

## LOW VISION SERVICES IN SOKOTO STATE, NIGERIA

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## ABSTRACT

**Background:** The provision and uptake of low vision services is said to be poor globally and is almost negligible in low income countries. **Objective:** To describe the first one year of low vision service provision in Sokoto state. **Methods:** A retrospective review of all patients with low vision referred to the low vision unit of Usmanu Danfodiyo University Teaching Hospital and Specialist Hospital, Sokoto during the study period was undertaken. The WHO definition of low vision using visual acuity cut off point (best corrected visual acuity of  $<6/18$  to light perception in the better eye) was used to enlist study participants. Data was extracted from the medical records of all the patients diagnosed with low vision. The information extracted included age, sex, socio-demographic details, presenting and best corrected visual acuities for near and distance, diagnosis, the spectacles and low vision device prescribed. Data was analyzed using simple percentages and proportions. **Results:** A total of 46 patients (0.45% of all patients seen -10,201) were diagnosed with low vision. The sex distribution was 65.2% males and 34.8% females. The age range of the patients was from 9 years to 69 years with a mean age of  $29.3 \pm 1.66$  years. The major causes of low vision in this study were glaucoma (52.2%), retinitis pigmentosa (26.1%), optic atrophy (8.7%), pathologic myopia (6.5%) and albinism (2.2%). The most prescribed devices were spectacle magnifiers and telescopes (41.3% both) followed by handheld magnifier (13%) and stand magnifier (4.3%). The most dispensed devices were spectacle magnifiers and telescope at 41.6%, handheld magnifiers 12.5%, and stand magnifiers 4.2%. **Conclusions:** Low vision service provision in Sokoto state is one of the challenges of eye care service provision in the state. The commonest cause of low vision was found to be glaucoma while Spectacle magnifiers and Telescopes were found to be the commonest prescribed and dispensed low vision devices.

**KEYWORDS:** Vision, Services, Spectacles, Vision device.

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**GSM:-** +2348069556566**eMail:-** [mohadna@yahoo.com](mailto:mohadna@yahoo.com)**INTRODUCTION**

Low vision has been described with variety of terms including partial sight, visual impairment and visual disability<sup>1</sup>. It describes a situation where a person has difficulty with activities of daily living (ADL) even with regular glasses, medicine or surgery, such that reading, writing, watching television or mobility are difficult to be achieved. In order to identify persons who could benefit from low vision services, a definition for low vision was

agreed by a WHO-stakeholders meeting in Bangkok, Thailand and it states that: "A person with low vision is one who has impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10 degrees from the point of fixation, but who uses, or is potentially able to use, vision for the planning and/or execution of a task"<sup>2</sup>. This definition incorporates both visual acuity and visual field in the better eye to standardize the definition for global usage. The WHO recent estimate project about 37 million blind, 314 million visually impaired, and 124 million people with low vision (with presenting vision)<sup>3</sup>. The causes include cataract (47.8%), glaucoma (12.3%), and age related macular degeneration (8.7%) among others<sup>3,5</sup>. In Nigeria, the National Blindness and Low Vision Survey estimated over 4.2 million people with low vision and 1 million with blindness with causes similar to the global estimates by the WHO.

The provision (and uptake) of low vision services is said to be poor globally and is almost negligible in low income countries<sup>5,6</sup>. This has been attributed to lack of awareness of service among the general public and eye care professionals, acceptance of low vision; and transport<sup>7</sup>. A global survey of low vision services showed 115 countries with some low vision services; and approximately half of the countries in Africa and Western Pacific regions have no service<sup>5</sup>. Only few countries have more than 10 low vision health professionals/10 million of population and NGOs were found to be the main providers and funders of the service<sup>5</sup>. The low vision service in Sokoto state on

commenced in 2011 with the training of personnel in two hospitals within Sokoto metropolis (Specialist Hospital and Teaching Hospital) and acquisition of low vision devices. The low vision services were integrated into the Sokoto State Eye Care Programme and the Programme procured the low vision devices with support from a non-governmental international organization. This paper reports the first year of low vision service provision in Sokoto state. The specific objectives are: to determine the common causes of low vision in the study population; to determine the commonly prescribed low vision devices; and, to determine the commonest dispensed low devices.

## MATERIALS AND METHODS

A retrospective review of all patients with low vision referred to the low vision unit of two hospitals (a Federal Teaching Hospital and a State Specialist Hospital) during the study period was undertaken. In each of the clinics, persons diagnosed with low vision after appropriate medical and/or surgical treatments with standard refraction were referred to the trained low vision therapist (Optometrist in Teaching Hospital and Ophthalmologist & Ophthalmic nurse in the State Hospital) for low vision assessment of both near and distance vision. The patients were assessed with the appropriate low vision devices depending on the visual needs of the person after which an appropriate device is prescribed separately for near or distance vision tasks or both. The devices used for assessment include low vision acuity and contrast charts, magnifiers and telescopes. The Programme provides the low vision devices to the eye clinics that dispense the devices at a subsidized cost as accepted by

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the patients and/or guardians. The inclusion criteria were a best-corrected Visual acuity (VA) of <6/18 to light perception in the better eye; and an Ophthalmologist's diagnosis of low vision. The exclusion criteria included patients with VA of no light perception referred to the unit for rehabilitation.

Ethical approval was obtained from the Ethics and Research committee of Usmanu Danfodiyo University Teaching Hospital, Sokoto. To ensure confidentiality, patients identity were hidden and case notes were promptly returned to the medical records library.

Data extracted included age, sex, socio-demographic details, presenting and best corrected visual acuities for near and distance, diagnosis, the spectacles and low vision device prescribed.

Data was analyzed using descriptive statistics of simple percentages and proportions using SPSS version 13.0. Chi-square was used to test the significance of the differences between the variables where applicable. Statistical significance was set at  $P < 0.05$ .

### RESULTS

Of the 10,201 patients seen during the study period (June 2011 to July 2012), a total of 46 ( 0.45%) were diagnosed with low vision.

Males (65.2%) constituted the majority. The age range of the patients was from 9 years to 69 years with a mean age of  $29.3 \pm 1.66$  years. Most (55%) of the patients seen were less than 30 years of age as shown in table I. Majority of the patients were students (32.9%) followed by civil servants

(23.6%), housewives (10.9%), - traders (10.3%), journalists (8.6%), farmers (8.7%) and others (4.7%).

Tables II and III shows the distance and near acuities of the patients respectively. Only 45.7% of the patients had an acuity of <6/18-6/60 with the presenting distance vision that increased with low vision correction to 82.6% of the patients. The presenting near acuity was Normal -up to 1.5M (N12) in 48% of the patients that increased to 87% with low vision correction.

The causes of low vision are shown in Fig 1 with Glaucoma (52.2%), Retinitis pigmentosa (26.1%), and optic atrophy (8.7%) accounting for 87% of the cases.

The most prescribed devices were spectacle magnifiers and telescopes (41.3% each) as shown in table IV. However, only 52.2% of prescribed low vision devices were dispensed spectacle magnifiers and telescopes (41.7%) constituting the majority as shown in table IV.

The characteristics of persons that accepted the low vision devices are shown in table V with patients aged 20-29 years accepting more than others (37.5%). Those aged <10 years and >50 years did not accept any LVD. Majority of the patients that accepted the LVDs were students (43.2%), civil servants (35.3%) and others (traders, artisans, and journalists) constituted 21.5%. Chi-square test was conducted for age, sex and occupational distribution for patients that accepted LVDs which showed no statistically difference in the age ( $\chi^2 2.8$ ,  $p = 0.82$ ), sex ( $\chi^2 3.2$ ,  $p = 0.77$ ) or occupation ( $\chi^2 7.1$ ,  $p = 0.08$ ).

**Table I: Age and sex distribution of the patients**

Age group (yrs)	Male (n)	Female (n)	Total n	Total (%)
0-9	2	-	2	(4.3)
10-19	4	7	11	(24)
20-29	10	3	13	(28.2)
30-39	6	3	9	(19.6)
40-49	5	1	6	(13.0)
50-59	3	1	4	(8.7)
60+	-	1	1	(2.2)
<b>Total</b>	<b>30 (65.2%)</b>	<b>16 (34.8)</b>	<b>46</b>	<b>(100)</b>

**Table II: Distance visual acuity at presentation and after correction**

Distance visual acuity	Presenting n (%)	LVA corrected n (%)
<6/18-6/60	21 (45.7)	38 (82.6)
<6/60-3/60	15 (32.6)	7 (15.2)
<3/60-PL	10 (21.7)	1 (2.2)
<b>Total</b>	<b>46 (100)</b>	<b>46 (100)</b>

**Table III: Near visual acuity at presentation and after correction**

Near visual acuity	Presenting n (%)	LVACorrected n (%)
Normal up to 1.5M	22 (48)	40 (87)
>1.5M-2.5M	14 (30)	4 (9)
Very large->2.5M	10 (22)	2 (4)
<b>Total</b>	<b>46 (100)</b>	<b>46 (100)</b>

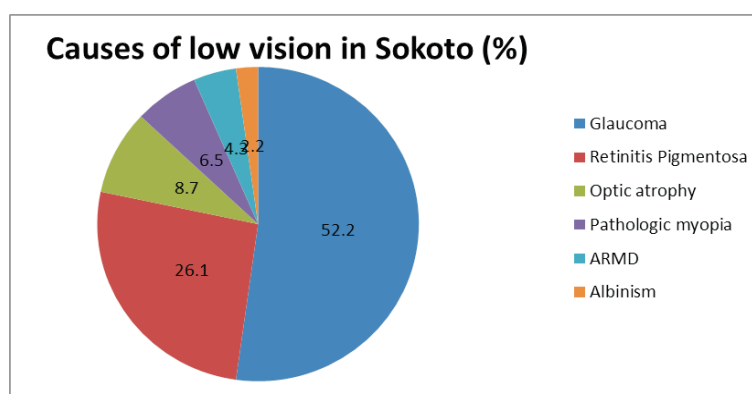
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**Table IV: Low Vision Device Prescribed and Dispensed**

Type of device	Prescribed N (%)	Dispensed n (%)
Telescope	19 (41.3)	10 (41.7)
Spectacle Magnifier	19 (41.3)	10 (41.7)
Handheld Magnifier	6 (13.0)	3 (12.5)
Stand Magnifier	2 (4.3)	1 (4.2)
<b>Total</b>	<b>46 (100)</b>	<b>24 (100)</b>

**Table V: Age and sex Distribution of Patients that accepted LVD.**

Age Group (yrs)	Male n	Female n	Total n (%)
0–9	-	-	-
10–19	4	2	6 (25)
20–29	6	3	9 (37.5)
30–39	5	1	6 (25)
40–49	2	1	3 (12.5)
50–59	-	-	-
60+	-	-	-
<b>Total</b>	<b>17</b>	<b>7</b>	<b>24 (100)</b>



**Fig 1: Causes of low vision in Sokoto**

## DISCUSSION

The problem of low vision is said to be worse among the working population and therefore gives a significant economic impact particularly in the developing world<sup>8</sup>. This is in accordance with the findings of our study which shows that more than half of the patients with low vision are within the working age group of 15yrs-60yrs.

This study also revealed that males most commonly access low vision services. This agrees with the findings of other studies<sup>8,10</sup>. This may be because the males have the economic power and are decision makers in our patriarchal society and will go extra miles to access eye care services in order to discharge their duties and responsibilities.

The commonest cause of low vision in this study was glaucoma followed by retinal disorders, age related macular degeneration, albinism and optic atrophy. This is comparable to reports from Kan<sup>8</sup> and Calabar<sup>10</sup> in Nigeria and emphasizes the emergence of glaucoma as an important cause of low vision in Nigeria. This perhaps may be due to the late presentation to the hospital of patients with glaucoma. On the contrary, studies from developed countries show that the commonest cause of low vision is age related macular degeneration with glaucoma and other retinal disorders each accounting for 10% or less<sup>11,12</sup>. This may be due to the fact that glaucoma is commoner in the black race and is also more aggressive making it commoner in the developing countries. Increased awareness and access to eye health care may also explain why glaucoma is less common as a cause of low vision in the developed countries.

The most prescribed low vision devices in this study are comparable to the findings in Kano<sup>8</sup> and Calabar<sup>10</sup> but different from that reported in Brazil<sup>13</sup>. Although the percentage of dispensed low vision devices is low in our study, it is higher than the 30% reported in the Calabar study<sup>10</sup> and may be due to the fact that the prices of low vision devices are subsidized in Sokoto state. The absence of a significant difference in acceptance of LVDs in our study is similar to the findings in U.S.A that reported no statistically significant difference in age and sex with acceptance of LVDs<sup>14</sup>.

The data from this study revealed that more than 80% of low vision patients had improved vision for distance and/or near visual acuities with the aid of spectacles, telescopes and magnifiers. This finding is similar to the report from India<sup>15</sup> and West Africa<sup>16</sup> which showed more than 50% of low vision patients having improvement with the help of low vision devices.

The short period of service availability, location of the two centers in the state capital, lack of an effective referral system, and the small number of clients seen in this study may be a limitation in applying our findings to the general population especially that some eye care personnel in district hospitals may not have been aware of its availability. It is recommended therefore, that awareness creation on low vision service, human resource training including task shifting, and creating more low vision service centers in district hospitals could reach rural populace. Future quantitative and qualitative studies may be needed to assess determinants of LVDs acceptance, the change in quality of life of these patients and the probable economic impact to the community especially with an anticipated increased

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uptake of low vision services in Sokoto state.

### CONCLUSION

Low vision service provision in Sokoto is challenging as the commonest causes of low vision are glaucoma and retinitis .

pigmentosa which are difficult to manage. The most common low vision devices prescribed and dispensed are spectacle magnifiers and telescopes and these hold great promise as patients show improvement in vision with their use. ■■■■

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