

Pattern of Disabilities among Leprosy Patients in Abia State, Nigeria - a Retrospective Review

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Early case detection and prompt treatment have been identified as key strategies for effective control and elimination of leprosy disease. Hence, control efforts should include among others treatment of the disease and disability prevention. This study is aimed at determining prevalence and pattern of disability among leprosy patients treated in a Leprosy Center in Abia State, Nigeria. Records of 287 leprosy patients treated in Uzoakoli Leprosy Center, Abia State between 2002 and 2006 were reviewed and analysed. Findings showed 23 (9.9%) with childhood leprosy, 206 (83.7%) multi-bacillary type and 64 (28.4%) with grade 2 disability among the leprosy cases. Four children (15.4%) presented with grade 2 disability at diagnosis. Prior to treatment 80 (27.9%) had grade 2 disability, while 11 (6.6%) at the end of the treatment. Based on EHF score 85 patients (50.9%) out 167 patients who completed treatment had impairment before treatment; on completion of treatment 133 (89.9%) of them improved, while 5 (3.4%) deteriorated. The lower limb (92.6%) was the most affected site in the leprosy patients, while the eye (3.4%) was the least affected. The current leprosy control efforts should be intensified to ensure early case detection and prompt treatment in order to reduce the leprosy burden, including disabilities in individuals and community at large.

Keywords : Disability, Impairment, Treatment, Diagnosis, Abia State Nigeria

Introduction

Despite the reduction in the number of leprosy cases over the years in Nigeria, the disease has remained a public health issue. The number of registered leprosy cases in the country declined

from 500,000 in 1989 to 3,805 in 2012. Between 2001 and 2012 over 50,000 new leprosy cases were notified and the country remains among the six high leprosy burden countries in Africa (Gidado et al 2012, Udo et al 2013, WHO 2014).

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In 1991, WHO set an elimination target and developed strategies for achieving them - which include increasing geographical coverage of Multi Drug Therapy (MDT) and patient's accessibility to treatment (World Health Assembly 1991). Nigeria adapted the global elimination target and the following strategies for achieving it - early case finding, provision of MDT to all detected cases, ensuring case holding, and surveillance of household contacts and integration of leprosy services into general health care services (Federal Ministry of Health 2008). By the end of 1998 the country had achieved the National elimination target of leprosy of less than 1 case per 10,000 population and since then case detection rate has remained below 0.5 per 10,000 which may well describe the country as low endemic for leprosy (Udo et al 2013).

Despite availability of effective treatment for leprosy and progress made in the control globally over the years, it has remained a stigmatised disease. Reasons for this include among others irreversible physical impairment associated with the disease, which often results in disability or handicap of the individuals affected. Late diagnosis and active transmission of leprosy are among the factors that interfere with effective control and elimination of the disease; while occurrence of deformity has been linked with early and prolonged exposure to untreated leprosy cases and late diagnosis (Lana et al 2013). Hence, the goal of leprosy control includes not only treatment of the disease but also prevention of disability. This objective is achieved primarily through early detection and prompt treatment of new leprosy cases.

World Health Organisation (WHO) disability grading and EHF (Eye, hands & Foot) scores have been used to evaluate and monitor patient's disabilities while on treatment. Grading is done both at diagnosis and at the end of treatment.

The grade at the end of treatment is compared with the grade given at diagnosis. In cohort studies, the disability grading is used as a proxy indicator for 'effects of care after diagnosis to assess to what extent disability grades improve or deteriorate, as a result of, or lack of, timely interventions. It is also used to grade the potential for preventing disabilities in individual patients and as an indicator for assessing the performance of the elimination programme in general (Brandsma and van Brackel 2003, van Brakel et al 1999).

In Nigeria, literature on prevalence and pattern of leprosy-associated disability is few. In southern Nigeria, despite several years of implementing leprosy control, no study has been done to ascertain the burden of disability among leprosy patients. This study therefore is aimed at determining the prevalence and pattern of disability among leprosy patients treated in a Leprosy Center in Abia State, Nigeria

Materials and Methods

The study is a retrospective cohort study involving leprosy patients treated in Uzoakoli Leprosy Center, Abia State. The centre was once renowned for its global contribution to research in the chemotherapy of leprosy and is regarded one of the most enduring legacies of the Methodist Church in Nigeria. The records of 287 patients seen in the facility between 2002 and 2006 were reviewed and data collected on patient details, category and type of leprosy, treatment outcome and impairment at beginning and at end of treatment. Case management was dependent on leprosy type. Pauci-bacillary type were treated for six months using two drugs - rifampicin once a month and dapsone given daily for 6 months, while multi-bacillary type were treated for 12 months using rifampicin given once monthly, clofazimine and dapsone given daily for 12 months. Patients were followed up monthly to

monitor progress of treatment. In addition to drug therapy, patients were given health education on self-care of eyes, hands and feet to prevent impairment and disability and on how to recognize and report complications during and after treatment. Data collected was entered and analysed using SPSS version 20. Descriptive analysis was done to determine the characteristics of the patients, pattern and prevalence of disability/impairment as well as proportion of Grade-2 disability among new cases, child proportion among new cases and proportion of multi bacillary patients among new cases. Furthermore, analysis of case management outcome following multi-drug therapy (MDT) was done, while Chi-squared test was done to ascertain relationship between disability and selected patient's characteristics. Ethical approval for this study was obtained from Abia State Ministry of Health. Individual consent was not sought for because the study involved only review patient's records(as per Institute's guidelines in Nigeria).

Results

A total of 287 patients were reviewed within the study period and the findings are being presented. The mean age of the patients was 40.2 ± 19.6 years. Child cases were 26 (9.1%), while the elderly patients were 65 (22.9%). Majority of them (58.2%) were males and were predominantly of the multi-bacillary (MB) type (88.2%). New cases constituted more than 82% of them, while retreatment cases were 46 (16.0%) as shown in Table 1.

A total of 167 patients (58.1%) completed their treatment, while 91 (32%) defaulted, 2 (1.2%) died and 27 were (9.4%) transferred out.

Twenty three (9.9%) of new cases were children, while the elderly accounted for 20.6%. Also among the new cases, 206 (87.3%) were multi-bacillary, while 28.4% had grade 2 disability at diagnosis, while 25.5% of retreatment/transferred in had grade 2 disability at diagnosis as shown in Table 1.

Table 1 : Clinical Classification and characteristics of leprosy patients in the study

Characteristic	New n=236 (%)	Retreatment / Transferred In n=51 (%)	Chi ²	P value
Age (in years)				
<15	23 (9.7)	3 (5.9)		
15-59	164 (69.5)	31 (60.8)	41.6	0.13
≥ 60	49 (20.8)	17 (33.3)		
Leprosy Type				
PB	30 (12.7)	4 (7.8)		
MB	206 (87.3)	47 (92.2)	0.95	0.33
Disability Grade at Diagnosis				
0	113 (47.9)	26 (51.0)		
1	56 (23.7)	12 (23.5)	0.21	0.90
2	67 (28.4)	13 (25.5)		

Table 2 : Patients details and WHO Disability Grading before treatment

Patient Characteristics	Disability Grade			Chi X ²	p-value
	Grade 0 n (%)	Grade 1 n (%)	Grade 2 n (%)		
Sex					
Male	79 (47.3)	41 (24.6)	47 (28.1)	0.24	0.88
Female	60 (50.0)	27 (22.5)	33 (27.5)		
Age (in years)					
<15	19 (73.1)	3 (11.5)	4 (15.4)		
15-59	93 (47.7)	46 (23.6)	56 (28.7)	7.66	0.11
≥ 60	28 (43.8)	18 (28.1)	18 (28.1)		
Mean±SD	37.3±20.2	45.2±18.8	41.0±18.5		
Leprosy Type					
PB	31 (91.2)	2 (5.9)	1 (3.0)		
MB	108 (42.7)	66 (26.1)	79 (31.2)	29.82	<0.001
Category					
New	113 (47.9)	56 (23.7)	67 (28.4)	0.21	0.90
Retreatment/Transferred in	26 (51.0)	12 (23.5)	13 (25.5)		
Treatment Outcome					
Treatment Completed	82 (49.1)	35 (21.0)	50 (29.9)	1.91	0.38
Others-defaulted, died, transferred out	57 (47.5)	33 (27.5)	30 (25.0)		

A total of 80 (27.9%) out of 236 new patients studied had grade 2 disability at diagnosis. Distribution of grade 2 disability among the sexes was nearly equal - males (28.1%) and females (27.5%) as shown in Table 2. Also, the number of children with grade 2 disability was 4 (15.4%) compared to >28% in adults. Patients with multi-bacillary type of leprosy were significantly more likely to have disability than those with pauci-bacillary type of leprosy ($X^2=29.82$, $p<0.001$). While on the other hand a slightly higher proportion of new patients (28.4%) presented with grade 2 disability compared to 25.5% of re-treatment or transferred in patients. This was statistically not significant.

Table 3 shows distribution of patients after treatment by leprosy type. Among the 167 patients who completed treatment 24 (14.4%) were pauci-bacillary type, while 143 (85.6%) were multi-bacillary type. On completion of treatment 38 (77.6%) out of 49 MB leprosy patients with grade 2 disability improved while 11 (22.4%) remained the same. On the other hand the only PB patient with grade 2 disability improved.

Table 4 shows patients impairment grading using WHO maximum grade score and EHF before and after treatment among those who completed treatment. Patients with grade 1 disability before and after treatment were 68 (23.7%) and 12 (7.2%) respectively while those with grade 2

disability were 80 (27.9%) and 11 (6.6%) respectively. On the other hand, using EHF score a total of 148 (50.9%) patients had impairment before treatment with mean EHF score of 3.16±1.88. After treatment 23 patients (4.8%) had impairment with mean EHF score of 3.35±2.08. On completion of treatment among the 148 patients with impairment at diagnosis 133

Table 3 : Clinical classification and characteristics of leprosy patients after treatment

Characteristic	PB N=24 (%)	MB N=143 (%)	Chi ²	P value
Sex				
Male	16 (66.7)	81 (56.6)	0.85	0.36
Female	8 (33.3)	62 (43.4)		
Age (in years)				
<15	4 (16.7)	15 (10.6)		
15-59	15 (62.5)	88 (62.4)	0.94	0.62
≥60	5 (20.8)	38 (27.0)		
Mean±SD	38.8±21.2	40.7±20.8		
Category				
New	21 (87.5)	121 (84.6)	0.13	F=1.00
Retreatment/Transferred in	3 (12.5)	22 (15.4)		
WHO Disability grading before treatment				
Grade <2	23 (95.8)	94 (65.8)		
Grade 2	1 (4.2)	49 (34.3)		
WHO Disability grading after treatment				
Grade <2	24 (100.0)	132 (92.3)		
Grade 2	0 (0.0)	11 (7.7)		

Table 4 : Distribution of patients according to Impairment using WHO maximum Grade and EHF Score before and after treatment

Impairment grading using WHO maximum Grade	0 Grade	Grade 1	Grade 2	Chi ²	p-value
Before treatment	139 (48.4)	68(23.7)	80 (27.9)	130.29	<0.001
After treatment	144 (86.2)	12 (7.2)	11 (6.6)		
EHF Score	n (%)	Mean±SD			
Before treatment	148 (51.7)	3.06±1.78			
After treatment	23 (8.0)	3.35±2.08			
Change in Impairment after treatment n=148 (%)					
Improved	133 (89.9)				
Deteriorated	5 (3.4)				
No Change	10 (6.7)				

Table 5 : Impairment Grade by sites before and after treatment among patients with impairment

Site	WHO Grading before Treatment		WHO Grading after Treatment	
	Grade 1	Grade 2	Grade 1	Grade 2
(L) Eye	2	0	2	0
(R) Eye	3	1	2	0
(R) Hand	31	24	5	4
(L) Hand	32	28	6	4
(R) Leg	68	45	12	7
(L) Leg	68	37	11	5
Before Treatment				
	Eye (n=5)	Hand (n=73)	Leg (n=137)	
Unilateral	4 (80.0)	30 (41.1)	54 (39.4)	
Bilateral	1 (20.0)	43 (58.9)	83 (60.6)	
After Treatment				
	Eye (n=2)	Hand (n=11)	Leg (42)	
Unilateral	0 (0.0)	2 (18.2)	9 (21.4)	
Bilateral	2 (100.0)	9 (81.8)	33 (78.6)	

(89.9%) of them improved, 5 (3.5%) deteriorated, while 10 (6.7%) remained unchanged. The five patients who deteriorated in the course of treatment were MB leprosy type (100.0%), 4 (80.0%) were females aged between 15-59 (60.0%).

Table 5 shows impairment grading by sites before and after patient treatment. Lower limb was the most commonly affected site, while eye was least affected. Among the one hundred and forty eight patients with deformities, 137 (92.6%), 73 (49.3%) and 5 (3.4%) had deformities of the leg, hand and eye respectively. Upper limb (58.9%) and lower limb (60.6%) affectation was mostly bilateral, while eye involvement (80.0%) was predominantly unilateral.

Discussion

The study revealed that more adults than children and more males than females who attended the hospital for treatment were affected by leprosy. Most of the cases seen within the period were

multi-bacillary type (MB) of leprosy and were predominantly new cases rather than re-treatment cases.

The proportion of children with leprosy among new cases was 9.9% which is comparable to the national average of 10% and lower than 8.4% reported in Kaduna, but less than 7.6% reported in Brazil (Federal Ministry of Health 2008, Lana et al 2013). About 15% of them presented with grade 2 disability at diagnosis, in contrast to 5% reported in Brazil (Lana et al 2013). This is suggestive of an on-going transmission of leprosy in the community by yet to be detected infected individuals. In addition at diagnosis, a good proportion of the childhood leprosy already have grade 2 disability, an evidence of late case detection and a significant gap in the state leprosy control.

Furthermore, 87.3% of the new cases were multi-bacillary (MB) and was comparatively lower than the national average of 92% reported to 2010

(Gidado et al 2012). The likelihood of grade 2 disability was also found to be significantly higher among MB cases (31.2%) compared to PB (3.0%). Greater propensity of grade 2 disability occurring among MB cases compared than in PB has also been reported from Pakistan (Soomro et al 2008). The proportion of grade 2 disability among new cases was 28.4% and is more than twice the national average (12%) reported in 2010 (Gidado et al 2012) and is higher than 20% predicted risk of disability among new cases. High prevalence of visible disability is an evidence of continuing late case detection which often results in continuing stigmatisation, isolation and destitution of the patients even after completing treatment with MDT (Lana et al 2013). Following treatment with MDT there was significant reduction of the number of patients with impairment; however, the condition of few of them deteriorated despite treatment. Our study revealed new impairment rate during MDT of 3.4%, which is line with the National Leprosy Control Program recommended target of <5%, and is indicative of effective prevention of impairment and disability (POID) intervention during care. The disability prevention interventions provided to patients during care include assessment at diagnosis for impairment grading; and comprise of full eye examination, voluntary muscle test and sensory test of the upper and lower limbs. In addition, patients were educated on how to care for the eye, hands and feet and report complications early. On completion of treatment they were reassessed for impairment grading and scored accordingly. Although, MDT has been found to be effective in the treatment of leprosy, studies have shown that reversal of severe disability is not often likely. The reduction in prevalence of impairment observed in this study is probably an indication that a good number of the cases were either detected early and had not developed

irreversible deformities or most of the patients did not have neuritic lesions. Despite reduction in overall number of patients with impairment at the end of care, five cases deteriorated; a development which could be prevented by improved self-care. Impairment could also result from nerve damage in the course of therapy following immunological reaction, particularly if not properly managed (Kumar et al 2012, Sales et al 2013).

The sites most commonly affected by leprosy-associated deformities were the upper and lower limbs, while ocular involvement was low. In earlier study in Northern Nigeria and Burkina Faso reported upper limb deformity as the most frequent leprosy-associated deformity (Lyere 1990, Alexandre et al 1996). In Pakistan, the distribution of deformities by sites of body showed a reversed trend with the eye being the most involved and the legs being the least involved (Soomro et al 2008).

In conclusion, the study demonstrated evidence of continuing leprosy transmission and late detection of new cases in Abia State. Also, the pattern of distribution of leprosy lesions was at variance with the pattern observed in the northern part of the country. Hence, the need for intensification current control efforts to ensure early case detection and prompt treatment, thereby reducing significantly leprosy-associated disability and stigma.

The major limitation of our study is that about 42% of the patients did not complete their treatment. They defaulted, died or were transferred out, hence could not be assessed for impairment at the end of care.

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