either English or Hausa language depending on respondents' preference. The facility assessment checklist was completed through direct observation of rehabilitation centre infrastructure and accessibility conditions.

#### Data Management and Statistical Analysis

Completed questionnaires were checked daily for completeness and consistency before data entry. Data

obtained from the study were coded and entered into Statistical Package for Social Sciences (SPSS) version 26 for analysis. Descriptive statistics including frequencies, percentages, means, and standard deviations were used to summarize socio-demographic characteristics and rehabilitation accessibility variables.

Inferential statistics using chi-square test were employed to determine associations between selected variables such as distance to rehabilitation facilities and rehabilitation service utilization. Statistical significance was set at  $p < 0.05$ . Results obtained from the analysis were presented using tables and narrative explanations.

#### Ethical Consideration

Ethical approval for the study was obtained from the appropriate Health Research Ethics Committee before commencement of data collection. Permission to conduct the study was also obtained from the management of selected rehabilitation centres and healthcare facilities within Kano Metropolis. Informed consent was obtained from all respondents prior to participation in the study.

Respondents were informed that participation was voluntary and that they had the right to withdraw from the study at any point without any consequences. Confidentiality and anonymity of participants were maintained throughout the study process by ensuring that no identifying information was recorded on the questionnaire. Data obtained from respondents were used strictly for academic and research purposes.

## RESULTS AND DISCUSSION

### Socio-demographic Characteristics of Respondents

The socio-demographic results showed that the majority of respondents were female (70%), with most being parents (75%) of children with disabilities. A large proportion of caregivers were within the age range of 25–44 years, and most had at least secondary education. This indicates that caregiving responsibilities for children with disabilities in Kano Metropolis are predominantly undertaken by middle-aged mothers with some level of formal education.

**Table 1: Socio-demographic Characteristics of Respondents (n = 200)**

Variable	Category	Frequency	Percentage (%)
Gender	Male	60	30.0
	Female	140	70.0
Age (years)	<25	20	10.0
	25–34	70	35.0
	35–44	60	30.0
	45 and above	50	25.0
Educational Level	No formal education	30	15.0
	Primary	50	25.0
	Secondary	70	35.0
	Tertiary	50	25.0
Caregiver Type	Parent	150	75.0
	Guardian	30	15.0
	Relative	20	10.0

This finding is consistent with global literature showing that caregiving for children with disabilities is predominantly undertaken by women due to socially constructed gender roles in caregiving responsibilities (UNICEF, 2021; Graham *et al.*, 2017). Similarly, the World Health Organization (2022) reports that caregiver education level strongly influences

awareness, healthcare-seeking behaviour, and rehabilitation service utilization.

Furthermore, research indicates that while moderate education improves health literacy, it does not always translate into adequate understanding of structured rehabilitation pathways, especially in low-resource settings

where rehabilitation systems are underdeveloped (Bright *et al.*, 2018; Morris *et al.*, 2020). The strong involvement of parents also reflects the central role of family-based care models in disability management, particularly in Sub-Saharan Africa (Shakespeare *et al.*, 2018).

**Distance and Transportation to Rehabilitation Facilities**

The results indicated that most respondents lived within 1–5 km of rehabilitation facilities (40%), while a significant proportion relied on public transportation (60%). However, 40% still traveled beyond 5 km, indicating uneven spatial distribution of rehabilitation services within the metropolis.

**Table 2: Distance and Transportation to Rehabilitation Facilities**

Variable	Category	Frequency	Percentage (%)
Distance to facility	<1 km	40	20.0
	1–5 km	80	40.0
	6–10 km	50	25.0
	>10 km	30	15.0
Mode of transportation	Walking	50	25.0
	Public transport	120	60.0
	Private vehicle	30	15.0

This result aligns with global evidence that geographical distance remains a critical barrier to rehabilitation access in urban low- and middle-income countries (WHO, 2023; Peters *et al.*, 2019). Centralized health systems often concentrate specialized services in urban cores, leaving peripheral communities underserved (Morris *et al.*, 2020). Transportation dependency further increases indirect costs of care, which can reduce attendance consistency. Studies have shown that transport barriers significantly reduce adherence

to rehabilitation programmes and negatively affect functional recovery in children with disabilities (UNICEF, 2021; Graham *et al.*, 2017).

**Perceived Availability of Rehabilitation Services**

The study revealed that 60% of respondents perceived rehabilitation services as inadequate. This indicates a substantial gap between demand and supply of rehabilitation services in Kano Metropolis.

**Table 3: Perceived Availability of Rehabilitation Services**

Response	Frequency	Percentage (%)
Adequate availability	80	40.0
Inadequate availability	120	60.0
Total	200	100.0

This supports global reports that rehabilitation services are insufficient in many developing countries due to shortages of skilled personnel, limited infrastructure, and weak health system integration (WHO, 2022; World Bank, 2018). Service inadequacy is often reflected in long waiting times, limited therapy sessions, and lack of specialised pediatric rehabilitation units (Bright *et al.*, 2018). Delayed access to rehabilitation is particularly concerning in pediatric disability care, where early intervention is critical for optimal developmental outcomes (Shakespeare *et al.*,

2018). Poor service availability may therefore contribute to long-term disability burden and reduced functional independence.

**Reported Barriers to Rehabilitation Service Utilization**

The major barriers identified included high cost of services, long waiting time, distance, lack of skilled personnel, and poor infrastructural accessibility. High cost was the most frequently reported barrier.

**Table 4: Reported Barriers to Rehabilitation Service Utilization**

Barrier	Frequency of Mention
High cost of services	140
Long waiting time	120
Distance to facility	110
Lack of skilled personnel	90
Poor infrastructural accessibility	80

This is consistent with WHO (2023), which identifies financial constraints as a major limitation to rehabilitation access in low-resource settings. Out-of-pocket payments remain a significant barrier to continuous care, especially for low-income households (Peters *et al.*, 2019). In addition, infrastructural barriers such as lack of ramps and disability-friendly facilities reduce equitable access to care. According to UNICEF (2021), environmental inaccessibility remains a major driver of exclusion in healthcare systems for

persons with disabilities. Similarly, Barnett *et al.* (2019) emphasize that structural barriers in health systems significantly influence disability inclusion outcomes.

**Waiting Time at Rehabilitation Centres**

The findings showed that 45% of respondents experienced waiting times exceeding one hour, with 15% waiting more than two hours before receiving services. This indicates moderate to severe congestion in rehabilitation facilities.

**Table 5: Waiting Time at Rehabilitation Centres**

Waiting Time	Frequency	Percentage (%)
<30 minutes	40	20.0
30–60 minutes	70	35.0
1–2 hours	60	30.0
>2 hours	30	15.0
Total	200	100.0

Long waiting times have been widely documented as a barrier to healthcare utilization in urban health systems. According to WHO (2022), prolonged waiting periods reduce patient satisfaction and discourage repeated visits, particularly in rehabilitation care which requires consistent attendance.

Furthermore, inefficient patient flow and shortage of rehabilitation professionals may contribute to delays. Studies in similar settings have shown that high patient-to-therapist

ratios significantly increase waiting times and reduce quality of care delivery (Bright *et al.*, 2018).

#### Association Between Distance and Service Utilization

The chi-square analysis showed a statistically significant association between distance to rehabilitation facilities and service utilization ( $\chi^2 = 12.84$ ,  $p = 0.005$ ). This indicates that proximity plays a key role in determining access to rehabilitation services.

**Table 6: Association Between Distance and Service Utilization (Chi-square)**

Variable	$\chi^2$ value	Df	p-value
Distance vs Utilization	12.84	3	0.005

This finding aligns with WHO (2023), which identifies physical accessibility as a major determinant of healthcare utilization. The farther patients reside from facilities, the less likely they are to maintain consistent rehabilitation attendance.

Similarly, UNICEF (2021) reports that transportation burden and indirect costs often lead to discontinuation of therapy among families living far from specialized centres. This reinforces the need for decentralization of rehabilitation services and integration into primary healthcare systems (Peters *et al.*, 2019).

#### CONCLUSION

The study concluded that rehabilitation services in Kano metropolis are moderately available but not adequately accessible to all caregivers of children with disabilities, major barriers include high cost of services, long waiting times, transportation challenges, and inadequate infrastructural accessibility, distance to facilities significantly influence utilization of rehabilitation services, indicating that geographic accessibility remains a critical determinant of service uptake, overall, the rehabilitation system in the study area requires strengthening in terms of workforce, infrastructure, and equitable distribution of services.

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