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# Availability and Utilization of Rehabilitation Services Among People with Disabilities in Maiduguri, Borno State, Northeastern Nigeria

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***Abstract*: Rehabilitation services are interventions designed to optimize functioning and reduce disability in individuals living with disability. Given the growing need for these services, especially in conflict-affected areas like Maiduguri, understanding their availability and utilization is crucial. The aim of the study was to assess the availability and utilization of rehabilitation services among people with disabilities in Maiduguri, Borno state. The study employed a cross-sectional study design. A total of 488 participants with disabilities were assessed using cluster sampling. Data was collected using a structured questionnaire with sections on socio-demographics, awareness, availability, utilization, and factors influencing utilization of rehabilitation services. Data were analyzed using SPSS version 30, using both descriptive statistics and inferential statistics, with P-value set at ≤0.05. The mean age of the respondents was 43.3 ± 15.2 SD, with 30.7% within the age range of 55-65 years. Slightly more than two-third (69.1%) of the respondents were males. Majority (70.1%) of the respondents were aware of rehabilitation services of whom 77.8% reported service availability with access to specialized services such as occupational therapy (2.6%) remained limited. The most utilized service was physiotherapy (33.7%) and the major factors affecting utilization include stigmatization (29.3%), transportation (27.5%) and affordability (14.7%). Factors associated with utilization of rehabilitation services were age, level of education and type of disability of which all were found to be statistically significance with p-value of <0.001. This study revealed that awareness of rehabilitation services was high in Maiduguri while utilization was affected by financial constraints, accessibility issues, and stigma. There are gaps in availability of certain services like occupational therapy. Addressing these gaps through improved accessibility and funding could improve outcomes for people with disabilities in Maiduguri, Borno State.**

***Keywords*: Accessibility, Utilization, Rehabilitation services, Disability, Maiduguri.**

## 1. Introduction

Rehabilitation is defined as a set of interventions designed to optimise functioning and reduce disability in individuals with health conditions in interaction with their environment [1]. Rehabilitation services are designed to help individuals recover from illnesses, accidents, and other injuries. There are many different types of rehabilitation services available to meet the needs of individuals of all ages [2]. The rehabilitation workforce is made up of different health workers, including but not limited to physiotherapists, occupational therapists, speech and language therapists and audiologists, orthotics and prosthetics, clinical psychologists, physical medicine and rehabilitation doctors, and rehabilitation nurses. Many other health workers, such as general practitioners, surgeons, and community health workers, may also play an important role in a person's rehabilitation [1].

The World Health Organisation (WHO) estimates that over one billion people, or 15% of the global population, live with a disability [3]. About 15% of the world's population lives with some form of disability, of whom 2% to 4% experience significant difficulties in functioning. The global disability prevalence is higher than previous WHO estimates, which date from the 1970s and suggested a figure of around 10%. This global estimate for disability is on the rise due to population ageing and the rapid spread of chronic diseases, as well as improvements in the methodologies used to measure disability [4]. Accordingly, evidence on access to rehabilitation services is sparse and expected to be limited in capacity and scope to meet demand of these services. While rehabilitation services are intended to be used by any individual who has limitations in their functioning, a key population is those with disabilities.

The healthcare system in Nigeria provided by the Federal, State, Local Government, and Non-Governmental Organisations (NGOs) made some provision to cater for the challenges faced by people with disabilities who needed healthcare services in general and rehabilitative services in particular. Although Maiduguri had been the headquarters of the defunct Northeast State, the Old Borno State (when Borno and Yobe were one state), and currently the headquarters of Borno State, rehabilitative facilities and services in the healthcare system have previously received little attention from

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governments, which has contributed to poor service availability and lack of coordination between services.

The nature of disabilities among people with disability ranges from physical therapy, occupational therapy, speech-language pathology, medical rehabilitation, and more [2]. People with disabilities are more vulnerable than the general population to a range of problems including fatigue, depression, and social isolation and have more limited access to healthcare [5]. In addition to having individual benefits for users, rehabilitation services have also been shown to result in cost savings greater than initial investments [6].

The healthcare network in Nigeria was rated among the worst in the world in 2018, ranking 142nd out of 195 countries in a study in The Lancet on global healthcare access and quality. The inability to perform some key activities (e.g., basic mobility, feeding, personal hygiene, and safety awareness) due to disability leads to dependency and the need for human help (or care) beyond that customarily required by a healthy adult. Most such help is given by family members or other informal caregivers. The occurrence of disability is high in developing countries. It is among the poorest communities were poverty breeds disablement and disablement breeds poverty, a vicious cycle that the poor can least afford. Although most of the disabilities can be prevented if proper preventive and rehabilitative measures of impairments are undertaken, it is estimated that only 2% of people with disabilities in developing countries have access to rehabilitation and appropriate basic services [5].

Despite the growing need for rehabilitation services, there is limited research on the availability and utilization of these services among people with disabilities in Maiduguri. This phenomenon culminates in limited access to healthcare, inequalities by service providers and government, a lack of transparency and accountability, communication barriers, inadequate professionals and commitment, poverty, neglect, marginalization, exploitation, poor health outcomes, and discrimination. This hinders the development of effective policies and programs to improve access to rehabilitation services and promote the rights and well-being of people with disabilities. Identifying these gaps and barriers will inform the development of more effective and inclusive rehabilitation programs that promote equitable access to healthcare and improve the quality of life for people with disabilities [5].

The issue of disability is a pressing concern in Nigeria, particularly in Maiduguri, Borno State, where people with disabilities often face significant challenges in accessing essential resources and services. Despite the growing recognition of the importance of inclusivity and accessibility, people with disabilities continue to be marginalized and excluded from mainstream society. This exclusion causes them to face numerous challenges, including limited access to healthcare services, educational institutions, and employment opportunities, which are often exacerbated by societal attitudes and the stigma surrounding disability. The lack of research on the availability and utilisation of rehabilitation services creates a knowledge gap that hinders efforts to address these challenges. By shedding light on the availability and utilisation of these services, this study aims to contribute to the development of evidence-based policies and interventions that promote inclusivity, accessibility, and equal opportunities for all [5].

Understanding the availability and utilisation of rehabilitation services among people living with disabilities is crucial to improving access. Effective rehabilitation helps reduce barriers preventing people with disabilities from functioning and integrating into daily life. It can also reduce the burden on caregivers and health systems by preventing hospitalisation and reducing its duration. Investment in rehabilitation services promotes social participation, enhances quality of life, and contributes to broader societal and economic well-being [5]. By identifying barriers to the utilisation of rehabilitation services, this study will help develop strategies to increase access and utilisation. This will, in turn, promote better health outcomes, enable individuals to reach their full potential, participate fully in their communities, and promote inclusivity and equity in healthcare and rehabilitation services [5].

## 2. Materials and Methods

### *A. Study Design and Setting*

A cross-sectional descriptive study design was conducted in Maiduguri, the capital city of Borno State, Nigeria.

### *B. Study Population and Eligibility Criteria*

The study population consisted of people with disabilities (PWDs) who had been continuous residents of Maiduguri for at least six months before the study. Individuals presenting with acute medical crises or cognitive impairments that precluded informed consent or active participation were excluded.

### *C. Sample Size Determination*

The minimum sample size was determined using Cochran's single population proportion formula for a large population:

$$n = \frac{Z^2 \times p \times q}{d^2}$$

Where:

$n$ = Minimum required sample size.

$Z$ = Standard normal deviate corresponding to a 95% confidence interval (1.96).

$p$ = Estimated prevalence of rehabilitation service utilization from a previous study, taken as 26.4% or 0.26 [7].

$q$ = Complementary probability ($1 - p = 0.74$).

$d$ = Desired level of precision or margin of error (0.05).

Substituting the values into the formula yields:

$$n = \frac{(1.96)^2 \times 0.26 \times 0.74}{(0.05)^2} \approx 296$$

(Note: Adjusting for design effect (1.5) and non-response (10%) as specified in the local study protocol, the final targeted sample size was established at 488 participants to ensure statistical power).

### *D. Sampling Technique*

A multi-stage cluster sampling technique was employed to select respondents.

*Stage 1: Selection of Clusters:* The study locations were grouped into distinct geographical clusters with a total of 7 clusters. A total of 4 clusters were randomly selected based on the density of the target population.

*Stage 2: Selection of Respondents:* The total sample size of 488 was distributed across the 4 selected cluster based on proportional allocation. Within each cluster, individuals meeting the inclusion criteria were selected using simple random sampling until the target quota was met.

### *E. Data Collection Instrument*

Data were collected using a structured, interviewer-administered questionnaire adapted from validated instruments and contextualized to reflect local socio-cultural dynamics. The questionnaire was structured into five thematic sections:

*Section A:* Socio-demographic characteristics of the respondents.

*Section B:* Level of awareness regarding various types of rehabilitation services.

*Section C:* Perceived availability of rehabilitation services.

*Section D:* Utilization patterns of available rehabilitation services.

*Section E:* Factors influencing the utilization of rehabilitation services.

### *F. Data Analysis*

Completed questionnaires were checked for consistency, cleaned, and coded before being entered into the Statistical Package for the Social Sciences (SPSS) software (Version 30.0). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Inferential statistics utilized the Chi-square ($\chi^2$) test of independence to identify significant associations between the independent variables (socio-demographic and institutional factors) and dependent variables (availability and utilisation of services). Statistical significance was fixed at $p \leq 0.05$.

### *G. Ethical Considerations*

Ethical clearance for the study was sought and obtained from the Borno State Ministry of Health Research Ethics Committee (Approval No: SHREC 99/2025). Verbal and written consent was obtained from each participant before questionnaire administration. Respondents were explicitly assured of complete data confidentiality, anonymity, and their right to withdraw from the study at any stage without penalty.

## 3. Results and Discussions

This study evaluated the sociodemographic characteristics, awareness levels, availability, and utilization patterns of rehabilitation services among persons with disabilities (PWDs) in Maiduguri, Borno State. The study achieved a 100% response rate across 488 participants, with ages ranging from 18 to 65 years and a mean age of 43.3 ± 15.2 years. This diverse age distribution stands in contrast to findings by Olaoye et al., who reported a much younger study population with a narrower age range from 15 to 34 years and a mean of 24.1 ± 5.6 years [8]. The variance is driven by our inclusive sampling framework, which captured older cohorts, individuals aged 55 years and above comprised the largest sub-group (30.7%), followed closely by those aged 45–54 years (22.3%). This trend also diverges from observations by Arabi et al. in Iran, where the peak demographic was concentrated between 21 and 30 years at 23.9%.

Table 1
The sociodemographic characteristics of study participants

| Variables | Frequency(n) | Percentage (%) |
|---|---|---|
| **Age (Years)** | | |
| 15-24 | 81 | 16.6 |
| 25-34 | 69 | 14.4 |
| 35-44 | 78 | 16.0 |
| 45-54 | 109 | 22.3 |
| 55-65 | 151 | 30.7 |
| **Total** | **488** | **100** |
| **Mean ± SD** | 43.3±15.2 | |
| **Gender** | | |
| Male | 337 | 69.1 |
| Female | 151 | 30.9 |
| **Total** | **488** | **100** |
| **Marital status** | | |
| Single | 176 | 36.0 |
| Married | 262 | 53.7 |
| Divorced | 12 | 2.5 |
| Widowed/Widower | 38 | 7.8 |
| **Total** | **488** | **100** |
| **Religion** | | |
| Islam | 464 | 95.1 |
| Christian | 24 | 4.9 |
| **Total** | **488** | 100 |
| **Level of education** | | |
| No formal education | 144 | 29.5 |
| Quranic education | 186 | 38.1 |
| Primary School Certificate | 37 | 7.6 |
| Secondary School Certificate | 92 | 18.9 |
| Tertiary Education | 29 | 5.9 |
| **Total** | **488** | **100** |
| **Source of income** | | |
| Self- employed | 59 | 13.3 |
| Family support | 106 | 21.7 |
| Farming | 29 | 6.0 |
| Civil servant | 16 | 3.3 |
| Charity/Begging | 272 | 55.7 |
| **Total** | **488** | **100** |
| **Average monthly income** | | |
| Below minimum wage | 415 | 85.0 |
| Above minimum wage | 73 | 15.0 |
| **Total** | **488** | **100** |
| **Type of disability** | | |
| Blindness | 163 | 33.4 |
| Deafness | 75 | 15.4 |
| Limb deformity | 250 | 51.2 |
| **Total** | **488** | **100** |
| **Duration of Disability** | | |
| ≤1 year | 122 | 24.9 |
| 2-3 years | 183 | 37.6 |
| 4-5 years | 50 | 10.3 |
| ≥5 years | 133 | 27.2 |
| **Total** | **488** | **100** |

A distinct gender asymmetry was observed, with males constituting most of the sample at 69.1%. This distribution aligns with international trends documented by Magaqa et al. in South Africa where males made up 56.3% of the cohort [6],

Zziwa et al. in Uganda reported a higher percentage with a 69.5% male majority [9]. The consistently higher prevalence of males in regional disability studies likely stems from gendered socio-economic roles; males in this setting frequently engage in higher-risk physical labor, transit, and outdoor activities, increasing their baseline exposure to trauma, occupational hazards, and conflict-related injuries.

Regarding marital status, 53.7% of the respondents were married, followed by single individuals at 36.0% and widowed cohorts at 7.8%. This structural profile contrasts with findings from Kampala, Uganda, by Zziwa et al., where single individuals predominated at 61.0% and married individuals formed the smallest group at 14.5% [9]. Predictably, given the local demography of Borno State, 95.1% of the study population identified as Muslim, contrasting sharply with the Christian-majority framework of 36.5% reported in Ugandan disability cohorts by Zziwa et al. [9].

The socioeconomic indicators in this study reveal profound systemic vulnerabilities. A substantial portion of the cohort source of livelihoods, dominated by charity/begging at 55.7%, family support 21.7% while civil servants constituted the minority at 3.3%. This high level of economic vulnerability mirrors data from Ethiopia by Aba Jebal, where 82.8% of PWDs were unemployed, but contrasts with Ugandan data where employment reached 54.7% [9], and Sierra Leone where Magnusson et al. identified structural barriers to sustainable livelihoods [10]. This discrepancy points to a mix of structural issues in Nigeria, including structurally inaccessible workplaces, a lack of institutionalized reasonable accommodations, and persistent social marginalization that limits formal employment for PWDs. This dynamic is further underscored by income metrics: 85.0% of the participants earned below the national minimum wage of ₦70,000, illustrating a clear link between disability and economic poverty.

In terms of clinical presentation, physical structural impairments predominated, with 51.2% presenting with limb deformities, followed by visual impairments at 33.4% and hearing loss at 15.4%. This profile matches findings by Zziwa et al. showing 59.1% structural or physical and 22.6% visual disabilities [9], as well as Srivastava and Khan at 53.7% locomotor impairments [5]. In Maiduguri and the broader Borno region, this high prevalence of locomotive and structural disabilities is directly compounded by prolonged regional instability, complex humanitarian emergencies, and trauma from conflict or blast injuries [11], alongside challenges in accessing early orthopaedic care.

The overall awareness of rehabilitation services was high, with 70.1% of the participants acknowledging their existence. This finding is encouraging when contrasted with rural Uttar Pradesh, India, where Srivastava and Khan found that 64.7% of disabled individuals were entirely unaware of such services [5].

However, awareness varied significantly across specific specialties, as physiotherapy had the highest recognition at 36.7%. Interestingly, this is lower than the 62.3% reported by Maruf et al. at the University of Ibadan Teaching Hospital [12] and the 85.4% noted by Ramanandi et al. across major urban centers in Gujarat, India [13]. This suggests that while physiotherapy is the most visible service locally, its absolute reach remains limited compared to regions with more stable healthcare infrastructure. Psychological counselling followed at 30.4%, reflecting an increasing community recognition of mental health services, likely driven by psychosocial support programs tied to conflict-rehabilitation efforts. Occupational therapy at 20.7% and speech or language therapy at 10.7% exhibited much lower awareness levels. This indicates that many PWDs view rehabilitation primarily through the lens of basic physical or medical recovery, remaining unaware of specialized therapies that support functional independence, cognitive adaptation, and communicative rehabilitation.

Table 2
Awareness of rehabilitation services among study participants

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| **Awareness of Rehabilitation Services** | | |
| Aware | 342 | 70.1 |
| Not Aware | 146 | 29.9 |
| **Total** | **488** | **100** |
| **Main Sources of Information about Rehabilitation Service** | | |
| Family/Friends | 234 | 68.4 |
| Healthcare provider | 22 | 6.4 |
| School/workplace | 65 | 19.0 |
| Social media | 3 | 0.9 |
| Mass media | 18 | 5.3 |
| **Total** | **342** | **100** |
| ***Types of Rehabilitation Services** | | |
| Physiotherapy | 192 | 36.7 |
| Occupational Therapy | 108 | 20.7 |
| Speech and Language Therapy | 56 | 10.7 |
| Psychological Counselling | 159 | 30.4 |
| Others | 8 | 1.5 |
| **Total** | **523** | **100** |

* Multiple response allowed

Informal networks served as the primary source of health information, with 68.4% of aware participants learning about services through family and friends. Conversely, formal channels like school or workplaces at 19.0% and healthcare providers at 6.4% played a much smaller role. This reliance on informal communication indicates formal institutional pathways and provider-initiated referrals remain weak. This dynamic supports the conclusions of Samuel [14], and Mbada et al. [15], who emphasized that standard healthcare worker engagement is essential for building systematic awareness. Maruf et al., for instance, reported a much higher rate of provider-initiated awareness at 29.7% [12]. Social media accounted for less than 1.0% of information acquisition in our study, highlighting a digital divide and a lack of targeted online public health campaigns tailored for local PWDs.

While 77.8% of participants affirmed that some form of rehabilitation service was available, the distribution of these services was highly skewed. Physiotherapy was identified as the most available service at 50.8%. This pattern mirrors facility assessments in South Africa, where strategic primary healthcare integration made physiotherapy widely available. In Maiduguri, this availability is uniquely supported by international partners, particularly the International Committee of the Red Cross

(ICRC), alongside the academic presence of specialized departments at the University of Maiduguri Teaching Hospital. This contrasts sharply with rural findings by Igwesi-Chidobe in southeastern Nigeria [7] and Akinpelu & Nwankwo [16], where assessments revealed zero physiotherapy infrastructure or personnel, leaving over 70% of households without local access.

Table 3
Availability and utilization of rehabilitation services among study participants

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| **Availability of rehabilitation services** | | |
| Available | 266 | 77.8 |
| Not Available | 76 | 22.2 |
| **Total** | **342** | **100** |
| **Most available services** | | |
| Occupational Therapy | 7 | 2.6 |
| Orientation and Mobility | 27 | 10.1 |
| Physiotherapy | 135 | 50.8 |
| Provision of assistive device | 58 | 21.8 |
| Speech and Language Therapy | 39 | 14.7 |
| **Total** | **266** | **100** |
| **Are rehabilitation services readily accessible** | | |
| Yes | 115 | 43.2 |
| No | 151 | 56.8 |
| **Total** | **266** | **100** |
| ***Rehabilitation services needed but inaccessible** | | |
| Assistive Devices | 31 | 11.2 |
| Braille | 14 | 5.1 |
| Hearing Aids | 20 | 7.2 |
| Occupational Therapy | 45 | 16.3 |
| Physiotherapy | 39 | 14.1 |
| Prostheses | 11 | 4.0 |
| Speech Therapy | 5 | 1.8 |
| Vocational Training | 80 | 29.0 |
| Walking Stick | 22 | 8.0 |
| Wheelchair | 9 | 3.3 |
| **Total** | **276** | **100** |
| **Affordability of Rehabilitation Services** | | |
| Yes | 203 | 76.3 |
| No | 63 | 23.7 |
| **Total** | **266** | **100** |
| **Used Rehabilitative Services Before** | | |
| Yes | 213 | 80.1 |
| No | 53 | 19.9 |
| **Total** | **266** | **100** |
| ***Types of Rehabilitation Services Used** | | |
| Physiotherapy | 97 | 33.7 |
| Psychological | 4 | 1.4 |
| Vocational | 46 | 16.0 |
| Social | 7 | 2.4 |
| Speech Therapy | 39 | 13.5 |
| Orientation and Mobility | 95 | 33.0 |
| **Total** | **288** | **100** |
| **Frequency of Rehabilitation Services used by the Study Participants** | | |
| Weekly | 76 | 35.7 |
| Monthly | 5 | 2.3 |
| Yearly | 13 | 6.1 |
| Occasionally | 119 | 55.9 |
| **Total** | **213** | **100** |
| **Level of Satisfaction** | | |
| Satisfied | 144 | 67.6 |
| Not Satisfied | 69 | 32.4 |
| **Total** | **213** | **100** |

*Multiple response allowed

In contrast, other essential interventions were largely unavailable. Assistive device provision was available to only 21.8% of participants, matching the low range of 2% to 22% reported by Magaqa et al. in rural South Africa [6]. Mobility aids were prioritized over communication or self-care tools, a gap driven by a shortage of specialized professionals like audiologists and speech pathologists. Occupational therapy was the least available service, accessible to only 2.6% of the cohort. A clear gap emerged between awareness, desire, and actual access, as 56.8% of the participants reported an inability to access required services, a barrier also identified by Mbada et al., who reported poor healthcare access among 67.2% of their cohorts [15], as well as restricted access to broader sexual, reproductive, and rehabilitative health services in other Nigerian urban centers such as Lagos [17].

The analysis of unmet needs reveals strong demand for specific services, with vocational training emerging as the most sought-after but unavailable service at 29.0%. This high demand reflects a desire among PWDs to achieve financial independence and reduce reliance on family support. This matches observations by Adugna et al. in a sub-Saharan African scoping review, which identified the absence of livelihood support as a major barrier to social inclusion [18]. This also reinforces the WHO World Report on Disability, which emphasizes that economic rehabilitation is as vital as physical recovery for long-term quality of life [4]. Physiotherapy and occupational therapy both had an unmet demand of 14.1% and 11.2% respectively. For physiotherapy, this gap highlights a disparity: although awareness is high, community-level access remains limited because personnel and infrastructure are concentrated in tertiary urban centers. In Borno State, this is further complicated by logistics and security challenges. For occupational therapy, the low availability aligns with findings by Magaqa et al. [6] and Morris and Grimmer [19], who noted that rehabilitation in low- and middle-income countries (LMICs) faces systemic workforce underfunding, with occupational therapy being disproportionately underrepresented.

Sensory and mobility aids also faced significant gaps, with unmet needs reported for walking sticks at 8.0%, hearing aids at 7.2%, braille at 5.1%, prostheses at 4.0%, and wheelchairs at 3.3%. The unmet need for braille is significant given that 33.4% of the sample presented with visual impairments, suggesting that true literacy and educational needs may be underreported. For hearing aids, the low coverage matches findings by Bright et al., which showed that less than 3% of individuals in LMICs who need hearing devices receive them. Although basic mobility aids like walking sticks and wheelchairs represent smaller percentages, they remain critical tools for independence. The scarcity of these devices reinforces observations by Bright et al. and Adugna et al. [18], who identified procurement costs and a lack of distribution in public health facilities as major barriers across sub-Saharan Africa. Speech therapy had an unmet need of only 1.8%, likely due to a low overall awareness of its utility, compounded by what Adugna et al. described as a systemic shortage of qualified speech-language specialists across the subcontinent [18].

Table 4
Factors affecting utilization of rehabilitation services among study participants

| *Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Affordability | 50 | 8.9 |
| Financial Problem | 33 | 5.9 |
| Transport problems to centers | 155 | 27.5 |
| Stigmatized when seeking rehabilitation services | 165 | 29.2 |
| Concerns on quality of care | 88 | 15.6 |
| Cultural/Language barrier | 73 | 12.9 |
| **Total** | **564** | **100** |

*Multiple response allowed

Table 5
Factors associated with awareness of rehabilitation services among study participants

| Variables | Not Aware (n) | Aware (n) | Test Statistic | P-value |
|---|---|---|---|---|
| **Age group (years)** | | | | |
| 15-39 | 50 | 139 | 27.991$X^2$ | <0.001 |
| 40-65 | 96 | 203 | | |
| **Total** | **146** | **342** | | |
| **Gender** | | | | |
| Male | 96 | 138 | 2.901 $\chi^2$ | 0.089 |
| Female | 50 | 104 | | |
| **Total** | **146** | **342** | | |
| **Average Monthly Income** | | | | |
| Below the Minimum wage | 141 | 283 | 17.170 $\chi^2$ | <0.001* |
| Above the Minimum wage | 5 | 59 | | |
| **Total** | **146** | **342** | | |
| **Religion** | | | | |
| Islam | 143 | 323 | Fisher's-Exact | 0.088 |
| Christianity | 3 | 19 | | |
| **Total** | **146** | **342** | | |
| **Marital Status** | | | | |
| Married | 91 | 179 | 4.132 $\chi^2$ | 0.042* |
| Unmarried | 55 | 163 | | |
| **Total** | **146** | **342** | | |
| **Total** | **146** | **342** | | |
| **Type of Disability** | | | | |
| Blindness | 61 | 110 | 10.412 $\chi^2$ | 0.005* |
| Deafness | 30 | 49 | | |
| Limb deformity | 55 | 183 | | |
| **Total** | **146** | **342** | | |
| **Level of Education** | | | | |
| No formal education | 108 | 95 | 30.884 $\chi^2$ | <0.001* |
| Formal education | 38 | 247 | | |
| **Total** | **146** | **342** | | |

Barriers to utilization with about one third of the cohort (29.2%) and (27.5%) identified stigma and transport logistics. While lower than the 93.4% challenge rate reported by Mbada et al. [15], this remains a major physical barrier. Social exclusion and negative attitudes from staff or the community affected 29.3% of participants, while 12.9% faced specific cultural/Language barriers. These dynamics are often intensified in insecure environments like Maiduguri, where conflict can disrupt community support systems. These findings align with work by Samuel [12] and community-level public health models analyzed by Lee et al. [22], who noted that Community-Based Rehabilitation (CBR) programs face persistent challenges with infrastructure, staffing, and long-term sustainability. They also mirror findings by Agada and Okafor, as well as broader national investigations by Eleweke & Ebenso [21], which showed that even when baseline awareness of health services is high, actual utilization is often limited by cost, structural inaccessibility, and long waiting times.

Table 6
Factors associated with utilization of rehabilitation services among study participants

| Variables | Not Utilized (n) | Utilized (n) | Test Statistic | P-value |
|---|---|---|---|---|
| **Age group (years)** | | | | |
| 15-39 | 16 | 110 | 6.32 $\chi^2$ | 0.012* |
| 40-65 | 37 | 113 | | |
| **Total** | **53** | **213** | | |
| **Gender** | | | | |
| Male | 35 | 155 | 0.941 $\chi^2$ | 0.332 |
| Female | 18 | 58 | | |
| **Total** | **53** | **213** | | |
| **Household Financial Status** | | | | |
| Low Income | 45 | 172 | 0.492$\chi^2$ | 0.485 |
| Middle Income | 8 | 41 | | |
| **Total** | **53** | **213** | | |
| **Religion** | | | | |
| Islam | 52 | 196 | Fisher's Exact | 0.114 |
| Christianity | 1 | 17 | | |
| **Total** | **53** | **213** | | |
| **Marital Status** | | | | |
| Married | 31 | 104 | 1.598 $\chi^2$ | 0.208 |
| Unmarried | 22 | 109 | | |
| **Total** | **53** | **213** | | |
| **Total** | **53** | **213** | | |
| **Type of Disability** | | | | |
| Blindness | 23 | 52 | 8.132 $\chi^2$ | 0.017* |
| Deafness | 5 | 38 | | |
| Limb deformity | 25 | 123 | | |
| **Total** | **53** | **213** | | |
| **Level of Education** | | | | |
| No formal education | 43 | 125 | 26.204 $\chi^2$ | <0.001* |
| Formal education | 10 | 80 | | |
| **Total** | **53** | **213** | | |

†Fisher Exact Test
$\chi^2$ Pearson Chi-Square
* Statistically significant set at $p \leq 0.005$

Inferential analysis showed significant associations between specific sociodemographic factors and rehabilitation outcomes. Regarding the correlates of awareness, age ($p< 0.001$) average monthly income ($p < 0.001$), marital status ($p = 0.042$), type of disability ($p= 0.005$) and level of education ($p <0.001$) were significantly associated with service awareness. The positive correlation with age suggests that older individuals, having lived with impairments longer, have had more opportunities to interact with the healthcare system. The positive correlation with income indicates that higher economic status provides better access to information channels, media, and healthcare environments. This matches data from Olaoye et al., which showed that gender did not significantly influence awareness levels [8].

Service utilization was significantly associated with age ($p = 0.012$), type of disability ($p = 0.017$), and level of education ($p <0.001$). This statistical trend closely mirrors findings by Zziwa et al., who confirmed that age and educational attainment ($p < 0.05$) serve as predictors for rehabilitation utilization [9]. Older age cohorts often present with greater functional needs or

secondary comorbidities, prompting higher healthcare utilization. Higher formal education enhances health literacy and reduces the impact of social stigma, encouraging individuals to seek care. Finally, the type of disability influences utilization patterns; individuals with clear physical impairments face immediate functional limitations in daily life, driving a higher demand for corrective and rehabilitative interventions to improve their overall quality of life.

## 4. Conclusion

This study demonstrates that although awareness of rehabilitation services among people with disabilities is relatively high, access to comprehensive rehabilitation remains inadequate. Financial hardship, transportation barriers, stigma and shortages of specialized rehabilitation services continue to limit service utilization. Strengthening rehabilitation within primary healthcare, expanding community-based rehabilitation programmes and increasing investment in specialized services are essential to improve equitable access in conflict-affected settings such as Maiduguri.

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