

Original Article

A Situational Report on Low Vision Services in Tertiary Hospitals in South-East Nigeria

HI Monye*, F Kyari¹, RO Momoh²

Department of Ophthalmology, University College Hospital, Ibadan, Oyo State, ¹Department of Medical Sciences, Baze University, Abuja, ²Department of Ophthalmology, University of Benin Teaching Hospital, Benin City, Edo State
* Affiliation where work was primarily carried out: International Centre for Eye Health, London School of Hygiene and Tropical Medicine

Received:
19-Jul-2019;
Revision:
21-Sep-2019;
Accepted:
15-Apr-2020;
Published:
03-Jul-2020

ABSTRACT

Background: The prevalence of functional low vision in southeast Nigeria is reportedly the highest in the country. **Aim:** This study evaluated the state of low vision services and perceptions of providers and users of the service in tertiary hospitals in the region, to facilitate advocacy and planning. **Methods:** This was a cross-sectional survey of available low vision services in the nine tertiary hospitals in Southeast Nigeria utilizing mixed methods. Data were collected on human resources, service delivery, and low vision equipment and devices. In-depth interviews were conducted to determine the perceptions of providers and users of the service. **Results:** Varying levels of low vision services were actively provided in three of the nine hospitals surveyed. Services, equipment, and devices were suboptimally available. The three functional centers had a combined output of 61 patients seen within 6 months preceding the study and had at most two-thirds of required equipment. Low vision devices (LVDs) were available in varying degrees in only four (44%) of the hospitals. Twenty-one (7.6%) of the 278 eye care personnel had some low vision training across seven hospitals. The challenges highlighted by providers were mainly inadequate funding (infrastructure, training, and equipment), communication gaps, and bureaucracy. Poor awareness, affordability, acceptability, and accessibility of LVDs were major constraints for users. **Conclusion:** Low vision services are available in some tertiary facilities in southeast Nigeria. Improved funding and better awareness of the availability of low vision services by eye care providers and the general public are needed to strengthen services.

KEYWORDS: Challenges, low vision, low vision services, perceptions, southeast Nigeria

INTRODUCTION

The World Health Organization (WHO) defines low vision as “visual acuity less than 6/18 and equal to, or better than 3/60 in the better eye with the best correction” (International Classification of Diseases, ICD-10 categories).^[1] However, such people may potentially be able to utilize their vision to perform tasks if they receive low vision care. Because of this potential functional vision, the WHO working definition, therefore, describes a person with low vision as one with “*impairment of visual functioning even after treatment and/or standard refractive correction, and has a visual acuity of less than 6/18 to perception of light in the better eye, or a visual field of less than 10° from*

the point of fixation, but who uses, or is potentially able to use vision, for the planning and/or execution of a task.”^[2]

Low vision services comprise vision and rehabilitation activities geared towards optimizing the vision potentials of people with low vision.^[3] These include vision services such as vision assessment, refraction, prescription and dispensing of optical and nonoptical low vision devices (LVDs), and training on their

Address for correspondence: Dr. HI Monye, Department of Ophthalmology, University College Hospital, Ibadan, Oyo State.
E-mail: henrietta.monye@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Monye HI, Kyari F, Momoh RO. A situational report on low vision services in tertiary hospitals in South-East Nigeria. Niger J Clin Pract 2020;23:919-27.

Access this article online	
Quick Response Code:	Website: www.njcponline.com
	DOI: 10.4103/njcp.njcp_375_19

use. LVDs are on WHO's priority assistive products list because they are highly needed and improve the individual's functioning, well-being, and quality of life along with the potential for socioeconomic benefits.^[4] They need to be available at a price the community/state can afford. Rehabilitation services include counseling on the underlying disease, use of residual vision, mobility and orientation training, occupational rehabilitation and environmental modification, referral to other services such as special education and job placement services.^[5] The WHO recommends at least one tertiary low vision unit/10 million population.^[6]

The Nigeria national blindness and visual impairment survey reports that the nationwide prevalence of functional low vision in people aged 40 years and above is 3.5% (95CI 3.1–3.9%), with the highest prevalence in the southeast zone (4.2%).^[7] Most other studies that evaluated low vision services in Nigeria were carried out in individual units of some tertiary hospitals in other zones of the country (north, southwest, and south-south).^[8–10] There is a dearth of low vision studies in the southeast zone which has the highest burden of functional low vision.

In this paper, we report the findings of a study that assessed the state of low vision services and the perceptions of eye care providers (ECPs) and the users of the available services in all tertiary facilities in southeast Nigeria. It is envisaged that these data will be used to influence advocacy and planning to improve the scope, quality, and uptake of low vision services in Nigeria.

METHODOLOGY

A descriptive, cross-sectional, multicenter survey of tertiary level low vision services was undertaken in southeast Nigeria from June to August 2014. A mixed approach of qualitative and quantitative methods was used to enhance validity and provide more insight into the results obtained.

Ethical clearance for the study was obtained from the Ethics Committee of the London School of Hygiene and Tropical Medicine. Local permission/approval was granted by each of the study units. Informed consent was obtained from all participants. The study adhered to the guidelines of the Declaration of Helsinki. The study did not interfere with any treatment that the patients were receiving. The anonymity of study units and participants was maintained by the use of codes.

The study included all tertiary hospitals with an ophthalmology department in the study area to obtain an objective assessment of available low vision services

at the tertiary level in the zone. Southeast Nigeria comprises five states, namely, Abia, Anambra, Ebonyi, Enugu, and Imo with a combined population of about 16 million people.^[11] There are nine tertiary level hospitals in the zone; one federal and one state center in each state except Ebonyi state, which has just one tertiary center. All nine tertiary hospitals were included in the study.

Study participants were purposively selected to include 25 eye care professionals and 10 patients who had accessed low vision services in the functional low vision units. Eye care professionals (ophthalmologists, optometrists, ophthalmic nurses) were selected while ensuring a good mix of people with and without low vision training. This was to ensure that the perspectives of those directly providing or trained to provide low vision services, as well as those of people who refer or would potentially refer patients to the service could be explored appropriately.

A four-part questionnaire was designed and used to collect information on low vision service provision including hospital characteristics, human resources and available services and infrastructure, low vision assessment equipment, and LVDs. The section on availability of equipment and LVDs was adapted from the Vision2020 Standard List for setting up tertiary level low vision services.^[12] Thirty-five in-depth interviews were conducted for 10 users and 25 providers of low vision services using interview topic guides for prompt questions. For users, interviews were centered on participants' awareness of their underlying conditions, challenges faced in daily life and in accessing low vision services, and their impressions of, and expectations from the service.

Quantitative data were analyzed using Stata/IC 13 (Stata Corp, College Station, TX, USA). Descriptive analyses were undertaken to indicate the number of personnel trained and the range of low vision services available, the types of LVDs prescribed and the demographic characteristics of the patients and eye care professionals. Qualitative data were thematically analyzed as a continuous process, with emerging themes being explored in subsequent interviews.

RESULTS

Human Resource

There were 278 eye care professionals in the study units making up six different cadres. Twenty-one (7.5%) of them had had some training in low vision service provision [Figure 1]. There were no rehabilitation officers, low vision therapists, or orientation and mobility trainers. Only one ophthalmic nurse had been

Table 1: Number and demography of patients seen in the low vision units from January to June 2014

Hospital	Number of patients seen	Sex n(%)		Age n (%)		
		Females	Males	<15 years	15-39 years	≥ 40 years
Unit 1	10	4	6	5	1	4
Unit 2	25	7	18	6	7	12
Unit 3	26	12	14	6	8	12
Total	61	23 (37.7%)	38 (62.3%)	17 (27.9%)	16 (26.2%)	28 (46%)

Table 2: Characteristics of low vision service users interviewed

S/N	Feature	Frequency	Percentage (%)
A	Age (years)		
	<15	1	10%
	15-39	5	50%
	40-65	3	30%
	>65	1	10%
B	Sex		
	Male	8	80%
	Female	2	20%
C	Diagnosis		
	Glaucoma	2	20%
	High refractive error	3	30%
	Oculocutaneous albinism	2	20%
	Optic neuritis	1	10%
	Optic atrophy	1	10%
	Retinitis pigmentosa	1	10%
D	Duration of low vision (years)		
	≤ 10	4	40%
	11-20	3	30%
	>20	3	30%

Table 3: Characteristics of the eye care professionals and low vision practitioners interviewed (Total=25)

S/N	CHARACTERISTICS	VALUES
1	Mean age	45.7 years (SD=7.2)
2	Sex	Males=15, Females=10
3	Cadre	Ophthalmologists (n=15), Optometrists (n=9), Ophthalmic nurse (n=1)
4	Low vision training	Yes=14, No=11

trained in low vision care. Two of the hospitals had no trained low vision practitioners.

More than half of the low vision-trained practitioners (57.1%, n = 12 of 21) had received only one training. Training included didactic and practical sessions in 81% (n = 17 of 21) of cases. The duration of training was from <1 week to >4 weeks. Four optometrists were undergoing a longer 4-year training program in low vision as at the time of this study. The training for 12 (57.1%) practitioners was self-funded and 18 (85.7%) practitioners had received all their training in Nigeria.

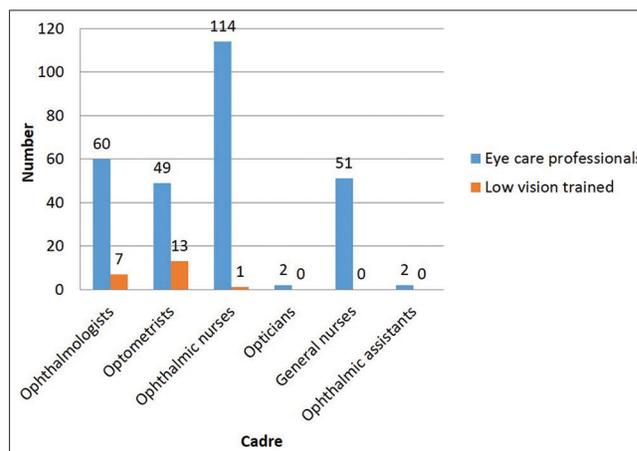


Figure 1: Number of eye care personnel in the tertiary hospitals in southeast Nigeria, and a number of each cadre that has received low vision training

Availability and service delivery

Four of the five states in the study area had two tertiary hospitals each while the fifth had only one, a total of nine hospitals in all. Three of the nine hospitals in two different states showed evidence of providing low vision services in at least 6 months before the study. For a population of 16 million, this implies an average of one facility per 5.33 million population. However, only two of these three hospitals had established units provided by the government or hospital management. In the third hospital with a functional low vision unit, low vision services were available but the equipment in use was privately purchased by the low vision practitioner. Plans were being made to setup units in two of the other hospitals while the remaining four had no units and no immediate plans to setup any.

As shown in Figure 2, all the hospitals reported that they counseled their patients on their low vision status, referred them for low vision assessment and performed at least basic refraction. More than half (n = 6/9, 66.6%) counseled patients on environmental modification, non-optical devices, and gave vocational advice. However, services such as orientation and mobility training and prescription of optical LVDs were limited to the three hospitals with functioning units.

Output

The number and demography of patients seen from January to June 2014 in the functioning units (Units 1, 2 and 3) are as shown in Table 1.

Records were paper-based and incomplete to varying degrees in the three centers. Therefore the diagnosis of every patient could not be ascertained. However, in one center, six out of the 12 recorded cases were due to oculocutaneous albinism. Other common causes across all units were glaucoma, retinitis pigmentosa, and high refractive errors.

The low vision clinics run once a week. There were no waiting lists and a minimum time of 40 minutes was spent on consultation per patient. Patients were referred

from the hospitals' ophthalmology departments and other hospitals in the same, or neighboring states. The cost of consultation in the eye unit was less than 1000 Naira (about £4)^[13] in all centers offering the service and there was no extra charge for low vision assessment.

Low vision equipment and devices

A hospital was classified as having an equipment or a device only if the equipment or device was functional. In places where some equipment was available but not functioning, reasons were mainly attributed to the inability to fix, or lack of funds to replace them.

In eight of the nine facilities, at least two-thirds of general ophthalmic equipment were available, while only four had LVDs to varying degrees [Figure 3]. Where present, LVDs were used mainly for patient

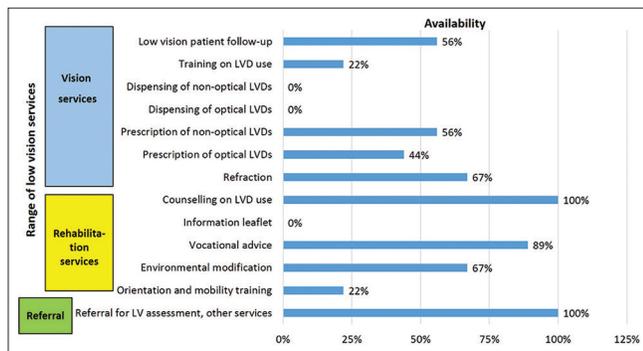


Figure 2: Summary of the range of low vision services provided in the region (LVD - Low vision devices, LV - Low vision)

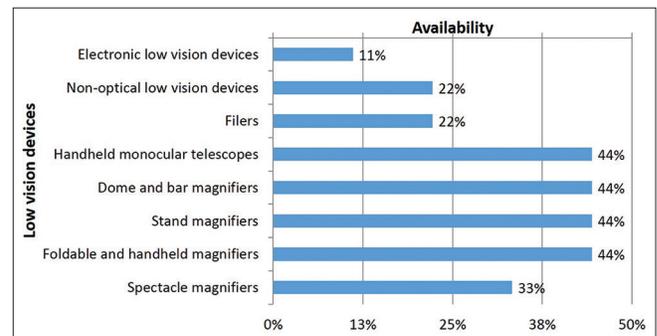


Figure 3: Percentage of hospitals that have various low vision devices

Box 1: Key themes of perceptions of the users of the low vision services (U - User)

User perspectives

Cost

There are many of us in the albino foundation [...] and I have not even seen one person among us here in State X who has been able to procure the low vision kit [...] because of the cost...U5

It wasn't really affordable in the sense that my salary here was very small, and I had to take a loan from my company which I paid back in instalments [...] the first one I bought from Dr X cost me, 210,000.00 naira...U9

Expectations

[...] at least if these things will be a little subsidised. You know it's more dangerous for you to see something that can help you... You know it exists but you can't access it...U5

I think patients need to be told how broad the field is so that we make our choice. Because what I have read since then shows me that perhaps, I would have tried some other options...U10

Acceptability

Yes they were looking because you know people here in Nigeria are not used to seeing people who use lenses that have this thing mounted on it. So coupled with the fact that I am an albino [...] some will come and gaze at it. They will be so astonished [...] you will see all kinds of comments, some of them positive, some negative...U9

But what matters is that I understand the reason why I am using it and I am determined to cling to it, as I wasn't using it for anybody's pleasure...U9

Acceptability, adjusting

Once they said that I should go to State X, I would go to State Y, fly to State X, stay in a hotel overnight because it couldn't be a day trip...U10

It took me like one month and some weeks to adjust. It requires careful training...U9

Impressions

When I was introduced to the low vision specialist, my interaction with him was awesome. He listens to you and really understands what you want...U9

It makes it better (the glasses) but I cannot still see well with it... because my vision is still ... U2

It's a huge difference because for one thing, if I didn't have these low vision aids, then I was pretty much struggling [...] so I sort of go with confidence into a meeting knowing that I would be able to read whatever I am handed...U10

They said that there's nothing they can do for me again, that I have to get used to the environment. It even worsened the issue for me to know I have this...U3

Box 2: Providers' perceptions - Non-low vision trained respondents (NLVP - Non-low vision trained professional)

Perceptions of non-low vision trained provider (NLVP) respondents about low vision services

Because there's nothing available [...] we don't talk about it much with the patient...P8-(NLVP)

[...] I can tell them to go to hospital X, or they can try, not that I am quite sure that they have it... P18-(NLVP)

[...] the few patients I have sent there, have not been excited really... P20-(NLVP)

I am not sending patients to them because I am not seeing anything they are doing..... P5-(NLVP)

We have the school for the blind at "location Y". But of recent I have thought to myself, [...] when I send a patient to Y, I don't know exactly what I expect that patient to get. I don't know the quality of education, and what the facilities available are, and I don't know what the outcome of sending a patient [...] P5-(NLVP)

Box 3: Provider perceptions - Low-vision trained respondents (LVP - Low-vision trained professional)

Perceptions of low vision-trained provider (LVP) respondents about low vision services

First of all we make a diagnosis. Then we counsel, we assess, evaluate them, then after evaluation, depending on what we feel the person needs, if the people need to have optical or non-optical devices, or they just need environmental modification or whatever, so depending on what we have available, we prescribe. The ones we don't have available, we can assist in procuring them....P9-(LVP)

Sometimes you'll be frustrated, sometimes you enjoy it, sometimes it's hectic. What we are doing is actually humanitarian service...P17-(LVP)

So we are doing more of counselling, more of referrals....P11-(LVP)

The percentage that get it is maybe, let me say about 10%, or even less, 5% will end up getting it, mainly because of finance...P1-(LVP)

One thing about low vision is when you give sight back to a person who thinks that he is blind, it's very rewarding. Just the smile on that person's face is enough...P24-(LVP)

We cannot say that we are very proud of what we are doing for now, but we can also say that we are trying our best given the resources available to us [...] At least they feel that somebody has listened to them if nothing else. Because they hardly go to a place where people are willing to spend one hour, two hours with you...P9-(LVP)

assessment but were not dispensed. Electronic LVDs were the least available, found in only one facility while most magnifiers and telescopes were available in up to four facilities surveyed.

Perception of users

Ten users were interviewed and their demographic characteristics are shown in Table 2.

Challenges encountered in accessing the service include the cost of devices, accessibility, acceptability, and difficulty in adjusting to use of the devices. These resulted in mixed feelings about their experiences and ultimately informed their impressions and expectations from the service. Key themes derived are as outlined in Box 1 (U - User).

High cost ranked as a major challenge and was indicated by six people as the main reason for the non-purchase of prescribed optical aids (U5, U9). Notwithstanding, two users were able to purchase spectacle-mounted telescopes (U9, U10). The bulky nature of the devices negatively influenced acceptability and was a source of concern because of poor societal awareness (U9). This, however, did not always deter their use of them (U9). The devices were not usually available for immediate collection and patients had to be carefully trained on the use and care of the devices (U9, 10).

In terms of impressions about services accessed, most respondents expressed some satisfaction with their interactions with the low vision providers even when

Box 4: Challenges highlighted by eye care providers (LVP - Low-vision trained professional, NLVP - Non-low vision trained professional)

Challenges highlighted by eye care providers

High cost

Part of the cause is the cost. Cost of training and the government's inability to sponsor people. And also after training what next? You need to get the things involved. The equipment. You don't just practice low vision with your bare hands...P3-(NLVP)

I have been using my salary for everything...P4-(LVP)

Low vision needs update training and courses. When a person always sponsors himself to go for training it's not encouraging...P1-(LVP)

Procurement of equipment and devices

They are not commonly available in the market, procuring them is a long way. Like my hospital does not provide these accessories. We will do assessment. But we are not the ones to dispense it to you. So most times we just give the prescription for you to source it elsewhere...P22-(LVP)

We have subsidized ones (device) from Vision 2020 but they are limited [...] we don't have binoculars, only up to 2x only. But higher magnifications like 4x, 6x, they are not in binoculars. [...] Those ones are very expensive...P25-(LVP)

Poor acceptance

[...] and patient is not even happy after spending that money because he still wants to see like he used to in his youthful days...P1-(LVP)

I am just specific about some albinos that I have seen. They'll say "when I put this one on, they'll think that I am already blind or that my own has no hope"...P7-(LVP)

Lack of infrastructure

We are waiting for when we have more space then we'll start...P17-(LVP)

Poor referrals

I don't think they refer enough [...] because they also understand that even the people offering the services are also handicapped...P16-(LVP)

Box 5: Suggestions proffered by eye care providers to improve low vision services

Suggestions proffered by eye care providers to improve low vision services

Provision of subsidies

Subsidy... If it's possible to get these things in bulk the price will crash per unit. And then you have something like a revolving scheme in which from the pool of that money you get devices in advance so that the patient doesn't have to wait for 3 months to get a device...P1-(LVP)

Better training

[...] if we can be given a sort of training abroad. We have done the limited training here in Nigeria. We need to be trained so as to do more things that are done overseas...P21-(LVP)

Better awareness

What is needed actually is, you have a place for low vision, you have to have links with other eye care providers around you, so that there'll be communication. But if you just do it and keep quiet, nobody knows you exist...P10-(LVP)

If we had the opportunity of saying same in the television, radio, once in a while, it will go to a very large audience...P15-(LVP)

Central low vision centre

Have a national low vision centre funded by the government, [...] that generally will just take care of the whole awareness thing...P24-(LVP)

their concerns were not fully addressed (U2, 9, 10). One respondent, however, expressed some despondence as the main help offered him was environmental modification (U3). The respondents also proffered some suggestions to improve the service including subsidizing the cost of devices, improving the appearance of devices, and better patient information (U5, 10).

Provider perspectives

Twenty-five eye care professionals were interviewed, 14 of whom had had some low vision training (P-LVP: Low

vision-trained providers). Their demographic features are as shown in Table 3.

All provider respondents had good knowledge of functional low vision and expressed the need for an established system of tackling it. However, both groups of eye care practitioners had varying perceptions about the available services. The group without low vision training was mostly unsure of or skeptical about the locations, range, and outcomes of available low vision services [Box 2].

The low vision trained group, on the other hand, felt that some progress was being made despite the numerous challenges [Box 3]. Services rendered varied depending on whether or not there was a functioning low vision unit in the hospital. Those without units mostly counseled and referred patients. Service utilization was poor especially the purchase of prescribed devices.

Challenges highlighted by providers are as outlined in Box 4. Funding was a major challenge identified by respondents in terms of training, setting up and maintaining services and procuring equipment and devices. Some of them often have to augment training and running costs with their funds (P3-(NLVP), P4-(LVP), P1-(LVP)).

Other challenges highlighted include logistics of procuring equipment and devices (P21-(LVP), P22-(LVP), P25-(LVP)), bureaucracy in setting up infrastructure (P17-(LVP), the dearth of referrals to the service (P16-(LVP), and poor acceptance of prescribed devices by users (P7-(LVP)).

Providers also suggested ways of improving low vision services [Box 5] including providing subsidies for the purchase of equipment and devices, better training opportunities, better awareness about locations and range of available services, and the establishment of a central low vision center.

DISCUSSION

Human Resource

Most hospitals (77.8%, $n = 7$ of 9) had at least one trained low vision practitioner but they were mainly ophthalmologists and optometrists with just one ophthalmic nurse (trained counselor). The roles that can be feasibly played by different cadres need to be considered. It may not always be practicable for ophthalmologists to be actively involved in low vision assessment of patients due to their workload^[14] and existing human resource deficit in some places. Most ophthalmologists with low vision training in this study were not actively providing low vision care. Two-thirds of the trained personnel were optometrists and they may be in a better position to do the actual assessment. This is dependent on the available personnel and workload. Though task shifting to midlevel ophthalmic personnel may be ideal in some settings,^[15] it may not always be feasible in high volume centers or centers with a dearth of personnel as was the case in some of these hospitals.

With regard to training, it is advocated that low vision be included in the curricula of eye care professionals to improve awareness among providers.^[16] The practitioners

in this study indicated the need for further training. Funding, and in some cases, quality of training were, however, the challenges identified. Over 50% of the training undertaken had been self-funded and this was identified as a demotivator, especially as low vision practice which is already perceived as a venture that is not lucrative by providers in Nigeria.^[14] Furthermore, though these training programs had both global and local experts as resource persons, the respondents still expressed the need for further training abroad to acquire more skills and knowledge of current global best practices.

Infrastructure and service delivery

The study revealed that only three hospitals were actively providing low vision services while logistics and hospital bureaucracy were impediments to the establishment in two other centers.

Often, competing priorities for limited resources for health means that less attention may be paid to areas such as low vision, which is less associated with mortality. WHO recommends at least one tertiary low vision unit/10 million population,^[6] therefore the availability in the zone of three per 16 million population or one per 5.33 million population seems adequate. In this setting, however, it may be more practical to plan services on a needs-based assessment of the proportion of adults who present routinely with functional low vision to the outpatient's departments as suggested by van Dijk *et al.*^[17] It is also important to consider the spread of the centers with regards to accessibility for the patient.

In terms of output, lower patient numbers were recorded (61 patients in three units in 6 months) when compared with findings from units in other parts of the country such as University College Hospital, Ibadan (193 patients in 18 months)^[9] and ECWA Eye Hospital, Kano (1200 patients in 5 years).^[8] These numbers are however considerably lower than those from studies in western countries such as Australia (1082 in 12 months).^[18] This could be attributed to differences in service delivery, or to barriers such as poor awareness of low vision and available services on the part of patients and poor referral on the part of eye care professionals as observed in this and other studies.^[16,19] The low output is also at variance with the response given by the hospitals that they all referred their patients for low vision assessment. However, it is also likely that patients referred did not follow through with the referral due to the barrier of cost, as alluded to by patients in the in-depth interviews conducted. Besides, patients may have patronized private facilities rather than the tertiary centers.

Equipment and devices

Though none of the units had the full complement of recommended equipment for tertiary hospitals,^[12] some were able to provide services with limited hospital or personal resources. Reasons for having non-functioning equipment included the inability to fix or and lack of funds to replace them, as are often associated with equipment maintenance issues in developing countries.^[20]

The major problem, however, was with the procurement of devices because of high cost and poor accessibility. Procurement is usually one of the most difficult aspects of low vision service provision^[17] and was a major challenge identified in this and other studies.^[14,16,19] It was cited as one of the factors that discouraged referrals by the other eye care professionals interviewed. In some western countries, unlike in Nigeria, these devices are provided free of charge (e.g. in Canada)^[21] or maybe largely covered by insurance (e.g. in the United States)^[5]

These devices were not available for immediate procurement, therefore patients may not have information on the final cost. This may affect their final decision to purchase the devices. It raises ethical issues and may amount to a waste of time and resources to assess patients and prescribe devices they may never be able to purchase. Furthermore, only 5–10% of patients purchased prescribed devices. An earlier study in Nigeria noted that only a third of prescribed LVDs were dispensed.^[10] Bulk purchase of frequently prescribed devices is a cost-effective option that was successfully employed in northern Tanzania^[17] and could be explored in this setting.

Perceptions of users

All but one user interviewed had at least secondary education, with a number of them have achieved academic and professional excellence. This may have been responsible for their level of awareness about the underlying causes of their low vision, proactive actions to seek help and expectations from the service. However, it may not be possible to generalize this finding to all the patients who routinely access the service or to the general population as a prevalence study of functional low vision in Nigeria found that only 9.3% low vision patients were literate and of working age.^[7] However, it does have implications on the type and level of services to plan for when setting up units.

The respondents' impressions about the services they accessed and/or the devices they acquired differed depending on the perceived level of involvement in their management, improvement, accessibility, and affordability of the prescribed devices, and adjunct

services they were referred to. The low vision services provided in the region are mostly clinical, as in many developing countries,^[19] with poor links to educational and rehabilitation facilities. Patients who required further services and or devices that were not financially or physically within their reach were more disappointed. This underscores the importance of having clear and accessible referral points for the aspects of low vision service not which are not available in a unit, as well as sufficient information about how these can be conveniently accessed by the patient.

The poor cosmetic appearance of the devices is also a major barrier associated with the use of LVDs^[19] but the users opined that though a major challenge, the benefits outweighed the disadvantages. Strong evidence suggests that patients value and utilize their LVDs.^[22] Increased utilization and societal awareness may, therefore, be beneficial in overcoming this problem.

Perceptions of providers

The low vision-trained group showed more awareness about available low vision services and associated challenges while the other ECPs were less aware and more skeptical about referring patients. This communication gap between the two groups probably contributed to the low output of the units. By not referring appropriately, ophthalmologists may be a hindrance to their patients accessing low vision care as reported by studies in Canada,^[21] India,^[23] and Australia^[24]

Other major challenges identified were bureaucracy, associated costs, and acceptability. Besides, van Dijk *et al.* posit that the support and engagement of key clinical, financial, and administrative leaders in the hospital are invaluable in successfully establishing a low vision service.^[17]

LIMITATION

A limitation of this study is that only services in tertiary hospitals were assessed and so it may not give a fully representative picture of low vision care in the entire zone. Although most low vision services in the country take place at the tertiary level, some level of low vision services may be provided in private eye care facilities. Therefore the findings of this study may be an underestimation of the true situation of low vision services in the zone, hence this study has rightly limited its findings to tertiary facilities in the zone.

RECOMMENDATIONS

Low vision service provision may be strengthened by tackling the challenge of cost through subsidized services, equipment and devices; and more sponsored

training opportunities for practitioners. Increased awareness among patients and providers, effective communication, and referral channels between eye care professionals and low vision practitioners, and the creation of accessible channels for procuring low vision equipment and devices will also greatly enhance uptake.

CONCLUSION

The state of low vision services in Southeast Nigeria is suboptimal. The identified challenges are an interplay between available human and material resources and perceptions of low vision patients and eye care professionals. There is a need to address these to improve low vision services.

Financial support and sponsorship

The fieldwork for this study was funded by the Sear Family Foundation.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- World Health Organisation. Priority eye diseases- Refractive Errors and Low Vision [Internet]. [cited 2014 Mar 05]. Available from: <http://www.who.int/blindness/causes/priority/en/index5.html>.
- World Health Organisation (WHO). The Management of Low Vision in Children: Report of a WHO Consultation, Bangkok, July 1992. Geneva; 1993.
- Barnshaw C, Brower J, Kent A, Lightstone A, Myint J, Dawn R, *et al.* Recommended Standards for Low Vision Services [Internet]. United Kingdom: NHS Eyecare Services Programme; 2007 [cited 2014 Mar 09]. Available from: https://www.visionuk.org.uk/download/archive_1/docs/LV_Standards_Jan_07.doc.
- World Health Organization; USAID and International Disability Alliance. Priority assistive products list: improving access to assistive technology for everyone, everywhere. World Health Organization. [Internet]. 2016 [cited 2019 Jul 09]. Available from: https://apps.who.int/iris/bitstream/handle/10665/207694/WHO_EMP_PHI_2016.01_eng.pdf?sequence=1&isAllowed=y.
- Owsley C, McGwin G, Lee PP, Wasserman N, Searcey K. Characteristics of low-vision rehabilitation services in the United States. *Arch Ophthalmol* 2009;127:681-9.
- World Health Organisation. Asia Pacific Regional Low Vision Workshop, Hong Kong. Hong Kong; 2002.
- Entekume G, Patel J, Sivasubramaniam S, Gilbert CE, Ezelum CC, Murthy GVS, *et al.* Prevalence, causes, and risk factors for functional low vision in Nigeria: Results from the national survey of blindness and visual impairment. *Invest Ophthalmol Vis Sci* 2011;52:6714-9.
- Barbie OM. Characteristics of the Nigerian low vision population. *J Niger Optom Assoc* 2004;11:1-7.
- Olusanya B, Onoja G, Ibraheem W, Bekibele C. Profile of patients presenting at a low vision clinic in a developing country. *BMC Ophthalmol* 2012;12:1-5.
- Ekpenyong B, Ndukwe O. Provision of low vision service in the department of ophthalmology University Of Calabar Teaching Hospital. *J Niger Optom Assoc* 2010;16:34-8.
- Kombe G, Fleisher L, Eddie K, Aneesa A, Parsa S, Ligia P, *et al.* Nigeria health system assessment. 2009.
- Vision 2020 low vision group. Standard List for Low Vision Services. *Community Eye Heal J* 2004;17:1-16.
- Central Bank of Nigeria. Central Bank of Nigeria: Monthly Average Exchange Rates of the Naira [Internet]. 2014 [cited 2018 Feb 11]. Available from: <https://www.cbn.gov.ng/rates/exrate.asp?year=2014>.
- Okoye O, Aghaji A, Umeh R, Nwagbo DF, Chuku A. Barriers to the provision of clinical low vision services among ophthalmologists in Nigeria. *Vis Impair Res* 2007;9:11-7.
- Chiang PP-C, Keeffe JE. Improving access to low vision services. *Community Eye Health J* 2012;25:15.
- Chiang PP-C, Marella M, Ormsby G, Keeffe J. Critical issues in implementing low vision care in the Asia-Pacific region. *Indian J Ophthalmol* 2012;60:456-9.
- van Dijk K, Kishiki E, Courtright P. Low vision care in Africa : Practical approaches to clinical services, educational engagement and planning. 2014.
- Matti AI, Pesudovs K, Daly A, Brown M, Chen CS. Access to low-vision rehabilitation services: barriers and enablers. *Clin Exp Optom* 2011;94:181-6.
- Chiang PP-C, O'Connor PM, Le Mesurier RT, Keeffe JE. A global survey of low vision service provision. *Ophthalmic Epidemiol* 2011;18:109-21.
- Howie S, Hill SE, Peel D, Sanneh M, Njie M, Hill PC, *et al.* Beyond good intentions: lessons on equipment donation from an African hospital. *Bull World Health Organ* 2008;86:1-80.
- Overbury O, Wittich W. Barriers to low vision rehabilitation: The Montreal Barriers Study. *Invest Ophthalmol Vis Sci* 2011;52:8933-8.
- Binns AM, Bunce C, Dickinson C, Harper R, Tudor-Edwards R, Woodhouse M, *et al.* How effective is low vision service provision? A systematic review. *Surv Ophthalmol* 2012;57:34-65.
- Khan S, Shamanna B, Nuthethi R. Perceived barriers to the provision of low vision services among Ophthalmologists in India. *Indian J Ophthalmol* 2005;53:69.
- Pollard TL, Simpson JA, Lamoureux EL, Keeffe JE. Barriers to accessing low vision services. *Ophthalmic Physiol Opt* 2003;23:321-7.